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# Acknowledgement

Dear Guests...

Welcome to the 4<sup>th</sup> International Conference of New Horizons in Education-2013.

"The International Conference of New Horizons in Education-2013 (INTE-2013)" is an international educational activity for academics, teachers and educators. It promotes the development and dissemination of theoretical knowledge, conceptual research, and professional knowledge through conference activities, the conference proceeding book. This year, INTE-2013 received almost 830 applications. The conference academic advisory board accepted 760 applications.

The International Conference of New Horizons in Education-2013 aims to diffuse the knowledge and researches among academicians and lead to development in educational sciences.

We have lots of participants from 38 different countries. Some of these countries are Austria, Australia, Brazil, Canada, Croatia, Czech Republic, China, Egypt, Denmark, Finland, Germany, Greece, Hungary, Malaysia, Mexico, New Zealand, Philippines, Poland, Portugal, Romania, Russian Federation, Saudi Arabia, Slovenia, Slovakia, Spain, Switzerland, South Africa, Turkey, United Kingdom and United States

Should you have any enquiries regarding INTE conference, please do not hesitate to contact with us for any additional information you may require.

Finally, we would like to wish you all a pleasant stay in Rome and safe return back home. I hope that INTE-2013 will be a meeting you will pleasantly remember.

We hope we will meet again at the International Conference of New Horizons in Education 2014 in Paris/France.

Thank you...

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**New Horizons: Tourist or Traveler?**

**Prof. Dr. Colleen Sexton**

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**Assessing Where it Matters Most - Your Instruction**

**Prof. Dr. H. Ferhan Odabaşı**

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**Does Digital Age Guarantee Digital Citizenship**

**Prof. Dr. Buket Akkoyunlu**

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INTE 2013

# Academic achievement and sports involvement of Malaysian university athletes

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## Abstract

This research studied the factors that influence the academic achievement of Malaysian university athletes. The respondents consisted of 156 field hockey players. The Team Socialization Scale (Allen, 1997) was used to measure the relationships between team subculture, parental influence, the learning environment, support systems, financial aid, training factors, academic assistance, socialization, and stress level and academic achievements of student athletes. The findings showed that there is a significant positive relationship between the learning environmental and academic achievements of university athletes. However there is a negative relationship between the support system and academic achievements of university athletes. The study provides suggestions on how to improve the academic achievement of athletes in Malaysian universities.

*Keywords:* Academic achievement; student athletes; team subculture

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## 1. Introduction

The goal of most universities is to produce students who have excellent academic performance as well as those who have the capability, talent and potential to contribute significantly to the development of a nation. However the competitive nature of intercollegiate sports has resulted in a lack of opportunities for university athletes to develop as the model citizen they should be (Adler & Adler, 1985). Factors such as stressful training schedules and an emphasis on winning have contributed to the differences in the academic experiences of an athlete and a non-athlete (Figone, 1994). These differences have influenced university athletes socially, emotionally and academically throughout their university education experience (Adler & Adler, 1985; Mayer, 1990). University administration and the coach would want to produce university athletes with excellent academic achievements and with good socialization skills on par with non-athletes. The findings of some research showed that non-academic cultural factors, class segregation and an unchallenging major, as well as too much time spent on sports influenced the academic achievements among university athletes (Adler & Adler, 1985; Pascarella, 1991). Commitment to and too much time spent on sports and the 'anti-intellectual' subculture among male student athletes (Adler & Adler, 1985) had resulted in lower academic achievements among student athletes and there was also an over dependency on personal support from other people for better achievements in both the academic and social environment.

Adler & Adler (1985) noted that university athletes were not ready and not interested in academic matters. They enrolled in a university or college to develop their career in sports. They obtained lower 'CGPA's, and had higher dropout rates and lower chances of completing their college education. Throughout their university education, university athletes will be exposed to various cultures and lifestyles in the campus that could affect their academic achievements. Their culture will develop as they socialize with their peers, coaches, lecturers, university staff and faculty members, as well as academic counsellors and with others in the university

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community from their first year until they graduate from the university. One of the components in the university athletes' culture is the indirect influence they receive from their coach and team mates (Allen, 1997). University athletes are more likely to be influenced by the behaviour of their coach and team mates. Male university athletes are said to have a culture of not valuing the importance of academic achievement. This is seen in the behaviour displayed by some team members such as poor class attendance, spending more time in sports, focusing on becoming a professional athlete and so on (Allen, 1997). Such non-academic behaviour will influence all team mates to behave in the same way. On the contrary, female university athletes receive positive influence from their team mates in both their sports and academic achievements. The team agrees on reasonable academic achievements and this creates a positive team subculture among the female university athletes leads to a positive influence on all team members' academic achievement. Team members also display a more 'pro academic' behaviour which contributes to their good academic achievements.

Previous studies (Castiglione, 1983; Harrison 1976; Hood; Larson, 1973; Sack, 1987, 1988; Allen, 1997; Miller & Kerr, 2002; Beamon & Bell, 2006) found that university athlete achieved lower academic performance compare to non-university athletes. However, a study on Malaysian university athletes by Abdul Rahim Mohd Meerah (1995) have obtained reverse findings. Specifically, there was no significant relationship between good academic performance and active involvement in sports among university athletes who were high achievers at Universiti Teknologi Mara, Shah Alam. Academic achievement was influenced not by active involvement in sports, but instead by time management and effective time tabling by the university administration, facilities to support a conducive learning environment and incentives provided by the universities; all of this contributed to the university athletes' motivation to study and achieve better grades.

Further research needs to be done on this topic to have a better understanding and explanation on the topic and factors that influence the academic achievement of university athletes, especially in Malaysian public universities. This study seeks to answer the following questions;

1. What is the relationship between the coach's influence and the academic achievement of university athletes?
2. What is the relationship between team mates' influence and the academic achievement of university athletes?
3. What is the relationship between parental support and the academic achievement of university athletes?
4. What is the relationship between the learning environment and the academic achievement of university athletes?
5. What is the relationship between financial aid and the academic achievement of university athletes?
6. What is the relationship between training and the academic achievement of university athletes?
7. What is the relationship between academic assistance and the academic achievement of university athletes?
8. What is the relationship between support systems and the academic achievement of university athletes?
9. What is the relationship between socialization factors and the academic achievement of university athletes?
10. What is the relationship between stress level and the academic achievement of university athletes?

## **2. Methods**

Using convenience sampling, 156 respondents were selected from among field hockey players from five public universities in Malaysia. These institutions include Universiti Malaya (UM), Universiti Putra Malaysia (UPM), Universiti Kebangsaan Malaysia (UKM), Universiti Teknologi Mara (UiTM) and Universiti Islam Antarabangsa Malaysia (UIAM).

Table 1 : Subjects

University	Male	Female
Universiti Putra Malaysia (UPM)	24	20
Universiti Malaya (UM)	25	18
Universiti Kebangsaan Malaysia (UKM)	16	-
Universiti Islam Antarabangsa (UIAM)	20	15
Universiti Teknologi Mara (UiTM)	18	-
Total	103	53

The '**Team Socialization Scale**' produced by Allen (1997) is used in this research. The scale has two sub-scales that is firstly the influence of the university coach and secondly the influence of team mates. Besides **Team Socialization Scale**, seven other factors are included in the questionnaire: learning environment (6 items), financial aid (6 items), training (7 items), academic assistance (7 items), support systems (4 items), socialization (6 items) and stress level (6 items). These items were included in the questionnaire to measure their relationship with academic achievement among student athletes. The second part of the questionnaire is to analyse university athletes' involvement in academic and faculty activities. Astin (1993) said that involvement in academic activities include: 1) Allocation of time to attend class or lab work; 2) time to study and do homework; 3) time to use personal computers. Finally the third part of the questionnaire collected demographic information of the respondents such as age, gender, ethnic group, year of study and academic information such as academic results, mean grade GPA and CGPA on majors and information on sports such as competition level, the role in team (main player or reserve) and sponsorship status.

Data collected was processed and analysed using the Statistical Package for the Social Science (SPSS) version 14 using multiple regression analysis. This type of analysis is used for descriptive and inferential statistics. In the process of analysing the research, the level of significance was stated at 0.05 and the confidential level at 95%. The level 0.05 is used as a point of reference as it a standard low-risk significance level which is used in many social sciences research. All the research questions were analysed using multiple regression analysis to explain the relationship between the independent variables, namely the behaviour of the coach, team mates' behaviour, parental support, the learning environment, financial aid, training, academic assistance, support systems, socialization and stress level and the dependent variable that is academic achievement among university athletes.

### 3. Results

The majority of the subjects (n=103, 66%) were males while females comprised 34% (n=53) of the sample. Fifty-four respondents (34.6%) are in year 1 of their university studies, 37 respondents (23.7%) are in year 2, 35 respondents (22.4%) are in year 3, and 30 respondents (19.2%) are in year 4. In terms of ethnicity, 146 or 93.6% of the respondents are Malays, 2 respondents (1.3%) are Chinese, 4 respondents (2.6%) are Indians and the remaining 4 respondents (2.6%) are of other races. The respondents are aged between 18 to 25 years (M = 21.78, SD = 1.54), and those aged 22 and 23 years make up the majority of students athletes who represent the universities in hockey competitions. As for the level of competition, it was found that 27 respondents (17.3%) had represented the country before, 50 respondents (32.1%) had represented the state, 70 respondents (44.9%) had represented the universities and 9 respondents (5.8%) had participated in other levels of competition.

Table 2 : Factors that Influence the Academic Achievement of University Athletes

Factors that Influence Academic Achievement	Mean	Standard Deviation
Parents' Behaviour	4.55	0.65
Support Systems	4.21	0.85
Socialization	4.15	0.65
Training	4.12	0.64
Academic assistance	4.10	0.59
Team Mates' Behaviour	3.90	0.67
Learning Environment	3.58	0.62
Financial Aid	3.53	0.68
Coach's Behaviour	3.51	0.58
Stress Level	3.19	0.68

Table 2 shows factors that influence the academic achievement of Malaysian university athletes. Parental influence has the highest mean at 4.55 (standard deviation = 0.65) followed by support systems (mean = 4.15, standard deviation = 0.65), socialization (mean = 4.15, standard deviation = 0.65), training (mean = 4.12, standard deviation = 0.64), academic assistance (mean = 4.10, standard deviation = 0.59), team mates' behaviour (mean = 3.90, standard deviation = 0.67), learning environment (mean = 3.58, standard deviation = 0.62), financial aid (mean = 3.53, standard deviation = 0.68), and coach's behaviour (mean = 3.51, standard deviation = 0.58). The lowest mean score is for stress level at 3.19 (standard deviation = 0.68). The results suggest behaviour of parents, team mates and coaches, the support system, training, academic assistance, and socialization can influence the academic achievement of university athletes with the influence of parents as the most dominant factor.

Table 3 shows university support system ( $\beta = -2.31$ ) and learning environment ( $\beta = 0.181$ ) have a significant relationship with the academic achievement of Malaysian university athletes. The value of R square ( $R^2$ ) that was obtained showed that a small variance in the dependent variable (GPA) is influenced by independent variables. With an R value at 0.080 ( $0.08 \times 100 = 8.0\%$ ), only 8.0% constitute variance in the dependent variables.

(academic achievement) and are influenced by independent variables. As for the learning environment, the analysis shows that there is a significant relationship between the learning environment and academic achievement among university athletes. ( $\beta = 0.18$ ,  $p < 0.05$ ). The positive correlation indicates that if a student athlete studies with a non-athlete, spending time to study and having discussions on relevant academic matters, it can enhance his or her academic achievement. If the reverse happens, the academic achievement will be lower.

Table 4 : Multiple Regression Analysis of All Factors that Influence the Academic Achievement of University Athletes

Variable	Non Standard		Standard		t	P
	Coefficient		Coefficient			
	B	Standard Error	Beta			
Constant	2.390					
Coach's Influence	.090	.073	.113		1.242	.216
Team Mates' Influence	-.028	.064	-.040		-.438	.662
Parents' Influence	-.014	.064	-.020		-.224	.823
Learning Environment	.135	.064	.181		2.101	.037*
Financial Aid	.033	.063	.048		.519	.605
Training	.008	.073	.012		.115	.908
Academic Support	.060	.080	.075		.746	.457
Support Systems	-.125	.056	-.231		-2.217	.028*
Socialization	.008	.068	.010		.111	.911
Stress Level	.039	.061	.057		.645	.520

R = 0.283, R<sup>2</sup> = 0.080, R<sup>2</sup> (adjusted) 0.017, F = 1.261

\* p<0.05

Next, the results of analysis show a significant negative relationship between the support system and academic achievement among university athletes ( $\beta = -0.23$ ,  $p < 0.05$ ). The result suggests if support system is positive, in terms of recognition by the university, providing rewards to university athletes, and providing training and proper planning for them, academic achievement will be lower. However in the absence of the above, the academic achievement of university athletes will be positively affected. The findings suggest Malaysian university athletes are not getting proper support system, but their academic achievement was still good.

#### 4. Discussions

The effort to enhance sporting achievements of Malaysian university athletes has raised concerns that involvement in sports might be a hurdle for university athletes to have high academic achievements on par or even better than non-athletes. The findings of this study suggest learning environment and support systems are significantly related with the academic achievement of university athletes in Malaysia. A direct significant positive relationship was found between the learning environment and academic achievement among university athletes. This finding is consistent with past research by Abdul Rahim Mohd Meerah (1995) to determine the relationship between academic achievements and outstanding involvement in sports in UiTM, Shah Alam. The research found that outstanding academic achievement among university athletes is because of the university's effective management in terms of providing a good learning environment, time table, and incentives that could motivate students. The findings emphasize the need for Malaysian universities to create a conducive learning environment so that students can study in a more pleasant environment. University athletes need to be given the opportunity to mix and interact with other students and join tutorial groups just like other students and not be segregated to specific groups consisting only of university athletes or made to stay in the same dormitory as their sports team mates as the practice in some countries (Allen, 1997).

In this study, support systems was found to be negative related with academic achievement of university athletes. This finding is not consistent with past research that indicated that with the existence of good support systems for the university athlete, the academic achievement of these students will improve (Allen, 1997). The Malaysian higher education system is different especially from those in the western world that provide equal support systems to all students. In Malaysia, only a handful of weak university athletes will be given extra attention because of their low academic achievement. They will be allocated counselling sessions, extra classes and tutorial sessions to help them improve their grades. University athletes with better grades do not get any form of additional support as their academic achievement leads to the belief that good support systems are not necessary for good academic achievement. In contrast, weaker students, in terms of academic achievement, will be given all the support they need such as counselling, and tutorials to help them achieve better grades. However, the practice of providing support only to academically weak student athletes should stop. Instead Malaysian universities need to provide a support system to all students whether they are high achievers or the weaker ones so that their academic achievement can be improved. Besides providing tuition and extra classes for university athletes, universities should provide financial aid and allowance for training to motivate the students athletes to continue being active in their respective sports.

For the other factors, the findings show that there is no significant relationship between academic achievement among university athletes and factors like influence of the coach's behaviour, influence of team mates' behaviour, parents' behaviour, financial aid, academic assistance, socialization, and stress level. Thus the findings are not consistent with past research done in other countries. The findings are in opposition with previous research that concluded that there is a significant relationship between coaches' behaviour and team mates' behaviour with academic achievement (Allen, 1997). However, the present findings that there is no significant relationships between academic achievement of university athletes and factors such as the coaches' behaviour, team mates' behaviour, parents' behaviour, financial aid, academic assistance, socialization and stress level are in line with past research that concluded that there is no significant relationship between high academic achievement and the active involvement of outstanding university athletes in sports in UiTM, Shan Alam (Abdul Rahim Mohd Meerah, 1995). This research found that good academic achievement is not the result of active involvement in sports but rather is because the students have good time management and also because the university is effective in scheduling classes, and providing good learning systems and attractive incentives to motivate university athletes.

Even though the focus of this study is on external factors, like the subculture of the team (coaches' and team mates' influence), and academic achievement among university athletes, there are also other internal factors such as personality and motivation of university athletes that have not been researched. Perhaps future research should look into the influence of these internal factors on the academic achievement of university athletes.

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# Academic motivation levels of technical high school students

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## Abstract

Motivational problems are very widely seen in education. One of the greatest frustrations mentioned by many teachers is that their students are often not motivated to learn. Determination of effective factors on students' academic motivation levels can be helpful in order to improve student academic performance. The aim of this study is to identify the effective factors on a group of high school students' academic motivation. Study group of this research consists of 300 high school students. A Turkish form of the Academic Motivation Scale was used to collect data. Additionally, Communal-Mastery Scale and a nine item questionnaire were also used in this study. Results indicated that a group of demographic characteristics and communal mastery were effective in academic motivation levels of students.

Keywords: academic motivation, technical high school students, communal-mastery

## 1. Introduction

The recent statistics results showed that achievement levels of technical high school students was very low in the university entrance exam and it was also observed that low academic achievement, low expectation and unwillingness to learn were very common among technical high school students. Determination of effective risk factors on students' academic motivation levels may help to improve academic motivation and academic achievement. The aim of this study is to identify the effective factors on students' academic motivation by working with a group of technical high school students within the concept of self-determination theory.

Motivation can be defined as the process whereby goal-directed activity is instigated and sustained. Researchers agree to the one generic definition of motivation, which is a mental state that stimulates the behaviour and arouses goal-oriented desire in human mind (Harris, 1940; Eysenck, 1970; Pintrich & De Groot, 1990). Motivation also known as an academic engagement which identify as the most influential of all the factors that affect student performance and academic motivation has been found positively associated with academic achievement, academic performance and 'will to learn' (McClelland, Atkinson, Clark & Lowell 1953; Entwistle 1968; Frymier et. al. 1975; Pintrich & Schunk, 2002; Woolfolk, 2004). These kinds of results emphasize that academic motivation is one of the basic factors for academic performance. It is described as "The cognitive, emotional, and behavioral indicators of students' investment in and attachment to education" (Tucker, Zayco, & Herman, 2002, p.477). Additionally, it is suggested that academic motivation is the only factor that directly impacts academic achievement; all other factors affect performance through their effect on motivation (Tucker, Zayco, & Herman, 2002). Another factor is the student's perception of themselves as being intrinsically or extrinsically motivated to engage in learning activities within educational environments (Barron & Harackiewicz, 2001; Elliot & Thrash, 2001). There has been a dialectical relation between people, as innately active organisms, and the social environment according to self-determination theory (Deci & Ryan, 1985). In this theory, humans are assumed to be active, growth-oriented organisms that have an innate desire for stimulation and learning from

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birth, which is either supported or discouraged within their social environment (Deci & Ryan, 1985; 2000). Within the social environment people attempt to satisfy their three basic needs. These three innate or fundamental psychological needs are competence, autonomy and relatedness (Ryan, & Deci, 2000). In this theory; at the end of the interaction between these needs and the environment three specific types of motivation are differentiated. Firstly, intrinsic motivation; the drive to pursue an activity simply for the pleasure or satisfaction derived from it, secondly, extrinsic motivation; pursuing an activity out of a sense of obligation, or as a means to an end and thirdly, amotivation; the absence of intent or drive to pursue an activity due to one's failure to establish contingencies between the activity and their behavior (Deci & Ryan, 1985; 2000). Additionally, Deci and Ryan (1985) distinguished four types of extrinsic motivation: external regulation, introjected regulation, identified regulation and integrated regulation. These four types of extrinsic motivation show differences in the degree of self-determination that the individual associates with the behavior. More internalized or more integrated behaviours produce a greater sense of self-determination. Based on one of the propositions that intrinsic motivation may be driven by specific, differentiated factors (Deci, 1975); three types of intrinsic motivation have been added to this original theory by Vallerand and his colleagues (1992). Firstly, to know; the desire to perform an activity for the enjoyment one receives while learning new things. Secondly, to accomplish; the desire to perform an activity for the satisfaction one receives from accomplishing or creating new things. Thirdly, to experience stimulation; the desire to perform an activity for the experience one receives while experiencing sensory stimulation which may reflect either intellectual or physical sensations (Vallerand et al. 1992). Thus, academic motivation can be examined within eight subtitles. Vallerand and his co-workers (1992) developed a scale which is measures seven subtitles of academic motivation on the bases of Self-Determination Theory and named as Academic Motivation Scale (AMS). In this study, academic motivation studied with AMS which is evaluates academic motivation as intrinsic and extrinsic motivation. According to Self-determination Theory environment has an important role in motivation. For example: "at the end of interaction between needs and the environment tree specific types of motivation are differentiated", "social contexts either stifle or promote intrinsic motivation" (Deci & Ryan; 2000). Motivation may be mediated by individual differences in social competence and mastery. Communal-mastery may be viewed as a form of social competence. Communal-mastery is defined as the belief that one is capable of successful goal attainment by virtue of being closely interconnected with others by Hobfoll and his colleagues (Hobfoll, Schroder, Wells, & Malek, 2002). A scale was developed by these researchers namely "Communal Mastery Scale" to assess communal mastery and used in this study.

### *1.1. Problem statement*

The recent statistics results showed that achievement levels of technical high school students was very low in the university entrance exam. And it was also observed that low academic achievement, low expectation, and unwillingness to learn were very common among the technical high school students. The aim of this study is to investigate academic motivation levels of technical high school students. Additionally, communal-mastery levels were also examined.

## **2. Method**

### *2.1. Participants*

The sample is consisted of 300 students from vocational and technical high schools, in this work. Participation was arranged voluntarily, with informed consent in the classroom environment. Enough time were given to all students to complete each instrument. Average age was 18 (range 17-22). 49% of the participants were male and 51% were female. This sample may be considered as a very representative one of vocational and technical high school students in Istanbul.

## 2.2. Measures

A nine item questionnaire was developed by researcher and used for demographic variables. Examples for the items; age, gender, whether he/she was happy from his /her school and whether the school was chosen by himself/herself or not. Additionally, two scales were also used in this study.

**2.2.1. Academic Motivation Scale (AMS):** The AMS (Vallerand et al., 1992) consists of 28 items and seven subscales. The scale adapted from English to Turkish (Ünal-Karagüven, 2012) and Turkish form named as Akademik Motivasyon Ölçeği (AMÖ). The scale consists of seven subscales, reflecting one subscale of amotivation, three subscales of intrinsic motivation and three subscales of extrinsic motivation. The items are rated on a seven point scale, ranging from 1 (does not correspond at all) to 7 (corresponds exactly). Examples for the items; “Because I need at least a high-school degree in order to find a high-paying job later on” or “Because I experience pleasure and satisfaction while learning new things” The scale has also one total score. Total score can range from twenty-eight to one hundred ninety six. A high score on scale indicates high endorsement of academic motivation. Total scores of the scale used in this study for each sample. Cronbach's alpha for this group is 0.89 (N=300, n=28).

**2.2.2. Communal Mastery Scale (CMS):** Communal mastery assessed via the CMS (Hobfoll, Schröder, Wells & Malek, 2002) which was developed from two commonly employed measures of mastery (Pearlin, Lieberman, Menaghan & Mullan, 1981) and self-efficacy (Schwarzer, 1993). Turkish form of CMS named as Çevresel Destek Ölçeği (ÇDÖ) (Ünal-Karagüven, 2005; Ünal-Karagüven, 20013).The scale consists of 10 items. Responses were based on a four-point scale from 1 (strongly disagree) to 4 (strongly agree). Students were asked to indicate the degree to which they agreed with the statements. For example, “With the help of those close to me I have more control over my life” or, “I can meet my goals by helping others meet theirs”. Cronbach's alpha was .64 in this study (N=300, n=10).

## 3. Findings

Sample sizes, means, standard deviations and intercorrelations among variables used in the study can be seen from the Table 1. As seen in column 5; academic motivation significantly correlated with all independent variables; gender ( $r=.178, p<.05$ ), school chosen by himself ( $r=.159, p<.05$ ), happy from his/her school ( $r=.229, p<.01$ ), and communal mastery ( $r=.319, p<.01$ ). All intercorrelations among academic motivation and independent variables were mostly positively significant.

Table 1. Means, standard deviations and bivariate correlations among variables

Variable	M	SD	1	2	3	4	5
1. Gender			1	-0.035	0.111	-0.068	0.178*
2. School chosen by himself				1	0.250**	0.047	0.159*
3. Happy from his/her school					1	0.140	0.229**
4. Communal Mastery	28.79	3.79				1	0.319**
5. Academic Motivation	118.59	26.25					1

\*\*  $P \leq .01$ , \*  $P \leq .05$

Hierarchical multiple regression was used to predict academic motivation and communal mastery from three predictor variables. The relative importance of variables in each predictor block was determined by examining significant beta. Beta weights provide an appropriate criterion about predictors. Table 2 depicts these results.

Table 2. Hierarchical regression analysis for communal mastery and academic motivation

Variables	Communal Mastery	Academic Motivation
	Beta( $\beta$ )	Beta( $\beta$ )
Gender	-0.083*	0.16*
School chosen by himself	0.008*	0.12*
Happy from his/her school	0.144**	0.18**
<b>Total R<sup>2</sup></b>	<b>0.2%**</b>	<b>0.8%**</b>

\*\*  $P \leq .01$ , \*  $P \leq .05$

As it can be seen from the Table 2, communal mastery and academic motivation are dependent variables. The independent variables are gender, school chosen by himself and happy from his/her school. As seen in Table 2, academic motivation and communal mastery were separately regressed on the three predictor variables. The absolute magnitude of beta coefficients indicates the relative strength of three variables as predictors of academic motivation and communal mastery. Communal-mastery and academic motivation subscales were separately regressed on three predictor variables. All independent variables are important predictors of communal mastery and academic motivation levels of technical high school students. These findings show that; being happy from his/her school a substantially important predictor of academic motivation and communal mastery, even when other predictors are statistically controlled. It explains a significant amount or increment especially in academic motivation (0.8%, \*\*  $P \leq .01$ ).

Additionally, significant findings for academic motivation showed that the Academic Motivation mean scores were significantly related with gender ( $t=-2.50$ ,  $p=0.01$ ), whether the school was chosen by himself/herself or not ( $t=-2.23$ ,  $p=0.02$ ) and whether he/she was happy from his /her school ( $t=-3.26$ ,  $p=0.001$ ). Boys' academic motivations were significantly higher than the girls. Additionally, willingly and happier students' academic motivations levels were significantly higher than the others. On the other hand, communal mastery scale results were significantly related with being happy from his/her own department of school ( $t=-0.918$ ,  $p=0.05$ ). Happier students' means scores were significantly higher than the others.

#### 4. Conclusion

This study presents the effective factors on a group of high school students' academic motivation levels which is based on Deci and Ryan's self-determination theory. Results indicate that demographic characteristics were more effective than communal mastery in their academic motivation levels. AMS has satisfactory levels of internal consistency ( $\alpha$  value= 0.89). Significantly different results obtained in some variables such as: gender, being willingly to go to this kind of school and being happy to be educated in these kind of departments such as computer or electricity education. Gender differences confirmed that boys' academic motivation levels were significantly higher than the girls. This may be due to the subjects, that are studied; which are found more interesting by the boys rather than the girls. We found that students have high academic motivation and communal-mastery levels if the school is chosen by themselves. Additionally, students have high academic motivation and communal-mastery levels if they are happy from their school. In addition, being happy or satisfied from school was found to be more effective than gender and choosing the school by themselves. This results confirmed that students' academic motivation have been affected by some factors. Findings provide support for the view that demographic characteristics are important for academic motivation. It was reported that motivation levels of university students are affected by some demographic factors such as; their reason to choose the school, the probability of finding a job after graduation, order of preferences, future expectations, distinctive power of testing and measurement activities at school and their desire to do master degree, probability of finding a job, attitude towards the teacher, social circle, level of income, appropriateness of the classrooms, efficiency of the educational material and number of siblings (Celikoz, 2009). Results related with communal-mastery also consistent with previous study that women have high level communal-mastery (Hobfoll, et al., 2002). Findings of this study were similar with other studies' findings as well. It was found that; demographic variables were significant predictors of communal mastery (Ünal-Karagüven, 2005). Subsequent studies of academic motivation should examine different factors not only demographic characteristics but also teaching style and classroom environment. In order to prevent negative effects of motivational problems on academic achievement motivating factors should be used by teachers in the classroom environment as much as possible.

In sum, we believe that the current study provides adequate support for the AMS and gives useful information on the technical high school students' educational research on motivation. Replication with different subjects to determine the influence of different variables on academic motivation and communal mastery is necessary to increase confidence of findings. Similar studies were suggested for the future.

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4<sup>th</sup> International Conference on New Horizons in Education

# Academic Study of Religions in Secular Age - The Case of Czech Republic

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## Abstract

Lately, the Study of Religions as an academic field has become highly attractive for many students. Globalization, among other impacts it has on society, certainly implements principles of multicultural education and religious tolerance into the frames of educational systems. Nevertheless, wide definition of these principles must be given concrete forms, which would reflect the socio-cultural and religious situation in different countries. It is on the scope of this paper to share experiences related to preparation of Study of Religions Curriculum in Czech Republic, a country often apprehended as one of the most secularized countries.

When implementing the education of Study of Religions we are confronted with two general problems. Firstly, believers sometimes reject an academic Study of Religions which is by them apprehended as unable to understand the reality of their religious experience. Furthermore they strive to reach a religiously caused (social) progress. Secondly, there is a wide underestimation of social impacts of religion among non-believing population according to which to deal with the topic of religion is of no use at all. In our paper, we intend to show elementary principles inherent to Study of Religions that need to be respected when educating at the academic level.

*Keywords. religion, religious education, academic study of religion, Czech Republic*

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## 1. Introduction

The socio-political changes after November 1989 influenced widely the lives of Czech citizens. More than forty years of communist regime ended with Velvet Revolution brought about a transformation of a state-directed economy into the free market based economy on one hand and the change of a single-party political system to the pluralistic democracy on the other. The human right principle, being a constitutive characteristic of new system, influences significantly the societal organisation as well as many other areas of citizens' everyday lives. Such a radical re-formation of socio-political system had also a crucial impact on social-religious domain.

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## 2. *Religion and religious education in democratic pluralistic society*

When we look at the impact of religious freedom principle on the state, we are instantly confronted with fundamental principle of modern state - secularity - which provides the frame of functioning for any religion in contemporary context. Modern state is built upon secular basis which foremost assumes its dissociation from any form of religion and religious tradition. At the same time, this by no means denotes atheism of the state itself, its negative relation or even persecution of religion. We shall strictly distinguish atheism, as a denial and combat against religion (Velký sociologický slovník 1996: 111-112), and secularity that is represented via structural societal organisation, since the foundation of modern European state is tied to secular nationalism.

Modern state of western type and its secular character adhere directly to political liberalism, quasi the protection of human rights and rights of free association of individuals. Thus the state must respect and protect the religious belief of citizens which subsequently leads to protection of minorities' rights (e.g. religious minorities). This principle does not mean that the modern state cuts off or disregards the historically based affiliations to diverse religious traditions whose presence is manifested strongly – that is Christianity and Judaism in case of Czech Republic. These religions particularly form an inherent part of our history and the secular state too must reflect that.

To fulfil this principle in Czech Republic the Charter of Fundamental Rights and Basic Freedoms was incorporated into the Constitutional order, thereby the freedom of religious belief (as well as the freedom to have no belief) in the Article 15 and 16 has been guaranteed.

Basic principles of religious tolerance and constitutional secularism further apply to educational system, too. According to the constitutional secularism principle the state cannot support nor identify itself with any particular religious tradition. Public schools and educational establishment (e.g. crèches), whose founder is either municipality (elementary schools), district office (secondary schools) or state (Institutions of specialized care) are therefore not attached to any kind of religion.

In case of private schools (where the founder is an executive individual or other executive private subject) and church schools (where the founder is a religious organisation) the situation can be rather different. Nevertheless, the Czech state takes the historical significance of Christianity into account and makes it possible to implement the religious education in case of interest. The feasibility to teach religion at the public schools is grounded in Charter of Fundamental Rights and Basic Freedoms, further in Act n. 3/2002 on freedom of religious belief and position of churches and religious organisations as well as in Education Act (Act n. 561/2004 Collection of Law, on Pre-school, Basic, Secondary, Tertiary Professional and Other Education). According to § 15 of Education Act only the registered churches can provide religious education, while they need “special act” permission to teach religion in public schools. Furthermore: on elementary and secondary schools founded by the state, district office, municipality (or its unit) the religion can be taught as a voluntary subject when at least 7 pupils are enrolled. For this purpose to joint pupils from different year-classes or schools is possible. The religious education in most cases practically means the Christian education, for Christianity is a dominant religion of Czech society, or more precisely – Roman Catholicism. Therefore the education is organised and carried out by local diocese and it corresponds to the document “Roman-Catholic Church Curriculum of religious education in 1th- 9th year of elementary school”, which was endorsed by Czech Episcopalian Conference in 2004 (Curricula..., 2004).

Although the Roman Catholicism is the dominant religion in contemporary Czech society, we might consider one distinctive characteristic of religious life in Czech Republic. The majority of Czech citizens claims no belief (they do not affiliate to any religion). Annual Censuses as well as specialised empirical inquiries (e.g. European Value Study or ISSP) illustrate this situation. According to the last Census of Population and Housing

carried out by the Czech Statistical Office in 2011 (Czech Statistical Office, 2011), out of 10,436,560 (total population), only 2,168,952 respondents report themselves as “believers” – that is 20,8 % of the total population. Out of this number of believers, 705,368 respondents declared themselves as “believers, not belonging to any specific religious organization” (6,8 % of population) and 1,463,584 declared themselves as members of a specific church or denomination (14,0 % of population). 3,604,095 respondents, that is 34,5 % of the total population, explicitly checked the option “no religious belief” on the census form and 4,662,455 respondents (44,7 % of population) did not answer at all since the response to the question of religious belief and affiliation was not mandatory (Havlicek & Luzny, 2013).

The number of believers who declare their belief openly decreases on the long-time scale: in 1991 there was 43,9% of declared believers, in 2001 the number fell down to 32,2% whereas in 2012 we had only 20,8% of believers. The following table shows the decline of large churches’ believers and the development of other religious organisations:

**Table: Religious Groups in Czech Republic (1991-2011)**

Religious group	Size (number)		Percentage in the population	
	1991	2011	1991	2011
Roman Catholic Church	4 021 385	1 082 463	39	10,3
Czechoslovak Hussite Church	178 036	39 229	1,7	0,4
Evangelical Church of Czech Brethren	203 996	51 858	2	0,5
Silesian Evangelical Church of the Augsburg Confession	33 130	8 158	0,3	0,1
Orthodox	19 354	26 350	0,2	0,3
Religious Society of Jehovah’s Witnesses	14 575	13 069	0,1	0,1
Islam	-	3 358	-	0
Buddhism	-	6 101	-	0,1
Hinduism	-	2 408	-	0
Judaism	-	1 129	-	0
Jediisms	-	15 070	-	0,1
believers, not belonging to any specific religious organization	-	707 649	-	6,7
Non-believers	4 112 864	3 604 095	39,9	34,2
Unidentified/ did not respond	1 665 617	4 662 455	16,2	45,2

The figure speaks for itself: Czech society is highly secularized with prevalence of non-believers. In spite of such data, we cannot speak of Czech society as being atheistic or having negative attitudes towards religion. Czech population can be rather defined a religiously non-active or apathetic (Topinka & Lužný, 2012; Váně & Lužný & Štípková, 2012).

It is thus not surprising that this religious passivity is reflected also in the means of religious education on elementary and secondary schools. In the scope of elementary education the religion also co-occurs in a thematic area “Human and Society”. Here, the topic of religion shall provide a general “orientation in socio-cultural phenomena and thus foster the respect towards cultural and other differences.” In this respect, the topic of religion is of secondary importance – the primal goal is to educate towards tolerance and respect and thus to follow and support the principles of multiculturalism. On the level of secondary education the system functions in a similar manner – optional form of religious education is lead by registered church, namely a delegated person of the church, and “in accordance with moral and humane principles of education and on the basis of tolerance

and religious plurality” (Directive n. 36). The secular state plays (in the field of education) the role of religious plurality and tolerance protector.

### 3. *The Academic Study of Religion at Universities*

The application of these principles is apparent also in the tertiary education, at the Universities in Czech Republic. Two parallel directions in education can be distinguished: religious education and the study of religions. This coexistence shall be apprehended as a result of the process of secularization, since the academic environment traditionally used to be a place where the religious education had been cultivated. Theological Faculties represented the hard-core of the medieval universitarian education system and only by the time its impact on the functioning of the system had been decreasing.

Today, the Czech education system includes five theological faculties. Three of them - Catholic, Evangelical and Hussite's Faculty of Theology – form a part of Charles University, the oldest university in Czech Republic established in 1348. These faculties also represent the major religious traditions in Czech society. Further, there exist a Sts Cyrilus and Methodius Faculty of Theology at Palacky University in Olomouc (1573) and Faculty of Theology at University of South Bohemia in Czech Budweiss (1991) – both being a part of Roman Catholic tradition.

Certainly, the goal of theological education is to transmit and cultivate the theology itself. It is, however, possible to attend the courses or to get a degree in Study of Religions also at these faculties. The understanding of such education is rather different than at non-theological (secularized) faculties, though. At the Hussite's Faculty of Theology the Bachelor and Master degree in the Study of Religion is available, yet only in combination with Hussite's theology. The Study of Religions is implemented as a teaching the history of religions, while the critical-historic method is applied prevalently. The religions of the Near East and large monotheistic systems (Judaism, Christianity and Islam) are of the main academic interest. Further, the education in at least one source language (Greek, Latin, Hebrew, Aramaic or Coptic) is incorporated in the Curriculum.

In Czech Republic the Study of Religions in its non-confessional form is present at the Faculty of Arts at Charles University in Prague, Masaryk University in Brno and University of Pardubice. Even though in all three cases we can talk about non-confessional and secularized studies which shall hence follow the basic principles of science (humanities or social sciences in general) we can observe significant differences in the approach towards the study of religions.

At the Faculty of Arts at Charles University, the Study of Religions is primarily textually and historically oriented – studying and interpretation of texts mainly in source languages form the core of the Curriculum. The main focus is given to the development of religious thought and philosophical analysis of religion (<http://religionistika.ff.cuni.cz>). Such a conservative approach in the Study of Religions along with the thematic content of education and the methods of scientific work reflects the tradition of Prague Faculty of Arts.

The youngest department of the Study of Religions in Czech Republic was established in Pardubice. There, the teachers' personal beliefs and convictions have a special impact on the form that the Study of Religions has taken. It promotes the religious dialog at the first place, its mission is to search for religious consensus on the base of everyone's personal religious believes, since those who are religious can understand the religion in general sense the best. Thus the Study of Religion as an Academic field serves as a place of religious encounters and the Curriculum focuses on the problematic of intercultural clashes (mainly of Europe and Orient) and the interreligious dialog (<http://religionistika.upce.cz/o-katedre>).

A distinctive conception of the Study of Religions offers the Department at the Faculty of Arts at Masaryk University in Brno. Currently, two different directions of the study and research are being supported and cultivated by the department. While the first one is based on contextual approach, partially influenced by the

sociology and social-oriented scientific approaches in academic study of religion (hermeneutics and interpretation turn), the second is oriented rather cognitively and thus strives to give the education cognitive scientific background. A part of such educational and research attitude is based on experimental and laboratory research (<http://www.phil.muni.cz/relig/>).

#### 4. Conclusion: Academic Study of Religion and Religion at Universities in (Post-)Secular Society

The secularist principle, upon which the actual development of modern western societies is based, lead to the disjunction of religion and public education system, respectively to decreased influence of religious institutions on the education system. Consequentially, the religious education and education about religion has been differentiated. On elementary and secondary schools this situation is reflected as differentiate religious education (optional, but guaranteed by the state to satisfy eventual children's religious needs) on one hand and a transfer of information about religion, that partially form diverse cultural traditions and memory of given nation, on the other. In case of tertiary education this disjunction went even further. Side-by-side there coexist institutionally separated systems focused on teaching and studying religion – theology and study of religions. While the first one – theology – produces religious specialist, the second – study of religions - is a non-confessional independent field of study. The existence of the academic study of religions should be thus apprehended as a demonstration of secular character of the education system itself.

Nevertheless, the secularist principles have been challenged lately and nowadays the tendencies to reinforce the influence of religion in diverse spheres of public life (policy, education etc.) appeared. This period is sometimes referred to as “post-secular” society.

The so called „Culture War” as we know it in USA, where the long-lasting conflict between religious world-view (along with the possibility to include its attitudes into the curricula) and non-religious world-view based on evolution theory, did not affect the Czech environment so powerfully. It is in fact a clash of creationism (also in a form of “intelligent design”) and Darwinism, but in some cases we can even talk about war between religious fundamentalism and atheism. It is still a question how expectable this situation, this ideological conflict, is in case of Czech society and Czech tertiary education. Considering the religious indifferentism of Czech society it seems to be unlikely for such conflict to become more intense. If it arises (which is possible), it will very probably touch the tertiary education only partially. It can embrace a clash between fundamentally oriented religious activists and university teachers on one hand and cognitively (evolutionary) -oriented academicians of study of religions on the other.

Regardless all these problems and potential rise of “culture war” in connection with the topic of religion (and its presence in tertiary education curricula), it is important to protect the fundamental principles that anticipate the existence of academic study of religion itself. Respect to the diversity of religious beliefs and religious tolerance belong to its pre-conditions. Therefore, it is highly eligible for the state (that frames the educational and religious policy) to follow the principle of religious neutrality. In this manner, the state in fact plays the role of religion's and religious minorities' protector, while the particular religions evolve unboundedly in the frame of secularity.

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# Accounting education for accounting educators evidence from Italy – the case of SISSIS/TFA (2002-2013)\*

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## Abstract

This paper aims to highlight the education-training during the early twenty-first century, for future teachers of *Economia aziendale* (“Economic concern”), in Palermo (Sicily, Italy), in a special training school. In Italy, the business disciplines, unitarily, are studied generally under the name of *Economia aziendale*, within which, however, the part of Accounting (*Ragioneria* in Italian) has always played a dominant role. Compared to the usual studies in Accounting Education, this research presents some peculiarities worthy of note. The perspective used is the critical thinking in education.

*Keywords:* Critical thinking in Education; School; Teaching

## 1. Introduction

This paper reports upon an unusual event in Italian accounting education: the change that occurred in the early 21<sup>st</sup> century in the education and training of future teachers of *Economia aziendale* (‘Concern’ or ‘Business’ Economics). This occurred at a special training school established in Palermo, the capital of Sicily, Italy. Although the business disciplines are studied together under the name, *economia aziendale*, in Italy, it is accounting (*Ragioneria*) that has always played the dominant role and, so, the change in education and training of teachers of *economia aziendale* impacted most upon teachers of accounting. This paper contributes to our knowledge of the process of accounting education by looking not, as most studies of accounting education do, at the education of future accounting professionals, but at the education of future teachers of accounting and other business disciplines. In addition, these future educators are being trained to teach, not in universities, but in secondary schools where the age of pupils is from 13 to 19. The teaching of accounting at this level is relatively unusual when compared with where it is predominantly taught in Anglo-Saxon countries, generally at post-high school level. The relative importance of this research, both for accounting education and for the history of our discipline, is that it draws attention to the importance of planning the trainers’ curriculum and not just the curriculum of the trainees. From a normative perspective, this study could inform curriculum designers to the

\* The idea for this research and the bibliography are attributable to a common body of work of the authors. The following sections, however, even with a strong cooperation among them, are due in the main, respectively, to Massimo Costa (2 and 4), to Alan Sangster (1), and to Patrizia Torrecchia (3).

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possibility of extensions to current curricula that should be beneficial and open the possibility of its generalization to other contexts beyond that investigated here.

But this history can also have an intrinsic historiographical value despite its extreme proximity over time; and we know that this historiographical perspective is relevant in accounting education field.

The third peculiarity is the reference to a particular legal system, that of the Italian school in the last decades.

During the past 30 years, research in accounting education has become established as a distinct branch of research with a global community of scholars (Urbancic, 2009; DeLande and Bernardi, 2013) but accounting education has ancient roots, inherent in the birth of modern accounting itself (Sangster *et al.*, 2007). It was, however, largely uninfluenced by specific demands of practice until two events occurred in the mid-19<sup>th</sup> century: accountants began forming professional bodies to represent their interests (Lee, 1995) and universities in the USA began including accounting in their programmes and their graduates sought jobs in the profession (Van Wihe, 2007a,b).

The birth of accounting education journals, in recent decades has led to the absence of education topics in the main accounting journals, however, it has also created a strong research community (Ravenscroft *et al.* 2008). The present work can be placed within this general framework and, in particular, in studies related to the curriculum or to instruction. In particular, it can be noted that although there has been an explosive growth of studies in accounting education from, roughly, 1997 (Apostolou *et al.*, 2001), some of the themes of the immediately preceding years have failed to develop. Instead there was a great numbers of empirical studies that sometimes seem distant from key issues, such as the strong relation between changes in accounting education and accounting faculty (May *et al.*, 1995), and focus more towards the change in accounting education in which there are “more concepts and less procedures, integration of subject matters, critical thinking” (Ehrenreich, & Hulme, 1992).

Attention towards critical thinking is evident in laboratory studies and case studies, more so than in traditional studies of the procedures, but beyond this, the important thing is that everything is not reduced to an algorithm or a claim of “best practice”. We need to identify the logic, the underlying model, the evidence, and then, if possible, justify it critically (Kimmel, 1995). Some have openly criticized their own university learning (Kinney, 1990), with less attention to rules and more attention to the processes that created the rules themselves. In this respect, the Italian experience reported in this paper may be considered as a reference example for others to note and consider in terms of its relevance to accounting education where they are located.

Accounting education in Italy has a far longer pedigree than elsewhere, dating back at least seven centuries and, through the Italian schools of accounting thought, accounting in Italy has recognized scientific features for at least for two centuries, principally within the discipline of *Economia aziendale* (Lipari, 2012). There are discordant opinions about the influence of this ‘scientific’ conception in the field of accounting education (Chambers, 2005; Mattessich, 2005), but this concept has influenced and continues to be prevalent in Italian accounting practice and accounting education.

The methodology followed in this research is essentially historiographical, with some conclusions of a theoretical evaluation of the proposed curriculum. In general, this paper can be considered more descriptive than prescriptive, with its normative consequences, but we believe that such a distinction is, in our field, more formal than substantial, since it is inevitable to give regulatory guidance arising spontaneously from a case study of this type. Moreover, this paper can be considered more descriptive than empirical, because the evidence supplied is, as would be expected from such as study, often anecdotal in nature, rather than replete with hard facts.

#### *Historical background of the Accounting Profession in Italy*

The accounting profession in Italy can be traced back to 1581, when the Collegio de' Rasonati (College of Auditors) was formed in Venice. In 1620, the profession of “liquidatori giurati” (certified liquidators) was founded in Piedmont and, in 1742, the profession of “ragionati” (accountants) was recognised in Milan. In 1828, accountants were recognised as “ragionieri revisori” (accountant auditors). The profession of public accountants

(“pubblico ragioniere”) was recognised in the Papal States in 1836. Then, in 1906 the Kingdom of Italy granted accountants the status of independent professionals (“libero professionista”).

For many years entry to the accounting profession was available to anyone who had completed high school. However, some entrants were graduates and they founded their own association which separated from the non-graduate group in 1953. This changed in 1997 when the profession became wholly graduate-only with a requirement that to become a professional accountant [*Ragioniere e perito commerciale*], entrants were required to hold a 3-year Bachelor’s degree. To become a “*dottore commercialista*” (the equivalent of a ‘chartered accountant’), a 4-year degree was first required then, from 1999, this was changed to a requirement of a 5-year degree. In 2004, this was again changed to require the holding of a Master’s degree and, in 2005, it was agreed to merge the two professional groups with effect from the start of 2008. From that point forward, all new entrants to the new combined body, the *Consiglio Nazionale dei Dottori Commercialisti e degli Esperti Contabili* (National Council of Certified Accountants and Auditors), were required to be graduates who had completed a period of professional training and passed the necessary state examinations. The profession comprises, therefore, of those with Master’s degrees (following 5 years of university education), the “*Dottore Commercialista*”, and those with Bachelor’s degrees (following 3 years of university education), the “*Esperto contabile*”.

Until the switch to a graduate profession in 1997, Italy had to ensure the presence of secondary business schools [*Istituti Tecnici Commerciali*]. In these schools, despite the emergence of “*Economia aziendale*” during the 1920s following the work of Gino Zappa, up until the 1990s teaching remained divided into two themes: accounting [*ragioneria*] and management [*tecnica commerciale*]. This was also done in other technical schools and in professional schools of business (more practical schools, but still secondary schools), and in secondary schools for tourism, where the themes of accounting and business had a more minor role. In the 1990s, the curricula of these schools were unified into teaching “*Economia aziendale*” with a significant reduction in the hours devoted to these accounting and management and the traditional “secondary business school” [*Istituti Tecnici Commerciali*], became “secondary schools – economics” [*Istituti Tecnici ad indirizzo economico*]. While the accounting profession shifted to requiring a university degree of its new entrants in 1997, accounting continued to be taught in the schools, but the change to a unified system embodied a process of autonomy, both in the teaching and administration, resulting in the schools enjoying relative freedom since 1997 in the content of their courses. These changes were not the only ones to impact the education of future accountants. In 1999, “*Scuole per l’insegnamento secondario*” (Graduate Schools for Secondary Education – SSIS) were established in order to train future secondary school teachers, including those who would teach accounting. This scheme ceased enrolment at the end of the 2007/8 academic year and has since been replaced by the “*Tirocinio formativo attivo*” (TFA). This paper examines the birth of one of the “*Scuole per l’insegnamento secondario*” which was established by the consortium of the three state universities in Sicily. The rest of the paper is divided into three sections. The first reviews the Sicilian SSIS, particularly its curriculum for future teachers of “*Discipline Economico-Aziendali*” (business disciplines). The next section considers its replacement, the TFA, which is endeavouring to maintain the legacy of the SSIS. The final section summarises what has been described and presents some theoretical and practical conclusions.

## 2. The Experience of Sicilian SSIS (2002-2010)

The traditional Italian school, until the twentieth century, had teachers’ methods of recruitment not very efficient. Typically, from time to time, national competitions were banished. In these contexts some ‘applicants’ were considered winners, the first in the standings, and they had tenure, others were still ‘enabled’ to carry out teaching. This system created a pool of temporary workers who could only supply the substitutes in public schools and, more often, in private ones -growing over time- which took the majority of their workforce right from these ‘qualified precarious’. The system did not work well for many reasons. The progressive increase in the number of graduates, and the lack of job opportunities, especially for the humanities and for the depressed regions

of the South and the Islands, over time inflated the population proportion of temporary workers, while private schools, among which very few really qualified, could afford to pay little or nothing their teachers, who were content just to accumulate 'points' to climb the provincial rankings. The public school, in fact, not to upset these teachers, recruited them, for 50% drawing on the list of these temporary workers (that could be 'climbed' through the substitution), and the remaining 50% with the open competitions themselves.

One reason for inefficiency, then, was the fact that even the 'losers' in competitions, doing a lot of substitutions in complacent private schools, could aspire to the chair. Another source of inefficiency was that, from time to time, the state helped even the 'precarious not qualified', reserving to those who had a lot of 'experience', although rejected in all competitions, the 'qualifying courses' that allowed them to override the winners of the competition. But above all, competitions occurred only in a superficial teaching skills of future teachers, especially according to the contents of the disciplines taught. Overall, the system of national competitions, acceptable several decades ago, when the school was still a fact of elite, became in time a sector witnessed, controlled by the unions and highly politicized.

With regard to the field of business disciplines and the territory of the Sicilian Region, the last qualifying competition open to all graduates was banned back in 1990. To overcome this disorder, in 1998, with a Decree of the Ministry of Education, University and Scientific and Technological Research, on May 26<sup>th</sup>, SSIS were also set up. This decree followed up, much later, the Law n. 341 of 1990, which entrusted the training of school teachers to the University. Some real High Schools were established [Scuole di Specializzazione], and they lasted two years after the graduation. The students of these schools were required to undergo a course of 1,000 hours, divided into 700 hours of courses and workshops and 300 hours of practical training at secondary schools, divided into four semesters. These schools had to be divided into different courses or branches, according to the groups of disciplines, and these in turn into "classes of competition".

The teaching hours were divided into two areas:

Area 1 or "Transversal": Teaching of the function of teaching itself, with courses in "pedagogy", "didactics", "psychology", "school history", "school law", "environmental education";

Area 2 or "Disciplinary": Teaching of the function of teaching a particular discipline, with courses on the epistemological, historical and didactic aspects of the discipline itself;

Area 3 or "Teaching Laboratories": Teaching of practical teaching methods of the discipline, through the preparation of teaching modules, lectures, case studies, and so on.

The training, however, was coordinated by a supervisor chosen from among school teachers with particular expertise, and took place at the schools, with participation in all educational activities under the guidance of a school tutor. The establishment of SSIS, started in Italy with the academic year 1999/2000, had some criticism. The universities ran these courses without a clear project, and essentially found themselves unprepared in the face of a world, that of the school, they knew little. Often they just replicated university courses, with a few characterizations really 'didactic'. The distance of university research towards the issues of education and didactics showed here perhaps all its limitations. Moreover, the 'world' of the qualified precarious was not demobilized and, despite a competition in 2000 (in our sector and in Sicily restricted only to competitors who already have qualification), these remained largely in their place, creating a social problem difficult to solve.

However, for the first time in the history of the Italian School, the future teachers were subjected to an organic process of training that, in some experiments, also gave first-rate results. The specialized SSIS went to swell the ranks of 'qualified', but often were preferred to the old precarious teachers for substitutions, because of their preparation, and not a few of them reached the summit of the rankings in a short time and could have tenure, even in the few areas of a sector subject to increasing budget constraints. This happened in Italy and in general.

In Sicily, the three state universities of the Island (Palermo, Catania and Messina), in order to withstand common mode and administrative costs, and in order to plan so common teaching on a regional basis, entered into a Convention in 2000, which gave birth to a Sicilian school for the training of future teachers of school: the Sicilian Inter-university school of Specialization for Secondary School Teachers (SISSIS). In fact, however, apart

from the administration, the three teaching poles would have moved then in complete autonomy from one another.

The SISIS had its headquarter in Palermo and it was divided into three sections, as the number of universities: Palermo, Catania and Messina. It ensured the training of teachers in all the courses of the secondary school, the Grade I (11-14 years old), as the Grade II (14-19 years). It also ensured special courses for the so-called “support”, that is, for those teachers who would assist students with disabilities. Typically these courses were an additional specialization (a kind of 3<sup>rd</sup> year) that some SISIS specialized took in addition to the main specialization.

The teachings of the area 1 that were activated at the SISIS were as follows:

- Institutions of General Didactics;
- General Pedagogy;
- Intercultural Pedagogy;
- Psychodynamics;
- Developmental Psychology;
- General Psychology;
- Social Psychology;
- Sociology of Communication;
- Sociology of Education;
- Teaching and learning technologies.

The teachings of the areas 2 and 3 were divided into 10 branches. Ours was the branch titled “Economics-Law”. The latter, in turn, was divided into two “classes of competition”: Law and Economics [Discipline Giuridiche ed Economiche] and Business Disciplines [Discipline Economico-Aziendali]. The contents of the latter, for long Italian tradition, was and is largely of Accounting.

The aim of the teachings of area 1 of historical and epistemological type was the acquisition of knowledge about the nature and development of specific subjects required teaching qualifications, their historical evolution, the relationship between them, the reflection on the nature of the problems of teaching addressed and of the methodologies used in educational research. In a word, what in the previous point we have defined as the critical thinking related to these disciplines.

The aim of the area 2 teachings of didactic teaching discipline was instead the acquisition of specific skills in the determination of educational objectives, selection of teaching contents and in their effective curricular organization, in the selection and construction also of interdisciplinary teaching strategies and formative assessment of learning outcomes achieved.

The aim of the teachings of area 3 (the “laboratories”) was the practical application of skills acquired in the teachings of area 2.

The internships, however, given the difficulty of actually imparting 300 hours of participation in the school, were divided between an “indirect training” method, in which there were interventions under the guidance of the supervisor also through professional work and writing, and a real “direct training” properly in the schools.

The aim of didactic and professional training was the production of skills related to the effective teaching, the mastery of language and communication processes of teaching and training, the critical use of educational technology and the development of constructive attitudes and behaviours and of collaboration in institutional and social interactions required from professional life.

Distinguishing features of the training were:

- Elaboration, organization, experimentation and evaluation of projects in the school work and educational research, both within the specific discipline and in the interdisciplinary area;
- A close coordination with the activities of the laboratories both of Area 1 and of Area 2;
- Close coordination with the preparation of the final exams.

As a result of the institution of SISIS, the Faculty of Economics at the University of Palermo was so charged with the responsibility to design a curriculum “law and economics” already from the second round of courses, in the academic year 2001/2002. However, the first year of this course was activated only in the course of preparation for the professors of law and economics, completely devoid of Business Disciplines.

The following year (2002/03, III cycle), the specialization course for the teachers training in business disciplines started, and in that of law and economics, two key business lessons were included, among which there was ‘General Accounting’ [Ragioneria generale], made of 15 hours. At first the two courses had some subjects in common and used to vary from one year to another, but after two years the program contents found their stability.

In a mature stage (from the academic year 2004/05, V cycle), the course was then settled in its essential contents. During the ‘parallel’ course for teachers of “Law and Economics” either “Business Economics” and “General Accounting” were abolished and replaced with a single teaching of “Accounting and Financial Reports for Law and Economics” [Contabilità e bilanci per le discipline giuridiche ed economiche], 20 hours course, while in the course for teachers of “Business Disciplines” two courses, unrelated to business matters, were maintained: History of Economic Thought (20 hours) and Didactics of Commercial Law (20 hours).

The other teachings of area 2 were the following:

- History and Epistemology of Business Disciplines (45 hours);
- Firm Economics and Management (25 hours);
- Organization Science (25 hours).

The “Didactic laboratories” (area 3), were instead the following:

- Economics and management of tourist companies (15 hours);
- Accounting and professional technique (20 hours);
- Corporate strategies and policies (25 hours);
- Applied Financial Accounting (training, analysis, review of financial statements) (25 hours);
- Applied Management Accounting (Planning and Control) (20 hours);
- Industrial and commercial technique (production, logistics, distribution) (25 hours).

Simply reading the curriculum can make the idea of the uncommon effort that the local Faculty of Economics produced to train teachers of excellence, with a curriculum and professional never experienced before.

Every year, therefore, no more than 20 specialized teachers were placed on the market for qualified teachers in western Sicily and a number not greater in Messina (the other pole where a similar course was activated) to the east. Some of them, as students with a curriculum particularly strong, were then attracted to other jobs, so that the number of new teachers could after all be consistent with the real needs of professors of accounting and other business disciplines in the Sicilian School. However, the system crashed for the presence, in the provincial rankings, of hundreds of ‘old’ temporary workers, which, with scores obtained in private schools by the thickness more or less ‘doubt’, also threatened to override the excellent specialized SISIS teachers.

The scandal, however, took place with a state law that admitted other temporary workers to the teaching training, even those not qualified, but that taught for some years. This law, the n. 143 of 2004, made it possible, with a special only one-year course at SSIS, to be placed in the same roles in competition with the specialists.

The University of Palermo tried to deal with this political decision in the most correct way. The selections were as strict as possible, but could not prevent the placing, at one time, of about 80 not qualified people that would come out from these courses. These teachers, already been placed in service for many years in school, could add the score of the SISIS to that one resulting from their school experience.

However, the above university tried to subject them to a training process that, although more accelerated compared to the ordinary SISIS, could be as close as possible to it. Being full time workers, courses were held on Friday afternoon and on Saturday morning and afternoon, with serious damage to the quality of the courses themselves.

In 2005/06 thanks to that special law, only the course for the support of disabled people was activated (one pilot course of just 5 subscribers) and the following year the course was activated for all, with about 80 students, as mentioned above.

The basic curriculum, as seen above, was based on a particularly challenging teaching of history and epistemology, as well as on a set of particularly challenging laboratories. Here the lack of the laboratory could be supplied with experience, but how to substitute the course of 45 hours, not feasible for students/teachers now relatively elderly?

There was a didactic experiment relatively important. In the first year (2005/06) a course in International Accounting, 45 hours, was activated with the aim to make these senior teachers familiar with the matter of the IAS / IFRS, at the time completely extraneous to their education. In the second year (2006/07) a course on “Doctrines and comparative accounting systems” was activated (40 hours), which was the version a bit less critical and philosophical and a little more practical than the normal course for SISIS students.

Even with these limitations and deviations, SISIS was representing a story of relative excellence. To give an idea of the contents offered in the most important lessons we propose the essential tracks of its programs in the Appendix to this paper.

This experiment finally met and clashed with the ‘great crisis’ began in 2008 and with the political upheavals that Italy has experienced until now.

By decree of the competent Ministry, the Berlusconi government ‘froze’ in 2009 the activity of SSIS, essentially decreeing their end. They would no longer be reopened. The academic year 2008/09 was carried out on a regular basis, while the next (2009/10) saw only the conduct of the second year for the courses started in the previous year (ninth round) and annual courses for support. Then, the activity of SSIS, and thus also of the Sicilian SISIS, was interrupted, and with it any input into the role of secondary school teaching qualification.

### **3. The Experience of TFA (since 2012)**

The ‘freezing’ of the special schools for the teachers’ training was a result of a real smear campaign through the press by means of which certain dysfunctions of the same or certain excesses were brought to the public as a symbol of a widespread malfeasance. The same items, however, who had complained about the limitations, real or imagined, of SSIS, rose up immediately after against the interruption of the experiment.

In fact, once both special schools and competitions stopped, the Italian school was subjected for several years only to an indiscriminate cutting of funds and chairs. The very few tenures, in fact, inevitably occurred by drawing on the lists of qualified, in which – as we said - there were so much of the few specialized SSIS as the historical precarious, getting older and older. The system was set to become paradoxical. Those who had graduated after 2008 never had any channel to enter teaching world. But even after 2003 graduates who were not able to fit into the SSIS were out. Who was in then? In large part elder graduates who had qualified in the old open competitions (the last in 2000, but in some areas - like ours - even in 1990), or with the aforesaid special law of 2004, and who had never been firmly confirmed. A school that led into very few new teachers, never younger than 40/45 years. A situation, therefore, long-term unsustainable.

Facing all the protests from the world of school as early as 2010, the Ministry intervened with a decree (n. 249) and set new rules for the access to the school. From now on, instead of the old schools of specialization, the 2-year degree courses shall be activated, to address teaching, followed by a year of internship, known as the “active training” [tirocinio formativo attivo, from which the acronym TFA].

For better understanding this, we have to recall that the reform of the Italian university, since 1999, has adopted the “Credits”, and has organized, in general, their university courses in two levels: the first of three years, the second of two years. To date, the three years course is titled “Laurea”, that of the following two years is named “Laurea magistrale”. The idea was to make the three-year graduates (22 years old) directly access to attend

*lauree magistrali* specifically oriented to “high school teaching”, for accelerating their training and rejuvenate the faculty.

To this good intentions, however, actions have not followed. Meanwhile, compared to the previous decree, more than a year passed without any regulatory intervention. When this interjected, with a further decree (November 8<sup>th</sup>, 2011), it set up ‘on paper’ these degree courses, without giving any public resource for their activation. In fact, since then, these degree courses did not arise almost anywhere in Italy.

To face the fact that in the meantime all those who had enrolled at the university had not had the opportunity to enroll in these degree courses, an ‘interim standard’ was then arranged, which, since then, unfortunately, it seems to have become final.

As with the new system, where who aspired to become teachers should have done a course of 2 years of postgraduate degree, plus one year of internship in schools, it was decided to establish a ‘temporary’ internship, of one year, in which, however, instead a real apprenticeship, the student/teacher could make some accelerated studies that, in short, could retrace the content of SSIS, or of the degree courses yet to be established.

In this way, the universities have inherited the legacy of the SSIS and, somehow, they reactivated the ad hoc training courses for future teachers.

Compared to the past experience, there is also to say, this represents a real ‘accelerated’ course, which is more reminiscent of the experience of the Law 143 of 2004 than that of the actual SSIS. The accelerated course, however, despite its lower accuracy, could ensure that the training and placing of workers is faster than the old two-year cycle. Another handicap of the new standard is that the explicit content of lectures on historical and epistemological discipline is no longer present. The rule, in fact, merely provides didactics lessons and educational workshops. Many universities, however, did not intend to lose this heritage of ‘critical thinking’ and have maintained it even in TFA.

The TFA ‘machine’ was thus set slowly in motion at the end of 2011, but only in 2012 it was possible to banish the competition for accessing the new courses, and these are actually fired only at the beginning of 2013, ending mandatory in July of the same year, with an incredible concentration of commitments for those admitted to the courses.

In this framework, the University of Palermo has reactivated some of the courses. The local Department of Economics has reopened the specialization courses in “Law and Economics” and in “Business Disciplines”. But another one was meanwhile added: “Applied Mathematics” (financial mathematics, actuarial mathematics, operational research, calculation of probabilities, elements of statistics, business statistics, and other similar topics).

The qualification course for “Business Disciplines” provides:

18 CFU of Education Science, 6 of which are dedicated to individuals teaching with special needs, and the other 12 in the following areas: General and Social Pedagogy, Experimental Pedagogy, History of Pedagogy; 18 CFU of “disciplinary didactics and educational laboratories” in the specific field of business disciplines, as specified below; 19 credits, equal to 475 hours of training, direct or indirect, 3 credits of which (75 hours) dedicated to students with disabilities; 5 credits for a final thesis about training.

The specific 18 CFU, 8 hours per CFU, were divided among the following courses:

- History of Business Economics Disciplines (6 credits) [*Storia delle Discipline Economico-Aziendali*];
- Elements of epistemology of business economics disciplines [*Elementi di epistemologia delle discipline economico-aziendali*];
- History of Accounting: from its origins to the birth of the *Economia aziendale* [*Storia della Ragioneria: dalle origini alla nascita dell’Economia aziendale*];
- The Italian “doctrinal issue” in Accounting and *Economia aziendale* [*La “Questione dottrinale” italiana in Ragioneria ed Economia aziendale*];
- “Accounting issue” in Italian Accounting [*La “Questione contabile” italiana in Ragioneria*];

- From national and comparative disciplines toward an International Accounting [Dalle discipline nazionali e comparate verso una Ragioneria internazionale];
- The other histories of business disciplines (outline): Management and Organization [Le altre storie di discipline aziendali (cenni): Gestione e Organizzazione]
- Didactic Laboratory of Business organization (3 credits) [*Laboratorio didattico di organizzazione aziendale* (3 CFU)]
  - Calls on the systematic fields of disciplines and main characteristics of the relative didactics
  - Workshop activities in terms of:
    - o organizational theories
    - o organizational structures
    - o organizational processes and characteristics of production systems
    - o Human Resource Management
    - o Business Information Systems
- Didactic Laboratory of Accounting (3 credits):
- Calls on the systematic fields of disciplines and main characteristics of the relative didactics
  - Workshop activities in terms of:
    - o Principles of Business Economics
    - o Elements of the General Accounting and Bookkeeping
    - o Accounting systems, accounting and financial statements for firms, public bodies and non-profit organizations
    - o Planning and control, financial statement analysis
    - o Elements of social and environmental reporting
- Didactic Laboratory of Business Management (3 credits):
  - Calls on the systematic fields of disciplines and main characteristics of the relative didactics
  - Workshop activities in terms of:
    - o Strategic management of industrial and commercial enterprises, analysis of Marketplace
    - o Marketing and Web Marketing
    - o Types of commercial distribution and brokerage in trade
    - o Management aspects typical of industrial, commercial and tourist enterprises
    - o Corporate Communications
- Didactic Laboratory in Corporate Finance and Financial Intermediaries (3 credits):
  - Calls on the systematic fields of disciplines and main characteristics of the relative didactics
  - Workshop activities in terms of:
    - o The financial system, regulation and supervision
    - o Financial intermediaries and typical management aspects
    - o The main banking and insurance operations
    - o The main financial instruments

Not even the start of these courses, however, finally gave certainty to the sector. The State, in fact, to meet the need facing the numerous retirements, related to teachers' age, has launched new competitions for school, again in 2012, without even waiting for the first TFA specialized teachers (expected in 2013).

This competition, formally to be opened every two years, was presented to the public as a tool to "rejuvenate" the Italian school. Actually it is a further paradox. It is open to TFA graduates (which do not yet exist, for obvious reasons). But, to avoid discrimination, it is also open to those who are collocated in the list of tenure, perhaps for having attended the old courses SSIS. Since the latter were activated, as mentioned, around 2000, it took also be without prejudice to all graduates, including non-qualified, with a degree obtained until 2003, because these

elderly graduates could never attend specialized schools that at the times were still not created. The result was that in these competitions a large mass of people born in the 60s and 70s participated, without any specialization, perhaps after decades of semi-clandestine work in private schools of low profile, while the young teachers, released from SSIS to a limited number, are very few. The very young, finally, in the best case just in the course of frequency of TFA, were cut out from this competition.

To avoid 'new' precarious people, however, this competition, unlike the old ones, 'is not' enabling. Aside from the winners, the others will no longer have any rights. The number of enabled is now closed and accessible only by means of the new TFA. It is true that the old graduates are always running, but the hope is that these, sooner or later, for personal reasons will come out of the scene forever.

Just to give an idea of the numerical success of this competition, we have to think that in Palermo (in Sicily) for the Business Disciplines around 3,000 competitors to only 26 places up for grabs. Under the old rules, which are open to all graduates, the competitors were approximately 15,000, of which several hundred were then resulted in possession of qualification.

In a recent and marked by emergency context, it is difficult to give a first critical assessment of this new experience. But it seems that the University of Palermo is doing today a considerable effort to maintain a channel for the training of future teachers of Accounting, and over time has formed a team of professors and scholars who could give contributions of a certain value. And yet it seems that the inattention of the national legislature, as well as the governments that have followed, represent the true risk to make to derail these efforts, however brave they are.

#### 4. Conclusions

The present study shows evidence of a training program for teachers of accounting and other business disciplines in secondary schools. The experience concerns particularly the University of Palermo, inside a frame of rules that are common to the other Italian universities. The evidence showed an interesting experimental curriculum, even in the presence of a strong carelessness on the part of public authorities that are likely to frustrate every effort to build an excellent school.

The key lesson to be drawn from this experience is the ability to create a program aimed for future teachers of Accounting, in particular with an extensive use of non-conventional learning. These can be identified mainly in the following two: workshops and critical thinking. This has favoured the history and philosophy of accounting, themes investigated particularly in the Italian teaching. Some importance, perhaps worthy of greater stress, has also been given to the attempt to internationalize the curricula of the future teachers, as long conceived by the best international literature (Adams, and Roberts, 1994) (Adhikar *et al.*, 1999).

The main implication, for both studies and for practice of accounting education, is the possibility of a fruitful encounter between the studies in the field of business education and the general pedagogical and didactic studies. The student of accounting education should perhaps be a little scholar of education in the general sense. Another possibility demonstrated from this experience is that the critical attitude can also be taught by means of a good alternation between theory and practice. Obviously, however, to complete this type of research an empirical investigation would be needed (Wolcott *et al.*, 2002), which, in our case, should verify the results on teachers out of this type of schools, both in terms of success in finding employment and in terms of quality of their teaching.

Within the limits of this research, however, we draw some insights that may be susceptible to broader generalization. Among these it is at least worth remembering the importance of structuring a training program in the four domains, respectively, of history and epistemology, didactics, educational laboratories and internships in the schools themselves.

Another option identified by this research, finally, is the chance to explore a new field for studies in accounting education: research on 'second level' teaching, that is, the education for educators. This type of

research would have a dignity, scientific and practical, certainly not lesser than that one ordinarily pursued, even if we are fully aware that the present study marks only a first modest step along this promising direction.

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## Appendix A. Contents of three basic disciplines taught at SISIS

**History and Epistemology of Business Disciplines [Storia ed epistemologia delle discipline aziendali] (Class of Competition "Business Disciplines")**

PART I: Epistemology of Business Disciplines

- Historiographical Premise on the Epistemological Foundations from the Origins to Positivism

- Contemporary Epistemology and Social Sciences
- Moral Philosophy and its Relationship with Economic Disciplines
- Business Disciplines among Social Sciences
- Philosophy of Economics and of Business Theory
- Economics, Business Economics and Business Administration
- Systems Theory, Complexity Theory and Business Disciplines
- The *Economia aziendale* as a “Scientific Revolution” and its Epistemological Substrate
- The Fields and Methodologies of Research in Business Disciplines
- The Comparative Method and the Case Method
- The Historiographical Research in Business Disciplines

#### PART II: History of Accounting and of other Business Disciplines

- Accounting in Antiquity and in High Middle Ages
- The Discovery of D.E. Method and the role of Luca Pacioli
- The “Precept Period” in Italy and the “Palermitan School” of Lodovico Flori
- The “Precept Period” in Europe: “Five-Accounts Method” in France, “Jones Method” in England, “Cameral Method” in Austria
- Renaissance of Accounting Studies in Italy in XIX century and Birth of Classical Accounting “Schools”
- The “Lombard School” of Francesco Villa
- The “Tuscan School” of Giuseppe Cerboni and Giovanni Rossi
- The “Logismographic Method” of the “Tuscan School”
- The “Stathmographic Method” of Emanuele Pisani
- The “Venetian School” of Fabio Besta
- The Classical “Asset and Liabilities View” in Italy [Sistema Patrimoniale Classico]
- The *Economia aziendale* of Gino Zappa
- The Contemporary Schools of Accounting: Orthodox, Anti-Zappian, Autonomous and Post-Zappian
- The other Accounting Systems: the “German Assets and Liabilities View” [sistema patrimoniale corrente], the “American Assets and Liabilities View”, The Variants of the Italian “Revenues and Expenses View [Sistema del Reddito]
- Contemporary Trends
- History of Management: from the Business Calculation to the Administrative and Commercial Technique
- History of Management in Italy: from the overwhelming influence of *Economia aziendale* to the Autonomous Study of the Firm Economics and related Management Science
- History of Governance and Strategy (Outline)
- History of Organization Science (Outline)

#### **Comparative Business Doctrines and Accounting Systems[Dottrine aziendali e sistemi contabili comparati] (L. 143/04, special law, for the class “Business Disciplines”)**

##### PART I: COMPARATIVE BUSINESS DOCTRINES

- Comparative Studies on Business Doctrines and Accounting Systems in Space and Time (Introduction)
- The Italian Classical Accounting (“Ragioneria”)
- The Birth of *Economia aziendale* and its contemporary developments
- The Business Doctrines in the International Arena: Accounting – Management – Organization
- Accounting, *Economia aziendale* and other Business Disciplines in the Contemporary Context

##### PART II: COMPARATIVE ACCOUNTING SYSTEMS

- From the Accounting Method to the Accounting System;
- The ‘Asset and Liabilities View’ according the classical Italian Doctrine;

- The 'Asset and Liabilities View' according the German Doctrine;
- The 'Revenues and Expenses View' according the Italian Doctrine;
- The 'Added Value View';
- The 'Assets and Liabilities View' according the IAS/IFRS

**Accounting and Financial Reports for Law and Economics[Contabilità e bilanci per le discipline giuridiche ed economiche] (Class of Competition "Law and Economics")**

PART I: Institutional Foundations of General Accounting

- *Economia aziendale* and Accounting
- Accounting as Semiotics of Administrative Languages
- Accounting in School and University Didactics
- Administrative Phenomena (Transactions and Events) and Administrative Concerns and Periods
- Resources, Claims, and relative Variations (Stocks and Flows)
- Translation of Resources, Claims and their Variations into Quantitative and Qualitative Languages
- The Recording: From Data to Information
- The Fields of Accounting
- Financial and not Financial Languages

PART II: Complements of Accounting applied to private and public entities

- Accounting Methods in general and Double Entry Method in particular
- Accounting Systems
- Elementary bookkeeping (inventory, wages, cash, and so on)
- Typical Private Sector Systematic Bookkeeping
- Typical Public Sector Systematic Bookkeeping
- The Financial Reports
- Other kinds of Financial and not Financial Information
- Accounting and Economics: National and Sector Accounting
- Accounting and Law: Commercial Law and State Accounting Law

Appendix I: The Financial Reports of limited companies according the civil code

Appendix II: The Financial Reports of the "Sicilian Region"

4<sup>th</sup> International Conference on New Horizons in Education

# Achievement and Motivation: A Different Perspective On Familiar Concepts

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## Abstract

Motivation, the powerful force behind our behavior, takes place in various areas of one's life. As globalization has a great impact on the world, individuals not only compete with their peers but also contend with the universe in terms of self-actualization. In psychological terms, self-actualization is a prevalent need for everybody, enabled by the success in different majors. To understand this mechanism, motivation should be considered as an inner force of accomplishments. In this article, achievement and motivation were evaluated thoroughly based on the constructive approaches such as Sternberg's Triarchic Intelligence Theory, Dweck's Implicit Theory of Intelligence, and Achievement Goal Conceptualization. The notion of achievement in educational areas was appreciated with respect to competent-relevant, self-related, relational, demographic, environmental variables and neuropsychological tendencies. They were regarded as the effects on the achievement goal orientations, leading to the processes and consequences of the success. As a result of the analysis in the study, it was observed that in one's academic motivation, mastery-approach, mastery-avoidance, performance-approach and performance-avoidance inclinations provide a meta-analytic insight for him. The suggestions pertinent to these concepts were proposed precisely to the ones dealing with the challenges in this area.

Keywords: Motivation, academic achievement, constructive approach.

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## 1. INTRODUCTION

Motivation, the powerful force behind our behavior, takes place in every field of our lives. Especially, academic motivation, pertinent to the success in the world of knowledge, is critical in various areas such as education, business, human resources, sports and so on (Elliot and Fryer, 2008). Competitive atmosphere of the business environment not only makes the employers seek this quality but also regulates it among the employees. When we look at the unit of the human resources, it is taken into account the fact that the projects aimed at leading the career progress in the organization causes the academic motivation of the individual to become pivotal. Besides this, in the educational settings, in order to do an effective counseling for the students, who face the struggles at the time of the transitional periods of their development, and who encounter challenges relevant to the process of goal attainment – in particular, the significant achievement necessary for the entrance into the high school, the university and so on, the academic motivation is revealed as an important concept. Therefore, the psychologists and psychological counselors must have a general understanding of this term and its underlying mechanisms contributing to the success of the person.

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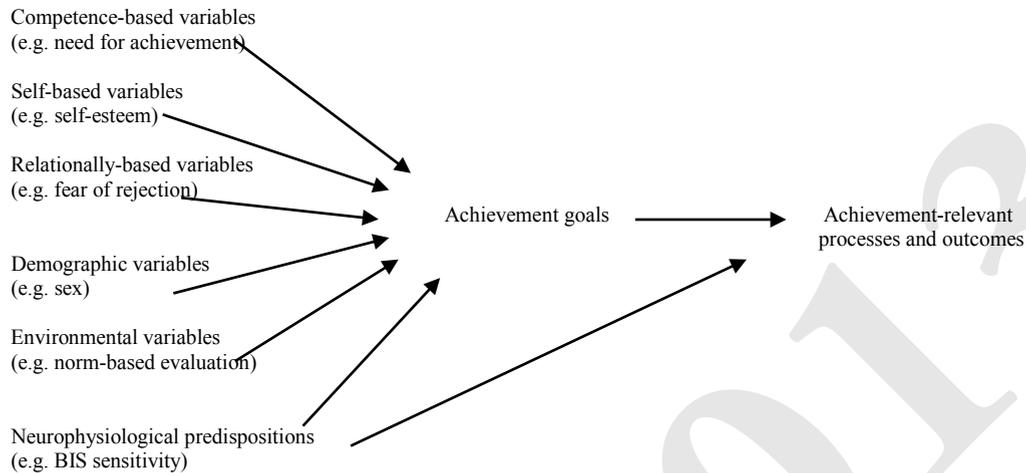
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The purpose of this article was to demonstrate the general picture of achievement motivation based on the different theoretical approaches such as social-cognitive approach, hierarchical model of achievement motivation, Sternberg's Triarchical Intelligence Model and so on. Starting with the definition of achievement motivation, the theoretical models were analyzed in terms of facts, concepts, procedures and strategies in the study. The result of the analysis was demonstrated in a detailed way.

Academic motivation can be depicted as the total of the skills, achievements and effectiveness shown by the individual under the circumstances he is exposed to. According to Elliot (1999), the one forms this concept through directing every thought, behavior, emotion and attribute based on his competences. In other words, it is the usage of one's own perception relevant to his competences in the guidance of his thoughts and behaviors. For Elliot and Dweck (2005), the person needs them so as to adapt the environmental conditions he is part of. Butler (2000) states that the individuals utilize these environments to get an idea about themselves. It means that they try to shape their self-knowledge depending on the degree of their competences evaluated in reference to themselves or the other criteria. In this respect, he focuses on two aspects of information-seeking behavior of the person: namely, "competence acquisition" and "competence assessment". Competence acquisition pays attention to the enhancement of competences and leads the one to search for individual growth. On the other hand, competence assessment involves the process of the social comparison and causes the one to consider the feedback information as an evaluating tool for himself or as a mentoring tool for his improvement. In addition to contemplating both the competence assessment and competence acquisition as spontaneous activities the individual does, they represent the guiding principles for institutional purposes of the agents and personal growth. Yet, he claims that the underlying system behind competence acquisition and assessment resides in the achievement goals embraced by the individual.

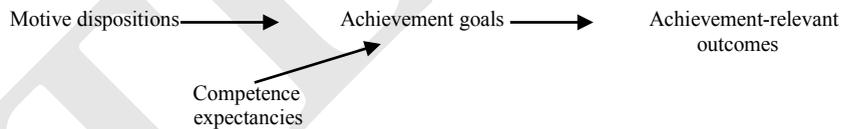
To comprehend the concept of the achievement goal of the person, we need to take into account the achievement goal theory profoundly. This theory reflects a social-cognitive approach trying to understand the goals and the processes followed by the individual in his academic world (Midgley, Kaplan, Middleton, Maehr, Urdan, Anderman, L., Anderman, E. and Roeser, 1998). Specifically, the focal point of the theory is to get the picture of the assessment tool utilized for appreciating one's competences in an endeavor (Meece, Anderman, E. and Anderman, L., 2006). The norms are created by the one who would like to evaluate the degree of the competent-relevant effectiveness in the pathway of achievements. Therefore, in educational circumstances, the goals of the student and the reasons behind his behaviors displayed in various learning activities become an essential research area for the ones who investigate the latent mechanisms of academic motivation (Urdan and Maehr, 1995).

According to Ames (1992), achievement goals are the factors having a fundamental impact on the formation of a successful behavior. For Elliot and Trash (2001), such goals are cognitive systems managing the activities of the person. From their point of view, they represent both the purposes and the inceptions of the conducts. In the "hierarchical model of achievement motivation" proposed by Elliot and Church (1997), they make a distinction between the "goals" and "motives" pertinent to accomplishments. As a result of this, "achievement motives" are regarded as the structures regulating one's success as well as failure. Yet, they play a critical role on endorsing the achievement goals. Thus, as shown in Figure 1, the model presents the variables configuring the achievement goals (Elliot, 1999, p.177).



**Fig. 1. Achievement goals in the context of the hierarchical model of achievement motivation (Elliot, 1999, p.177).**

Moreover, in the hierarchical model of achievement motivation, “..... motive dispositions (achievement motivation and fear of failure) represent higher order motivational constructs, achievement goals (performance-approach, performance-avoidance, and mastery) represent midlevel "motivational surrogates," and task-specific competence expectancies are conceptualized as an independent antecedent of achievement goal adoption.....”(Elliot and Church, 1997, p.219). This relationship was indicated in Figure 2.



**Fig. 2. A hierarchical model of approach and avoidance achievement motivation (Elliot ve Church, 1997, s. 220).**

In sum, the individual sets the standards for his own performances in his academic or business areas, which reflect his achievement goals (Pintrich, 2000). They express his belief in his skills, competencies or abilities. But what are the dimensions of these goals? Which kind of goal leads the one to success, which one contributes to failure? In order to answer these questions, the conceptual features of achievement goals are to be handled thoroughly.

In the achievement goal theory, the keyword – competence - determines the types of achievement goals. The notion of achievement becomes individualized and differentiated depending on his subjective perception of his competent-relevant skills. Based on how competence is defined, there are three kinds of competence: absolute, intrapersonal and interpersonal competence. Absolute competence represents one’s comprehension of the

problem accurately. Intrapersonal competence encompasses the aim of increasing the level of knowledge and abilities. On the other hand, in normative competence, the individual makes great effort to display himself as superior than others. In this respect, performance becomes more essential than the learning activity itself. For normative competence, social comparison takes part in the process of one's attainments. Furthermore, the concept of competence can be divided into two dimensions in accordance with how it is appreciated: approach and avoidance. When the achievement goal emphasizes on the way of obtaining favorable outcomes, it expresses an approach tendency. However, when it pays attention to the means of shunning aversive outcomes, it reflects an avoidance predisposition (Elliot and Thrash, 2001; Elliot, 2005).

In accordance with the interpersonal and intrapersonal feedback from the environment, the individual determines his achievement goal orientation and regulates his behaviors. As it was displayed above, in the hierarchical model, the social, cognitional and emotional variables shape one's manipulation of his academic motivation. It can be interpreted as the formation of self-management.

Depending on the delineations of competence, there are two types of achievement goals: "mastery" and "performance". Mastery goal motivates the one to acquire lots of information from learning activities, which in turn leads to the enhancement of skills, knowledge and abilities. Success is measured with respect to the degree of self-improvement. In spite of facing the struggles, feeling joy in the learning process is prevalent in mastery goal. Yet, performance goal instigates the person to display himself as better than others. He longs for being more successful and excellent than anyone else. Thus, the accomplishment is assessed on the basis of social comparison (Ames, 1992; Meece, Anderman, E. and Anderman, L., 2006; Molden and Dweck, 2000).

Based on the discourse mentioned above, the process of mastery goals and performance goals seems to work in apart. Yet, the individual compares himself with the others in his academic environment and turns to himself so as to determine whether he is close to his achievement goal or not. Performance goal is the information-provider of the mastery goal. Deriving from this understanding, should these two goals be considered as separate procedures of goal orientation? Does mastery goal involve only the intrapersonal process? Does performance goal encompass only interpersonal process?

For Elliot and Thrash (2001), mastery goal involves the drive for self-growth. It portrays the advancement in competence. Therefore, it utilizes task-oriented criteria for appraising competent-relevant behaviors. On the other hand, performance goal includes the intention for self-embodiment. It underlines the aim of manifesting competence in the eyes of others. This idea leads to examination of competencies through normative criteria. In this regard, absolute and intrapersonal competence can be part of mastery goal, while normative competence can be seen as an aspect of performance goal.

Dweck and Leggett (1988) state the fact that the individuals embracing different goals cannot demonstrate similar attributes towards the predicaments. The ones adopting performance goals withdraw themselves when they encounter dilemmas and failures. But the ones pursuing mastery goals do not give up and avoid from the bad situation. Instead, they insist on completing their lacking sides and seeing the challenge as an opportunity for self-development. Thus, mastery goals contain competence acquisition, just as performance goals entail competence assessment (Butler, 2000).

According to Darnon, Butera and Harackiewicz (2007), the previous researches cannot make a definite distinction between mastery and performance goals. For them, the reason lies in the fact that the social environment in which the individual pursues these goals is not taken into account effectively. Especially, the reciprocal interaction with the other ones in the context leads to different outcomes with respect to one's learning progress. Doise and Mugny (1984) claims that "the socio-cognitive conflict" the person is exposed to makes him contemplate about his thinking pathway. This conflict encompasses both the disharmony with others and the loss

of faith in his problem-solving methods. Therefore, how he deals with such a struggle determines his choice of achievement goal. If he wants to learn the subject in hand, he will adopt the mastery goal. Yet, if he wants to display his competencies, he will embrace the performance goal.

In addition to this, Darnon, Butera and Harackiewicz (2007) assumes that the type of the subjects the one copes with also differentiates the kinds of goals. When he deals with a facile task, mastery and performance goals result in similar consequences. However, if the task is uneasy, mastery goals cause him to get a benefit from the situation unlike performance goals. Thus, the degree of ambiguity in the task plays a pivotal role on one's goal orientation. The vagueness brings into the socio-cognitive conflict, which in turn leads to the re-evaluation of the knowledge and skills.

Therefore, in educational counseling, the counselors should be aware of the mastery and performance goals of the students and the educational context they are part of. In this context, the kind of lessons, teachers' methods of teaching and teachers' understanding of success have a great influence on whether the students follow mastery or performance goals. At this point, the counselors should make the students create awareness of where their destination of success is via mastery or performance goals.

When dealing with the concepts of competence and achievement goal orientations, the place of intelligence should be considered profoundly. How is intelligence related to these notions? What makes intelligence unique when it is compared with competence and goal inclinations? To answer those questions, Sternberg's Triarchic Theory of Intelligence is to be analyzed thoroughly.

For Sternberg (2011), intelligence has three components, namely "Analytical", "Practical" and "Creative Thinking" abilities. Analytical process allows the one to criticize and figure out the content in hand. Especially, such a kind of thinking is used in the solution of well-known obstacles. Practical procedure in thinking facilitates the application of opinions in accurate settings. This skill is crucial for the adaptation to new conditions. Yet, creative operation in mind permits the formation of original ideas, contributing to dissolving atypical challenges. In this sense, it highlights the significance of experience in thinking world. Based on this theoretical schema, Sternberg (2011) proposed the concept of successful intelligence. It depicts the fact that the person tries to take advantage of his capacities so as to obtain an achievement. According to Sternberg, the individual identifies his powerful and fragile sides concurrently, and makes great effort to recompense them. Thus, everyone devotes themselves to discover their original way of being intelligent.

In addition to Sternberg's approach, there is another theory addressing the concept of achievement motivation from a different point of view. Especially, Dweck's theory of intelligence clearly explains how the achievement goals are formed by the one who takes part in the academic pathway. According to Dweck (1986), no individual has a similar understanding about intelligence. Some of them consider intelligence as an unchangeable identity no matter what they are exposed to throughout their lives. On the other hand, some of them regard intelligence as a pliable feature. They think that the challenges they encounter cause them to modify their skills as well as their knowledge. In this respect, the first group reflects *entity theory of intelligence*. Yet, the second group indicates the *incremental theory of intelligence*. For Dweck (1986), the underlying mechanism behind the choice of achievement goals resides in the preference of intelligence theory. Thus, for the ones embracing the entity theory, the performance goal becomes pivotal. However, for the ones adopting the incremental theory, the mastery goal / learning goal appears as an important purpose in the attainment of success. Dweck's theory of intelligence and its relation with achievement goals were displayed in Table 1.

Table 1. Achievement Goals and Achievement Behavior (Dweck, 1986, p.1041).

Theory of intelligence	Goal orientation	Confidence in present ability	Behavior pattern
Entity theory (Intelligence is fixed)	Performance goal (Goal is to gain positive judgments/ avoid negative judgments of competence)	If high but If low	Mastery oriented Seek challenge, high persistence Helpless Avoid challenge, low persistence
Incremental theory (Intelligence is malleable)	Learning goal (Goal is to increase competence)	If high or low	Mastery oriented Seek challenge (that fosters learning) High persistence

While Dweck regards a direct one-way relationship between intelligence and achievement, Mayer (2011) interprets these concepts as mutual qualities affecting each other. “Academic intelligence” allows the one to gain “academic achievement” and vice versa. Consequently, the academic intelligence can be assessed via the tests relevant to academic achievement just as the academic accomplishment can be examined through the inventories pertinent to academic intelligence. The link was indicated in Figure 3.

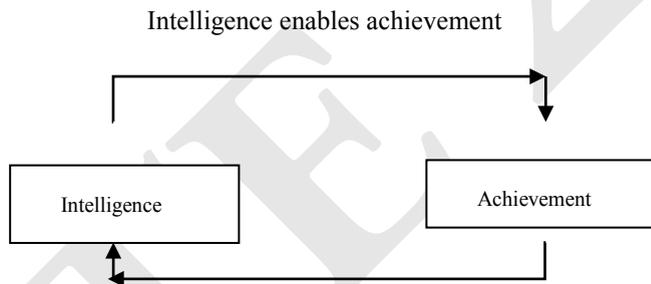


Fig 3. The reciprocal relation between intelligence and achievement (Mayer, 2011, p.740)

In accordance with that formulation, Elliot (1999) and Pintrich (2000) proposed 2X2 Achievement Goal Conceptualization. Despite presenting the same ideas relevant to achievement motivation at different times, both of them emphasized the akin point on this issue. In the model, there are four types of achievement goals: “mastery approach, mastery-avoidance, performance approach and performance avoidance”. “Mastery approach” and “mastery avoidance” concepts emerge as novel structures in the literature. “Mastery approach concept” refers to the idea that the individual has the aim of improving his knowledge, skills and abilities. Yet, “mastery avoidance concept” reflects that the person is afraid of losing these skills and forgetting them. He worries about misunderstanding the materials or tasks given to him. Therefore, the one adopting such a goal organizes his life in accordance with this. He tries not to make any mistakes or miscomprehend the subjects he deals with (Elliot, 2005; Linnenbrink and Pintrich, 2002). The four types of achievement goals best summarized in 2X2 Model by Pintrich (2000) was shown in Table 2.

Table 2. Two Goals Orientations and Their Approach and Avoidance States (Pintrich, 2000, p.100)

Name	Approach state	Avoidance state
Mastery orientation	Focus on mastering task, learning, understanding	Focus on avoiding misunderstanding, avoiding not learning or not mastering task
	Use of standards of self-improvement, progress, deep understanding of task	Use of standards of not being wrong, not doing it incorrectly relative to task
Performance orientation	Focus on being superior, besting others, being the smartest, best at task in comparison to others	Focus on avoiding inferiority, not looking stupid or dumb in comparison to others
	Use of normative standards such as getting best or highest grades, being top or best performer in class	Use of normative standards of not getting the worst grades, being lowest performer in class

Barron and Harackiewicz (2000, 2001) claim that both the mastery and performance-approach goals play an essential role on the progress in one's education. However they differ in terms of the evaluation process the individual engages in his improvement. If he embraces the mastery goals, he will make himself a reference point. Yet, if he prefers the performance-approach goals, the other ones in his environment will become his referee. Besides this, these two goals predict distinctive educational outcomes for the person. For example, the student with high level of mastery goal and low level of performance approach goal is the best one in the educational setting. On the other hand, the student with high level of both mastery and performance-approach goal gets stressed in every examination and behaves like a perfectionist. He cannot demonstrate his abilities efficiently due to the pressure of performance-approach goal (cited in Harackiewicz, Barron, Pintrich, Elliot and Trash, 2002).

In conclusion, the diverse approaches in the literature of achievement motivation lead us to form a qualitative analysis table based on the facts, concepts, procedures and strategies. As it is indicated in Table 3, the models suggested by Butler (2000), Elliot and Church (1997), Dweck and Leggett (1988), Dweck (1986), Mayer (2011), Pintrich (2000) give us a comprehensive look at the concept of achievement motivation.

Table 3. The Qualitative Analysis Table Based On The Theories of Academic Motivation Mentioned In The Article

Comparison units	Butler	Elliot and Church	Dweck and Leggett	Dweck	Mayer	Pintrich
<b>Facts</b>	Competence acquisition = longing for self-improvement  Competence assessment = longing for being the best among others	Achievement motives have a direct effect on the formation of achievement goals unlike competence expectancies.	Mastery goals contain competence acquisition, just as performance goals entail competence assessment.	Entity theory of intelligence regards that intelligence is a fixed identity unlike incremental theory of intelligence.	Academic intelligence and achievement have a reciprocal relationship, which in turn leads to mutual influences among them.	Mastery-approach = Focusing on mastering task  Mastery-avoidance = Focusing on avoiding misunderstanding,  Performance-approach = Focusing on being superior  Performance-avoidance = Focusing on avoiding inferiority
<b>Concepts</b>	Competence acquisition  Competence assessment	Achievement motives  Achievement goals	Performance goals $\leftrightarrow$ competence assessment  Mastery goals $\leftrightarrow$ competence acquisition	Entity theory of intelligence $\leftrightarrow$ performance goals  Incremental theory of intelligence $\leftrightarrow$ mastery goals	Academic intelligence  Academic achievement	Mastery-approach Mastery-avoidance  Performance-approach Performance-avoidance
<b>Procedures</b>	Shaping the self-knowledge depending on the degree of the competences evaluated in reference to oneself or the other criteria -environment	Bringing about achievement goals through being influenced by different variables (competence-based, relationally-based and so on)	Forming the strategies in the face of difficulties, which is constructed by the type of achievement goals (performance vs. mastery)	Building the goal orientations via the preference of entity vs. incremental theory of intelligence	Organizing the goal orientations depending on the level of intelligence, and achievement	Arranging the goal orientations in accordance with the approach-avoidance concepts

Strategies	The individual with the idea of competence acquisition longs for self-improvement. Yet, the one with the opinion of competence assessment consistently compares himself with others and based on this, he organizes his self-growth.	Competence-based and self-based variables are relevant to the formation of mastery goals while relationally-based, environmental and demographic variables are pertinent to the construction of performance goals. Neurophysiological variables have direct effect on the goal orientation (mastery vs. performance)	The ones adopting performance goals withdraw themselves when they encounter dilemmas and failures. But the ones pursuing mastery goals do not give up and avoid from the bad situation. Instead, they insist on completing their lacking sides and seeing the challenge as an opportunity for self-development.	For the ones embracing the entity theory, the performance goal becomes pivotal. However, for the ones adopting the incremental theory, the mastery goal / learning goal appears as an important purpose in the attainment of success.	If the level of intelligence is quite well for the individual, he will compare himself with others based on his achievements. Yet, if the level of intelligence is not efficient for him, he will prefer developing his skills, which in turn enhancing the level of achievement	The individuals with mastery-approach goals search for self-enhancement. The ones with mastery-avoidance goals try to keep his current level of knowledge, avoid losing it. The ones with performance-approach goals long for the best positions in every setting. The ones with performance-avoidance goals devote their efforts not to be claimed as being the worst by the others.
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Consequently, in the literature, the components of academic motivation are stated in a different way, depending on the different theoretical approaches. In addition to academic goals and academic motives, the social, cognitive, emotional, relational and neurophysiological factors in the goal orientation shape one's tendency toward the success attainments. Furthermore, competence acquisition and competence assessment have a direct influence on this issue. How one evaluates and regards the competence concept determines one's academic goal. Besides this, Sternberg's Theory of Intelligence and Dweck's Theory of Intelligence claim that the individuals have diverse understandings about intelligence, which leads to the establishment of either mastery or performance goals. Moreover, 2X2 Achievement Goal Conceptualization presents four types of goals (mastery-approach, mastery-avoidance, performance-approach, performance-avoidance) and explains them in a detailed way so as to indicate how achievement motivation can be configured by one's approach-avoidance predisposition.

The models mentioned in the study can be regarded as the ones emphasizing the person's evaluations of his achievements both in the cognitive, emotional, neurophysiological level, which display his internal assessments, and in the social level, which indicate the external factors. Thus, one's management of academic motivation is a two-way street; the feedbacks from inside and outside concurrently direct his choice of occupation, his job status, as well as his academic career. Such a kind of self-regulation requires a socio-cognitive capacity.

However, these models are inadequate in terms of paying attention to one's social goals. As Urdan and Maehr (1995) claim that, the individual possesses "social welfare goals", which shape his academic orientation. These goals include being productive member of the society, living for the family, making the family proud of him, getting praise, and so on. Although 2 X 2 Achievement Goal Model provides lots of information about the process of learning and academic motivation, it cannot bring about the role of social issues residing in the culture. In this respect, besides cognitive studies, the researches focusing on social as well as spiritual factors in the interpersonal relationships should be carried out in order to give a comprehensive way of looking at the academic motivation.

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## Activating resources and its use in e-learning

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### Abstract

Education has been always linked with the human kind and it has been undergoing continual development and gradual innovative processes. E-learning became a phenomenon of the second half of 20<sup>th</sup> century and the beginning of 21<sup>st</sup> century; it comprises variety of individual elements which are usually complexly interwoven, creating a comprehensive system and allowing for an effective development of one's personality, mainly – but not exclusively – of its cognitive part. This kind of development should be resulting from active learning when a student dedicates himself/herself to an intensive studying activity arising ideally from his/her own interest, without any apparent pressure or more or less without someone else's help. The activity, however, must be specifically aimed, controlled, guided and provided with feedback. In order for students to be able to learn actively, it is essential to create appropriate situations, involving the activating resources. Modern education technologies represent such resources, which is reflected in this theoretical study focused on activation of a student.

From a technological point of view, the resources can involve extensive full-distance education systems with sophisticated tools securing cooperative learning, but on the other hand, the resources can involve simply support for real-time traditional classes. Nevertheless, e-learning can only be an adequate alternative or part of the traditional education, if it is built upon deep and comprehensive pedagogical analysis of the educational process and all its elements, processes and relations.

Keywords: activation, student, e-learning.

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## 1. E-LEARNING TECHNOLOGIES AS A SOURCE OF ACTIVATION POTENTIAL

Modern educational technologies offer a variety of possibilities for more effective learning, if *effective activation of students* is provided; this applies to face-to-face education, as well as distance education, which is specific in many respects. By virtue of the e-learning technologies, everyone can become a distance student. A healthy person or a handicapped one, if he/she is able to study independently on a required level and has his/her own responsibility for the educational process and his/her own goal to achieve. This matter is narrowly related to desired fair opportunities in education.

According to Svatoš (2009), new educational technologies represent progress in development of didactic means supporting educational aims. Their general features are:

- integrity (interconnectedness of individual means);
- multimediality (different pieces of information from one source);
- interactivity (user's active participation in the process of teaching-learning);
- an increased importance between so called hardware and software;
- more independent educational roles (more independency for a student);
- creating of relatively new concepts of education (distance education, e-learning, blended learning, individualized education) based on controlling user's learning activities and his/her self-education.

Due to its high educational potential, e-learning has become a promisingly developing area of pedagogical theory and practise that keeps on being continually, systematically and intensively worked on, both on national and international level. Some of the most important works are: S. B. Eom & J. B. Arbaugh (2011), R. C. Clark & R. E. Mayer (2011), Y. J. Joo, K. Y. Lim & E. K. Kim (2011), A. Mauthe & P. Thomas (2004), J. Anderson & R. McCormick (2005), S. Bennett, K. Maton & L. Kervin (2008), S. Kluge & L. Riley (2008), R. Möhlenbrock (1982), M. F. Paulsen, (2003), D. S. Smith & J. B. Caruso (2010), D. Tapscott, (1998), A. Bates & G. Poole (2003), R. Ramanau, A. Hosein & Ch. Jones (2010), A. Barešová (2003), L. Eger (2002).

There is no doubt that one of the *important aspects of e-learning is the activation of a student*. Other important aspects are interactivity and multimediality. Possibilities of activating students, i.e. individual learners, vary; they cannot be associated only with study fields involving particular educational content. Communication between a teacher and a student, educational activities and educational environment can also contribute to activation. The primary aim of activation is to change passive students into "immediate participants in education" (Kotrba, Lacina, 2007). However, the activation is also related to teachers. Student activity means increased, intensive work, on one hand based on inner motives, spontaneous interests, emotional incentives and life needs, and on the other hand on conscious effort (Maňák, 1998).

From the point of view of formative-educational process and achieving preset goals, the inner activity is important, because it emerges from person's own resources, interests, attitudes and beliefs. Such an activity can be difficult to initiate or direct towards a desired goal in some cases, yet teachers have plenty of possibilities for external activation. It is important to watch over an activity that is illusory, pretended and formal, and thus not effective.

Also passivity of students occurs within e-learning, which is the opposite of activity. Such a state is undesirable and it is necessary to eliminate it. This can be done with help of e-learning technologies which can be considered as one of the conditions of successful student activation.

## 2. POSSIBILITIES OF STUDENT ACTIVATION IN E-LEARNING

Appropriate student activation constitutes an important purpose of a teacher and didactic means, because if student attention is not caught, the acquiring process cannot be effective. All cognitive processes, either perceiving or thinking, are focused on a particular object. The basic attribute of attention is thus its focus on an object, which can be either material or mental (content of our mind), and our concentration on it (Linhart, 1987). Feelings, perceptions, remembering, thinking and imagination belong to mental processes with specific content; attention does not have any specific content, but represents itself within perception, thinking, remembering and other cognitive processes (Pardelt, Boroš, 1979). As soon as attention becomes part of the perception process, the person is not only hearing, but is listening and becoming absorbed, is not only looking, but is watching and contemplating. His/her perception changes into *active* dealing with perceived material and its acquisition for a certain purpose (Rubinštejn, 1964). All this constitutes important moments for creating successful learning process (e-learning).

If we narrow down the issue of attention only to the area of e-learning, it can be concluded that from a psychological point of view, it is justified and desired to make use of sophisticated education systems with a variety of resources. A question emerges why studying through e-learning with multimedial elements attracts student attention. It is known from psychology that every contrast between stimuli catches attention. Education using multimedial resources offers an alternative to students, something new in form of active participation. That is something truly essential for student development, avoiding mere perception of transmitted verbal commentary provided by a teacher. In case of e-learning, the attention of students is caught inadvertently, unintentionally, by the appealing nature of a matter itself and is subjected to immediate interest. This is extremely important for education, because – among other reasons – it is indisputable that intentional attention develops from unintentional attention.

Unintentional attention is not exclusively passive, but involves activity as well. It is unconditionally necessary for a teacher to be able to catch attention of students and to base e-learning on unintentional attention conditioned by immediate interest. Using the influence of multimedial resources for unintentional attention is only one of the options, although an important one. However, it is desirable to support development of intentional attention by using various didactic means. The activation is closely connected to motivation, which is a direct consequence of cognitive and affective-social factors. According to Badinská (2007), the use of information technologies makes the educational process motivating and dynamic.

## 3. MULTIMEDIALITY, INTERACTIVITY AND E-LEARNING

Communication has always been part of our lives and is transferred through various media. According to Sak et al. (Sak, Mareš, Nová et al., 2007), it is possible to differentiate between 4 stages of media existence in human civilization and the current stage can be characterized by using computers and the Internet, and by interconnecting individual media into multimedia through digitalization.

The development happening in the field of communication and communication media takes place also in education, which forms a fundamental part of human existence. Traditional verbal communication between an educator (teacher, trainer...) and a student (or students) has been complemented by other media and technologies, at first drawings, clay plates, papyrus and later by paper, blackboards, book printing, materials for back projectors, educational videos, didactic computer software, electronic educational presentations, educational web portal, e-learning system, e-beam, interactive boards, etc. Today's education can be globally characterized

by continual implementation of multimedial, hyper-textual and hyper-medial educational aids. According to for example Burgerová and Beisetzner (2008), interactive elements on different levels of interaction directly determine the quality of e-learning.

Everyone who participates in e-learning keeps in touch with e-learning tools, either as their user or as their creator. It is necessary to dedicate enough attention to an appropriate use of the e-learning tools in the educational process, because only the right methodological use allows to achieve educational goals more effectively. If a teacher has e-learning tools at his/her disposal, it does not necessarily mean that the tools will be beneficial for acquiring knowledge, skills and attitudes. On the contrary, if they are used inappropriately, they can be counterproductive.

With the beginnings of computer use and spreading of computer use in education, the term *multimedia learning aid* has been becoming more and more common. The multimedia learning aids are important for education, because they contain information expressed in a way that appeals to senses of students, which fulfils the requirement of illustrativeness. The use of multimedia appeals to several sensory receptors at the same time which brings better study results and subject matter is acquired in a more permanent and deeper way.

Generally, multimedia can be perceived as digital aids that integrate different document formats, namely data (e.g. text, tables, animations, figures, pictures, schemes, illustrations, charts, maps, sound, verbal commentary, videos, etc.).

Interactivity allows two-way communication (a student vs. multimedia learning aid) and a student has a possibility to actively engage in the course of a program via its user interface, and not only passively perceive content. Multimedia requires technology for operation (so that a user can interact with the system); usually, the technology includes a multimedia computer with specific peripheral devices.

Multimedia learning aids that are widely used are e.g. educational software, didactic computer games or multimedia educational presentations. If multimedia are used in education, it is referred to as so called *multimedia learning* (Mayer, 2001), but it is not restricted only to this case. For implementation of multimedia training, it is not important whether the learning process involves multimedia (in the form of integrated interactive learning aids) or individual aids in various formats (individual media) which allow to present information (text, images, video, sound...) influencing various human senses simultaneously.

According to the learning theory, the more intensively a student works with study material, the more effective the learning is. In case of printed text, it is possible to highlight and underline important passages, to write down excerpts in margins, put down reformulated thoughts, and moreover, to return to this kind of personalized material at any point later on. Electronic books do not have this possibility (yet). If we took a traditional printed book and transferred it into an electronic form (e.g. pdf format) with all its features, preserving linearity, continuity and finality of the text, it would not offer effective learning options; it is not possible to work with it in any other way than to scroll up and down on a screen. Experience shows that many students prefer to print the content of an electronic book (and even to bind it) and study in the traditional way.

The attractiveness of electronic text for a student can be increased by transforming it into a hypertext form, making the text interactive. In case of transformation of plain text, it is called *hypertext learning aids*, and in case of transformation of text with images, tables and charts, possibly with animations, videos and sounds, it is called *hypermedia learning aids*.

The characteristics of hypertext follow from its virtual nature; in comparison with printed text stored in the form of physical characters on a physical surface, it is stored in electronic virtual codes kept in a computer memory or network systems. Generally speaking, the nature of hypertext as a type of media means that there is no central, main text with subordinate passages, as it is the case of the printed page layout.

Hypertext learning aids make it usually clear which part of text is the main one and where a student should start from when learning (it does not matter whether hypertext content in LMS is stored on a CD-ROM or available on-line). However, other texts can lack any hierarchical structure. An author (teacher) cannot know without explicit instructions what order a student will choose for reading a text, and if a material is shared on-line, neither which other materials will be connected with it (which links will be directed towards the text). The method of study represents the main difference between the traditional text type and hypertext which presupposes multi-sequential reading (Kobíková, 2012). Within hypertext, a reader (student) marks a link (most commonly underlined/highlighted) with a mouse pointer that carries metadata (a hyperlink to another document), activates it, and the respective material appears on a screen. When creating hypertext, it is advisable not to include too many visual materials such as pictures, figures, charts, schemas, etc. that are not directly related to the educational material. There is a risk that student's attention gets carried away.

New educational media can support learning as an active and creative process, convey realistic learning situations and transform learning into an interactive process. However, the question is what form should the educational material have to become a truly interactive tool. According to Hartl (1999), it is necessary to observe whether pieces of information are provided in a linear way or are interlinked, whether they are processed dynamically (e.g. simulations), whether they are provided in a parallel way and whether pieces of information of one type can be transformed into another type.

#### **4. ACTIVATION THROUGH DIDACTIC GAMES**

Study materials for e-learning can have the form of a game. It is thus possible to incorporate gaming activities into the educational process and make it more attractive and natural for students. A game is an activity for one or more persons which does not need to have a specific purpose, but is supposed to bring joy or have a relaxation effect.

Even before the massive development of e-learning, there was a continual growth in availability of computers for children, youth and also adults and along with this growth computer games began to appear. A new way of using computers emerged; computers were no longer used only for working, but also for entertainment, recreation and relaxation. At first, the games were only simple programs with poor quality graphics and only sporadically they involved sound.

Every computer game has its basis in a virtual world (virtual environment) where a player enters through external devices connected to a computer (either common ones such as keyboard and mouse or special ones such as joypad, joystick or wheel) and influences the virtual world through them. The goal of a player is to complete given tasks in the virtual environment as well as possible, e.g. to go through a certain route as fast as possible, to hit the most targets, to choose the best dress, etc. (in this context we speak about so called genres – strategic games, simulators, arcade games, heroic games, adventures...). A computer game can serve for entertainment, but also for improving knowledge, senses and thinking. Games are sometimes used also in medicine or psychology. Through the virtual world of computer games, it is possible to get to know the unreal world (sci-fi, fantasy world), as well as the real world. A computer game becomes a part of the real life environment – an environment which is necessarily needed by a child in the ontogenetic stage of cognition – but which is not immediately available to him/her. However, excessive substitution of the real world by the virtual one is not desirable.

From the growing trend of computer games it might seem that traditional games and its themes have been disappearing. But in many cases mere virtualization occurs – games and toys have been transferred from the real into the virtual one. This is narrowly related to virtualization of education. According to Marešová and Klement (2001), virtual worlds provide educational institutions with a transition from a teacher-led education to education oriented towards a student. This model corresponds to constructivist theories where a learner uses his/her experience to actively contribute to understanding of the matter; this makes more sense for a learner than to be

given study material in an already organized form. In the virtual worlds, students are more actively engaged and stay in the process of constructing meanings on the basis of their experience. The virtual worlds thus provide an opportunity for teachers to implement learner-oriented pedagogical principles which support active, constructivist teaching focused on problem solving.

One of the main features of a game is that it is an activity accompanied by joy and pleasure, but on the other hand there might be also negative emotions in case of a loss. When playing a game, a person is enjoying it, but when learning or working, it is about achieving educational and work goals and fulfilling obligations. When playing games, including computer games, the only goals that are achieved are the goals contained within the game. The so called game goals can be achieved on a certain level of difficulty and quantity and quality of fulfilling such goals become the purpose of the game.

A didactic computer game is a specific type of educational software. It is a computer program that – in an entertaining way – creates conditions for activities aimed at developing one's personality (Dostál, 2009). Regarding the activity that is executed when playing didactic games, it can be stated that a didactic game played on a computer is an activity of an individual (or individuals) which has its basis in the virtual world simulated by a computer and it consists primarily in developing one's personality, whereas it can provide entertainment, recreation and relaxation.

## 5. VIRTUAL CLASS AS COOPERATION SUPPORT

Within e-learning, a virtual class has an activation effect on a student. It is an on-line **study space** where the traditional class environment can be substituted to a certain extent. It makes it possible for a teacher to present subject matter as if he/she was standing in front of a real class. The teacher can provide immediate **feedback and this way control the learning process**. A student of the virtual class is a specific kind of a student, which is documented also by findings of Palloff and Pratt (2003) who use the term “virtual student”.

The virtual class is thus a classroom in virtual space. According to Zlámlová (2006), it is a web-based interactive tool allowing students to meet, communicate and cooperate, without the need to be present in person. It provides the possibility to gain considerable benefits of the on-line electronic education when preserving the benefits of the traditional, in-class education. The way the virtual class works is the following: after a student connects to a class, a window opens with a list of participants and a set of tools allowing on-line cooperation. A tutor (teacher) presents prepared matter on “a blackboard”, creates new content, and works with office software within the environment or surfs on the Internet. Voice communication, e.g. lecturing, is happening through telephone connection. Among others, virtual classes can be used as an authorial tool for creating electronic courses. The virtual class takes place at an arbitrary place and time; the essential requirement for the realization is Internet connection (Mikulecká, Poulová, 2002).

A teacher controls education in the virtual class, determines study matter, procedure and pace. When teaching, he/she can examine students and evaluate them, ask questions, split students into teams and give them individual tasks. Virtual classes involve cooperation and also for example brainstorming. Students can leave the class when needed or they can ask the teacher about things they do not understand. Students can communicate also privately; in the real class, they whisper or send notes or text messages, in the virtual one they have access to a private chat. The teacher prepares materials beforehand and then he/she talks about it and can project it as well (in case of the traditional class, he/she uses a back projector, data projector or an interactive board). He/she can use the board in the virtual class for writing or drawing, and the same can be done by students. He/she can also provide some extra materials to students (Pravda, Barešová, 2004; Tiffin, Rajasingham, 1995).

The virtual class allows the following:

- to present subject matter on the virtual board (the teacher is lecturing while using the presentation, showing content of data files, drawing on the board, etc.);
- two-directional voice and visual communication between the teacher and students (it means that the teacher can communicate with students, can examine them and talk to them directly);
- to practise subject matter by tests integrated in the virtual class;
- a chat with students.

It provides also other options such as an access to supporting materials, plan of an on-going course or more advanced tools for communication with students (desktop sharing, remote access). Virtual classes involve a specific teacher approach towards students (e-students), which was summarized by Pavlíček (2003) as follows:

- orientation towards a student, defining a new role of a student, understanding student needs in the sense of mobility and new communication tools, as well as globalization elements;
- communication, mainly in the written form, but also through telephone or other audio and visual tools, understanding the change of style in communication;
- discussion moderation in the sense of creating and monitoring their scope, suggesting topics, initiating discussions;
- accepting and supporting a virtual community that has been created; virtual communities have their own rules, e-tutor must know them, understand them and comply with them;
- encouraging interaction within a virtual community, leading cooperation in the right direction;
- listening to questions and answering them;
- creating tasks with focus on authentic learning and on tasks with a real basis;
- evaluating tasks and discussing their results;
- monitoring education results and further processing and evaluating them;
- analyzing team composition and team work, understanding the need for appropriate team composition for effective cooperation when solving problems;
- creating ambience of personal contact of remote participants.

According to Ligas (2007), the advantage of virtual classes lies in the fact that students do not need to feel uncomfortable in front of the whole class, because they can simply send a private message to their teacher. This helps in removing constraints and communication becomes more natural.

## **6. USER INTERFACE AND DESIGN OF THE E-LEARNING EDUCATIONAL ENVIRONMENT**

Activation of a student who is supposed to study through e-learning is strongly related to the design of user interface, its spatial layout and interactive options. In spite of that, there is not enough attention paid to this area,

in contrast with foreign countries (e.g. Zhang, Zhan, Du, 2010). To begin with, reliable research in this area is almost not carried out in the Czech Republic and only individual experience is used (exceptions are for example works of Sedláček, 2006 and Hájek, 2003). That is also the reason why many e-learning environments are so different, despite being intended for students with similar characteristics. There is obvious unfamiliarity with pedagogical effectiveness of individual educational environments related to acquiring knowledge and developing skills.

A user interface of an e-learning educational system is one of the key factors which influence the effectiveness and usability of a particular system. On the basis of analysis of educational environments represented by LMS (Learning Management System), didactic computer programs used for student education and published findings, it is possible to determine basic pedagogical requirements that should be met:

- *must be motivational, must not repel a student* – an interest in working with LMS or an educational program must be evoked and supported;
- *must bring a feeling of safety* – a user cannot be exposed to a situation when he is under pressure or is afraid;
- *simplicity and intuitiveness of use* – a user cannot be thinking about the use itself;
- *freedom/control* – a user can make a mistake and for such cases, he/she needs a clear “exit” to get back (this cannot involve a need to go through a set of complex dialogues);
- *less is sometimes more* – information displayed on a screen at a certain time should not contain information that is irrelevant for a particular action or is not necessary for a user (each information unit is in competition with all others and it can decrease clarity and an apparent meaning of other pieces of information (*HCI - Existuje dokonalé uživatelské rozhraní?*[*HCI - Does a perfect user interface exist?*], 2013).

When evaluating proposed user interfaces, it is necessary to take into consideration the following criteria (formulated as questions):

- Will a user know which actions should be/can be done?
- Will a user know which controls are related to individual actions?
- If a requested action is done, will a user understand the feedback?

It is possible to state that a user interface must comply with the following principles (Palloff, Pratt, 2001): be fully functional;

- offer functions necessary for the realization of effective e-learning;
- be simple to use for all participants;
- be user-friendly and visually attractive.

The resulting interface of modern e-learning educational environments should respect the following parameters:

- *interactivity* – a user interface must respond to commands quickly, execute actions and provide adequate feedback to a user;

- *clarity* – objects and elements currently displayed on a screen must provide good possibility for orientation, which also counts for the whole system, and not only to a current screen;
- *transparency* – controlling the system should be easy and system reactions should be intuitively predictable;
- *understandability* – used terminology should be known to users;
- *continuity* – a user interface should be consistent, at least as far as basic features are concern, for the whole system;
- *empathy* – a user should have a feeling that a user interface was specifically designed to meet his/her needs;
- *help* – a user should not have a feeling at any point that he/she is left without any help.

It is obvious that parameters of e-learning educational environments and educational programs must stem from the needs and specifics of users, i.e. mainly students and a teacher. In many cases a universal optimal system cannot be created and that is why it is convenient to create adaptive and flexible systems. On a general level, this matter is dealt with by Human-Computer Interaction (HCI) which is a discipline focusing on evaluation, design and implementation of interactive computer systems that communicate with a human (Zaphiris, Ang, 2009).

## 7. SIMULATIONS AND MODELLING AS ACTIVATION TOOLS

In case of simulation and modelling, a particular “thing” is studied, represented by any object or phenomenon, with the goal of understanding it. This is very closely connected to education, but the models must be obviously adjusted to didactic means, to regularities and possibilities of those who study them.

The principle of modelling, in a sense of a research technique, is substituting a researched system by its model (more specifically by a system that models it) and the goal is to gain information about an original researched system through experiments with such a model (Křivý, Kindler, 2001).

Depending on taking or not taking time into consideration when modelling, we distinguish between dynamic and static systems. When dynamic systems are studied, it is called a simulation. On a general level, from the point of view of the principles of schematicity, it is not possible unambiguously determine whether using static or dynamic systems is didactically more valuable. In connection with modelling, it is always necessary to realize that the studied model is a simplification, i.e. an abstraction of reality; in other words it is imperfect in relation to the reality. The imperfections are, however, marginal and negligible for studying. Simulations can be used for studying any kind of subject; it is not important whether it is from technical or scientific field or humanities. The use of modelling and simulations in education was dealt with for example by the following authors: Hrbáček (2008), Serafín (2009), Bílek, Rychtera and Skalická (2010).

Regarding didactic possibilities, remote internet labs have been gaining importance; they are based on a principle that an experiment is carried out separately from a learner and he/she controls it through a computer network using a web interface, does experiments and measures relevant data. There are no field limitations for experiments; it can be an experiment in chemistry, physics, technology, etc.

Apart from remote labs, there are also virtual labs, but according to Lisalová and Lustig (2004), remote labs sometimes include mere databases of experiments or observations, eventually camera recordings of experiments,

which is not correct. Remote labs and virtual labs are not the same. In case of a remote lab, gained data are real, because they were obtained on a real device.

Remote labs have the following advantages in comparison with the traditional labs:

- free access to a lab (whenever, wherever);
- an experimentalist does not need any real aids;
- an experiment can be repeated several times;
- users work with real measuring devices and measured data are real;
- there is no risk of injury when working with dangerous devices;
- it can be used as preparation for traditional school labs;
- modern approach = an increased student interest;
- time saving for teachers and quick graphical processing of measured values (Látal, 2012).

The very process of learning is based on student active participation and student engagement is supported by dynamic simulations of real phenomena, team work (real and virtual), public presentations and defence of gained results; everything is happening either at a real, present time, or in tele-presence (Lustigová, Mechlová, Malčík, Lustig, 2009). The possibility of connecting a real, currently occurring phenomenon with a computer allows to better grasp the essence of the demonstrated phenomenon and to gain vaster amount of data about the phenomenon (Lepil, 2010).

## 8. ELECTRONIC CONFERENCE AND VIDEOCONFERENCE

An electronic conference represents virtual space for mutual communication of determined participants and communication itself including a communiqué. It is dedicated to a certain topic using electronic support. Accordingly, it can happen through various channels:

- written text;
- audio (audio-conference);
- video (video-conference).

The electronic conference is a social meeting of people in a virtual world, in contrast with a chat, which can be defined as brief communication between two or more people via a communication network.

In case of education, the aim of the conference is not any kind of communication, but communication aimed at achieving didactic-educational goals. Then, the participants are a teacher/teachers and students. From the educational point of view, it is convenient that it also offers means for archiving contributions and their subsequent browsing, or eventually evaluating.

The electronic conference places significant demands on the teacher, mainly because to maintain a discussion during such a conference can be difficult. Some learners can actively participate in guided conferences, some refuse it; many learners can represent completely passive participants of a discussion during an e-conference. Mainly in case of teaching adults, the prevailing experience is that they avoid participating in discussions because they are afraid they might look stupid due to not knowing something or being wrong, etc. (Zlámálová, 2006).

## 9. CONCLUSION:

By using analytical-synthetic approaches, the importance of student activation during e-learning has been shown, but also basic possibilities of activation applied in educational practice have been determined. It seems that the most effective is to use a set of activation means; meanwhile, a synergetic effect manifests itself, having a positive effect on learning.

It is vital to prepare e-learning activities in a way that both initial and continuous activation is ensured. Such activation should be of an intensifying character, because attention during learning tends to decrease. It has been proven that modern educational technologies dispose of a variety of tools for ensuring active learning that is based on the constructivist principles.

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# Addressing Spirituality in Experiential Learning

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## Abstract

Experiential learning has had a firm place in Education since the time of John Dewey. Nevertheless in the Czech Republic, due to its isolation during the Communist era, its development has been unique in some respects. This study aims to examine whether experiential learning is capable of addressing spirituality as a significant aspect of human life. The findings of a research survey conducted among participants of two experiential courses show that a kind of spiritual experience did occur, although it was not intended in the original design of the course. An insight into the question of addressing spirituality through experiential learning is thus provided.

*Keywords:* experiential learning; winter experiential course; spirituality; spiritual experience.

## 1. Introduction

Experiential learning represents a fairly distinctive approach to Education theory and practice. Although the concept has been quite elaborated in terms of theory and its approach has been very solidly verified in terms of practice, at least one aspect of experiential learning has been so far neglected: that is, the question whether experiential learning can also address spiritual elements in human experience. A deeper analysis of the spiritual dimension in experiential learning is entirely absent (Schmidt & Little, 2007).

Our contribution intends to further the debate on this issue. It focuses on an orientational introduction of experiential learning, including concepts which may possibly encompass spiritual experience. Since we rely on empirical data obtained in the Czech environment, where experiential learning has undergone specific development, we also explain these specifics. Nevertheless, the kernel of the text is the presentation of a research survey from two experiential winter courses, whose goal did not consist in inducing a spiritual experience, yet the participants evidently did experience one. In the final part, we select two theoretical frames of experiential learning and interpret them with regard to their potential inherent affinity to spiritual concepts—in order to be able to support the findings of our research survey by means of theoretical reflection.

## 2. Experiential learning in the Czech Republic and its specifics

We acquire knowledge and practical skills on the basis of our life experiences. We learn about ourselves, our abilities, limits, and possibilities. We change with increasing experience and transform our view of the world and our attitudes. No wonder that experiences are considered to be the most essential components in the process of learning. The concepts of learning through experience have been developed in the English-speaking world since

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the 1930s. The works of John Dewey (1938), the pioneer in this area, and Kurt Lewin (1935) have played the most significant roles. Dewey, in his attempt to reform pedagogy, was the first to articulate a theory of learning through experience, which involves three stages: 1) Observation of the surrounding environment after a stimulus is provided; 2) Recollection of knowledge and previous experience in similar situations in the past; 3) Judgment which puts together what is observed and what is reflected and recalled to see what they signify (Dewey, 1938). Today, however, rather than Dewey's concept, the model of experiential learning by the German emigrant Kurt Lewin is being used. During a series of courses applying experiential learning, Lewin noticed that it is convenient to complement the cycle with a discussion, which allows the participants to reflect on their experience, to compare their impressions with external observers, and share them with other participants. This results in a more effective generalization of the concrete task to the level of an abstract rule and allows an acceleration of the learning process. The essential stage of feedback was thus added into the cycle. This model plays the central role in the system created by David Kolb in the 1980s, and although the cycle of experiential learning had been conceived by Lewin, today we are used to referring it as Kolb's cycle or model. In addition to Dewey and Lewin, Kolb was also inspired by the theory of cognitive development of Jean Piaget (1999) which the process of development from the concrete solutions to the abstract solutions of given tasks and the ability of generalization are very similar to processes used in the stage of reflection in experiential learning. Kolb's experiential learning model, as it is used today by practitioners in various fields, involves the following: Concrete experience—Reflective observation—Formation of abstract concepts and generalization—Testing the concepts in new situations to see what results (Kolb, 1984, p. 21). Apart from the application of Kolb's cycle, the methodology of experiential learning also uses the mechanism of comfort zone expansion. The comfort zone is the area in which we spend most of our time, and which gives us a sense of security, as we have scenarios ready to use for all our activities in the zone. By means of a specifically targeted adjustment of the activity, however, a person can be made to step out from their comfort zone and enter an area with new and intense experiences. They are forced to take action and develop new scenarios. Therefore, this zone is referred to as the learning zone. A person can acquire new experiences here and subsequently include them in their ready-to-use storage of knowledge, thus expanding their comfort zones. The experience occurring in the learning zone may have both positive and negative qualities. Stepping out too far brings us into the panic zone, where new experiences are not perceived in an optimal way.

Nonetheless, these concepts began to find their way into the Czech Republic no earlier than in the beginning of the 1990s, together with the opening of its borders after the Velvet Revolution. This does not mean to say that experiential education has been employed only in the last two decades. Quite the contrary, experiential learning has been developed for a long time in the Czech Republic. The practical application of experiential learning in the Czech Republic, however, has had a number of unique characteristics, and there are several reasons for this. First and foremost, the former Iron Curtain did not allow conducting a dialogue across various international approaches; second, the Czech Republic is a relatively highly urbanized country, which does not have large areas of wilderness like the United States, enabling the instructors to expose their students to natural conditions for a longer period of time. This is why a way had to be found which would make it possible to achieve the same results in a shorter time and in a smaller space. Furthermore, the terminological aspect has to be taken into consideration in the Czech context as well. The English word "experience" can have several strictly distinct meanings, and the diverse interpretations of its meaning imply various applications in practice. The terminology has been clarified in the Czech context by Jirásek (2004) and Dočekal (2012). In accordance with their interpretations, we will consider the term experience to be a result of reflection and generalization of an experienced event, which can be potentially used in future decision-making. One of the specifics of the Czech experiential learning model is that the courses are aimed at precisely specified goals and make use of dramaturgy. The term "dramaturgy" has been adopted from art education and carries the specific meaning of pedagogical work with a place, time, goals, themes, program means, people, etc. The experiences in intensive courses are arranged with respect to achieving the maximum intensity of the program. Unlike abroad, various phenomena

such as play are characteristically employed in the Czech environment (Hanuš & Chytilová, 2004). The Czech approach also typically aims at reaching maximal developmental potential in diverse dimensions and to intervene in the structure of personality in terms of its development, rather than orientation on knowledge and skills. This approach has been classified as experiential education, which stands apart from similarly oriented approaches, such as leisure education, adventure education, or outdoor education (Jirásek, 2004).

Experiential learning and its theory have developed into an independent discipline, yet its practice has adopted several concepts from other disciplines, especially the psychological theories on motivation and the functioning of the mechanism of group dynamics. Herein two concepts dealing with individual experiencing and potentially covering the area of intersection between experiential learning and spirituality should be mentioned. The first of them is the theory by the psychologist Mihaly Csikszentmihalyi (1994) on absolute immersion in an activity—the concept of flow. Csikszentmihalyi explored the relationship between skills and challenges and claimed that our involvement in activities ranges from boredom (due to a low level of challenge) to anxiety and fear of failure (due to a high level of challenge). In order to achieve the desired flow state, activity must be balanced, so that the challenge of the task matches the skill of the group or individual. Therefore, our goal in practical experiential learning is to remain in the zone where optimal experience is possible. The other concept relates to the level of experiencing as well. It deals with so-called peak experiences, i.e., states in the moments of exceptional happiness or excitement. The term was first used by Abraham Maslow in the 1960s, who described it as an uplifting state of mind, which brings a sense of integration and meaningfulness, “being-values” as values related to being, and creative energy (Maslow, 1994). A peak experience is perceived as very intense and becomes a stimulus for prospective changes. This is why the design of a course or any such program may purposefully include activities containing the potential for being experienced as Maslow’s peak experiences.

### **3. Spirituality in the dramaturgical design of a concrete experiential course**

The possibility of addressing the theme of spirituality by means of experiential learning was verified by a research survey. The sample for the survey was composed of the participants of an experiential learning course, which consisted in a winter field trip on snowshoes and was entitled “Life Is a Gothic Trek”. This course has had a long tradition in the Czech Republic. The participants trekked along the ridge of the Bukovské Hills in eastern Slovakia, following a route longer than 100 kilometers (more than 60 miles). The declared goals of the course included, most of all, staying for two weeks in demanding outdoor conditions, camping and traveling in the winter landscape, with the necessity to carry all their gear in rucksacks on their backs. Another level was constituted by the aspect of self-knowledge. The course was conceived as an opportunity to look at oneself with different eyes, in a spirit of earnestness and within an authentic experience. Needless to say, the revelation of spiritual aspects was not among the explicit goals of the course. Nevertheless, the provided opportunity for being free from common worries and having plenty of time “to be oneself”, including the specific conditions in which the course took place, contained the potential for the spiritual mode of experiencing. This potential was investigated in our research survey.

#### *3.1. Methodology*

Our investigation was conducted during a weekend session in September 2012. The participants of the previous two years, 2011 and 2012, were asked to form the research sample, which eventually consisted of 13 persons. The research focused on the question whether, and in what form, the participants experienced moments which might be regarded as spiritual. The sample group consisted of 2 women and 11 men. Their ages varied between 20 and 55 years, with the majority in between 25 and 35.

In the course of the investigative meeting, the phenomenon of spirituality in relation to the course Life Is a Gothic Trek was explored by means of several methodological tools. With respect to the nature of our theme and

the number of present respondents, most of them had a qualitative, heuristic character (Miovský, 2009). The findings were mostly grounded in individual semi-structured interviews. The interviews always began with the same inquiry (“We would like to know whether anything really touched you during the course.”). The initial query was formulated neutrally, so that there was enough space left for the phenomenological development of the theme in the discussion. We presumed that should a moment of spiritual experiencing occur during the course, it was something that had really touched and influenced the participant, and such an experience would be carried on. Once it became obvious that our intention was to discuss the spiritual aspects of the course, we let the participants reflect on this theme in group discussion (a focus group) at the end of the weekend session. In order to have a form of feedback verification by a reliable research tool, we used the Prague Spirituality Questionnaire (Říčan, 2005; Říčan & Janošová, 2004; Říčan & Janošová, 2005). This questionnaire tests the tendency for the spiritual mode of experiencing by means of 36 statements with which the respondents express their degree of identification or non-identification. Although the validity of this questionnaire is still being questioned (Jandásková & Skočovský, 2007), the neutral formulation of its questions, without association to any specific religion, seemed to provide valid results in terms of our target group.

### 3.2. Findings

In order to better understand the context of the situation described in the respondents’ statements, one must realize that trekking on snowshoes is, most of all, physically very demanding. Even with the snowshoes on, the weight of the human body and the carried weight make one sink into the snow. The strategy of advancement is to walk in line, one after another, and keep to the track, trampled by the footsteps of those in the front. This causes a separation of the individual wanderers, who are not in immediate contact with each other, even though they walk in a group. From the perspective of a person used to the excess of stimuli typical for the life in the modern society, this situation—your only activity is to follow the footsteps of the person walking in front of you—unfolds an unusual space for immersion into oneself. This situation was reflected upon by a majority of the respondents in the interviews:

“Many times, I just went on and ceased to perceive anything and became absorbed in myself.”

“I have a very strong, long-lasting experience of having abundant time to think of what I do, how I do it, what I want to do... For the first time in my life, I stopped, somehow... I have realized now I don’t even have the time for that in normal life...”

During the long monotonous walk and due to the lack of communication and stimuli, they had plenty of time for introspection. Of course, it did not always necessarily involve deep spiritual contemplations. Nonetheless, thinking of the importance and purpose of things, pondering on one’s own search for values, reflecting on one’s own thoughts and feelings, meditating upon oneself and the purpose of one’s own life in such moments of calming down and stopping may be considered spiritual. For even the respondents themselves used such expressions:

“What was happening? Some kind of reconciliation, contemplation on where I am, why I am here, why I want to be here, thinking if my school and family make sense, feeling some kind of energy compelling me to become a better person...”

“Concentration on myself, on my inner world, my inner voice, arranging my thoughts, making my mind to leave out this and stop doing this and focusing on that.”

On the other hand, the moments of “solitude” were matched by the participants’ development of their sense of belonging to the whole—both nature and the other people. This relationship was established under the influence of intense and authentic contact. The sense of a strong bond with the group resulted in abandoning of the patterns of everyday interactions and elimination of ever-present protective barriers in interpersonal contact.

“You only deal with what is here and now, with the people who are with you, as there is nothing else... And the morning exercises, when we hugged, in such an intense group of people—I have never experienced anything like it, it was so purifying, the day suddenly received a whole new dimension, you had an immense sense of belonging to the group... You felt great in your soul.”

“I somehow overcame my own blocks in relation to other people, as I used to keep such a distance... as if perceived the others from distance... all of sudden you have no energy for that anymore, the constant protection of yourself.”

“The protective bubble suddenly breaks, and you simply *are*...”

The breaking of these barriers allows the individual to see him/herself in a new light. A deeper understanding of oneself is attained and an imaginary Johari window is opened (Luft & Ingham, 1955). The joint influence of several factors—such as, apart from the above-mentioned, sensory deprivation while walking through the mist on the white, snow-covered ground as well as the long-term exposition to radically different climatic conditions than we are commonly used to—enables the participants to achieve the transcendental mode of experiencing, which may be sometimes difficult to describe:

“You can somehow overcome all the physical challenges, but there’s something behind them, something that can be... I don’t know what it is, I haven’t found out. Anyway, the physical simply doesn’t matter...”

“I take the world as it is and I am open to it, and it comes to me, and it’s a deeper connection with the world, a sense of integration, unity, because you’re not somewhere else, you don’t look from the outside on what is happening: you are inside everything. You experience the world through yourself, and it suddenly opens before you.”

While some interviewed respondents confirmed the occurrence of the theme of spirituality in their experience, we should also call attention to those who never referred to any spiritual experience. It turned out that what we refer to as spiritual may be expected to occur only with individuals who have been adjusted to such a type of experiencing. In other words, the specific setting and conditions of the experiential course open the vertical dimension rather with people who are ready to see and experience the setting and conditions as such. That is to say, we did not find any such experience which could be considered as spiritual, for a portion of the respondents. This fact has been confirmed by the results of the Prague Spirituality Questionnaire, which showed that approximately one-third of the respondents declared a high degree of identification with statements testing the particular possible dimensions of spiritual experiencing (Řičan, 2005); one-third identified with the statements only partially, and the rest assumed a reserved or even negative attitude to the statements.

Should we come back to the research question as to whether the aspects of spirituality occurred among the participants of the course *Life is a Gothic Trek*, the answer is that despite the fact that it was not so in all cases, the spiritual mode of experiencing was confirmed in several instances. The setting of the course providing experiences sharply contrasting with the common lifestyle of the 21st century human—experiences of solitude as well as almost intimate contact, challenging both physically and mentally—became a breeding ground for the human vertical (that is, spiritual) dimension. This was manifested in several areas.

## 4. Spirituality in experiential learning

### 4. 1. Spirituality in education and experiential learning, including the Czech experience

For quite a long time, the theme of spirituality in Education has been pushed to the periphery of interest by the predominantly scientific and secular society, or even totally suppressed. As Wane and Ritskes pertinently noted: “For too long spirituality has been an underexplored, often misunderstood aspect in the field of education” (Wane & Ritskes, 2011, p. xv).

In the West, a certain breakthrough with a relatively unrestrained growth of spiritual development beyond the formal educational system was achieved. When Yves Bertrand (2003) composed his overview of contemporary theories of Education, he could not ignore an educational trend which gained power in the beginning of the 1970s and was oriented towards spiritual renewal. Bertrand refers to thinkers who were beyond the mainstream, and being interested in spirituality, they formulated their ideas on spiritual Education (e.g. Harman, Leonard, Fotinas), and pondered upon the essence, goals, and principles of spiritual theories of Education. The theme of spirituality in Education is similarly legitimized—with reference to the increase of interest in spirituality, often non-religious—by several contemporary authors as well (e.g. Hunt, 2009). In the present time, the theme of spirituality has been explored by a number of Western authors (English, 2003; Miller 2000; Palmer 2007; Tisdell 2003).

The situation in the Czech Republic was, similarly to other countries of Central and Eastern Europe, affected by the events of the World War II and mainly by its subsequent membership in the Communist Bloc. The Communist era was soon after the Velvet Revolution of 1989 replaced by the era of consumerism, and the two ideologies—ultimately, both materialistically oriented—had a strong impact on many essential areas of life (Jirásek & Veselský, 2013). Since this has been so in the area of Education to no lesser extent to the present day, the issue of spirituality in Education is almost never discussed. After all, the same applies to experiential pedagogy, in which the vertical dimension of “educating toward experiencing” or spirituality emerges only very rarely or not at all (Jirásek, Hanuš & Kratochvíl, 2009).

### 4. 2. Conceptualizing the intersection of two experiential learning and spirituality concepts

As it turns out from our research survey, however, especially experiential learning—in the form that it has acquired in the Czech Republic—has a certain potential for encompassing the theme of spirituality in a meaningful way. Nevertheless, this assumption on the possibility of addressing the spiritual dimension of human life by means of experiential learning does not rely only on the experience of the participants of the experiential course *Life Is a Gothic Trek* (the research findings seem to be augmented by the fact that spiritual experiences occurred repeatedly, even though this was not included in the objectives of the course dramaturgy), but also on the very nature of experiential learning, which touches on the elementary characteristics of spirituality in some of its aspects. Namely, we will at least focus on two such aspects, which can initiate the debate on the experiential learning of spiritual experience: the emphasis on direct experience and stepping out of the comfort zone.

Experiential learning and spirituality cannot be more thoroughly introduced without being perceived as the conditionally direct and immediate experience of a concrete individual. Experience is the most self-evident and basic constitutive element of experiential learning. Similarly, personal experience is the most essential condition in the area of spirituality; it may be the only way how to credibly touch upon this theme. One of the most authentic spiritual authorities in recent history, Shri Ramakrishna, emphasized the need to relate to spirituality through experience, using the analogy of a spoon burned deep in sugar. The inanimate spoon will never taste the sweetness of sugar, nor will an individual, who does not take the courage for a direct spiritual experience, ever surpass the unsatisfying superficiality of his or her spiritual knowledge (Gupta, 2003).

In this respect, spirituality—as a concept relying on a direct individual experience—can be perceived in contrast to religiosity. This perspective has been confirmed by Zinnbauer’s research on the relationship between religiosity and spirituality, which showed that a significant part of respondents associated spirituality with the experience of connection, relationship to God and mystical experiences, whereas religiosity was associated with personal faith, religious activities, and affinity to an institutionalized religion (Paloutzian & Park, 2005). This difference between the prevalingly inner (experiential, spirituality) and the prevalingly external (ritual, religiosity)—and about the need to transcend the external description of spiritual experience to the experience itself—has been mentioned in some original spiritual traditions. Buddhists, for instance, use the analogy of *a finger pointing to the moon* (Veselský, 2011). It would be a mistake to think that the finger pointing to the moon is the moon itself; it would be equally problematic to confuse the rational/discursive knowledge in the area of spirituality with the experience itself. The Buddhist tradition considers words to be “mere guideposts and markers identifying the recognized reality” (Nyanatiloka, 1993, p. 8). He does not mean to point out that (using the Zen hyperbole) the finger and the moon need to be distinguished. The objective of the spiritual approach is not oriented discursively to the concepts that we apply to the recognized reality but, above all, to what may be considered genuinely real—one’s own experience.

Direct experience, which has a transformative impact on the life of the person who has had it, is then the cornerstone of both experiential learning and spiritual life. It is more than obvious that experience mediated through experiential learning needs not automatically be of a spiritual nature. At the same time, as is also confirmed by the findings of our investigation, it is possible to point out the fact that experiential learning has a potential for individual development in the area of spirituality.

Apart from the common emphasis on experience, the potential of experiential learning also seems to address the spiritual dimension in the fact that spiritual experience necessarily requires stepping out of the comfort zone (albeit this movement is called otherwise and has a different form in some respects). In terms of spirituality, this movement may be connected to the elementary nature of spiritual experience, which arises is grounded in transcendence; from the Latin *transcendere*—to overcome, to surpass. This surpassing of the commonplace of everyday safe and comfortable life and concurrent opening to the horizon of insecurity and seeking within spiritual experience happens on the borderline of “two worlds”, which can be more than a metaphor according to Eknath Easwaran: “In a sense, there are two worlds. One is the land of ever-changing phenomena, of birth and death, cause and effect: the world of duality, which of all of us believe is our real home. It is not. Our native land is altogether beyond these: a world which is the very source of light and life, beyond all change and therefore beyond death. In this land there is only one inhabitant, the Self. Read the writings or teachings of any great spiritual figure: this is the theme...” (Easwaran, 2000, p. 176)

As regards the movement from the world of duality and seeming safety to the world of fullness and genuine safety, from the world of transience to the world beyond changeability, from the world of conditional happiness taking turns with unhappiness to the world of unconditional happiness or bliss (according to the terminology of particular spiritual traditions), the one who surpasses is the one who sets out on the journey of transcendence, who directly or indirectly steps out of the individual comfort zone, and acquires spiritual experience.

The experience may have a clearly evident and very dramatic form in some spiritual traditions. The spiritual practice of the followers of the pre-Buddhist Tibetan tradition of Bön, for instance, was to undergo a stage of deep sensory deprivation, which they maintained for a long time, meditating in total darkness. The process of sensory deprivation was supposed to bring them close to the experience of death as well as prepare them for death (Kalweit, 2004). Similarly, shamanic initiation afflictions are on the border with mental disorders, and the shamanic adepts are often not so far from physical death in the initial stages of their initiation (Peters, 1994).

Stepping out of the comfort zone in other spiritual traditions seems to have a more subtle character, yet it does not mean by any chance that becoming an adept of Buddha’s teaching or a follower of Christ or a disciple of any other serious religious tradition, one can do without abandoning the horizon of the self-evident, safe, or comfortable. Sensorial temperance (food, sexuality), discipline in the relationships with others (not hurting by

deed nor word), deflecting the adept's attention from the world of duality and enabling him or her to initiate movement and transcend this world, represent quite common requirements for those who aspire for a spiritual experience. As Paul Brunton noted on the nature of such a discipline: "It cannot be bought cheaply. Relinquishments of distracting activity must be made, disciplines must be brought in, the work on oneself must be done, the hands which want to hold others unclasped and solitude embraced..." (Brunton, 1986, 2/7/18). Spiritual traditions consider this transcendental discipline to be a necessary price, a prerequisite so that the adept learns something fundamental about him/herself, about the world of duality and the world beyond duality. The objectives of spiritual life are a different matter, but regardless of them, the same can be said about experiential learning, where the expansion of or stepping out of the comfort zone is a prerequisite for entry into the learning zone.

Despite the fact that both experience and stepping out of the comfort zone can be considered as fundamental conditions for individual development, this similarity with experiential learning cannot obviously be overestimated. Since the objectives of spiritual practice are so specific and the focus of experiential learning is so wide-open, we assume that it is realistic to narrow the question, as to whether experiential learning in its openness is able to embrace some form of spiritual experience development. We believe that it can indeed, as confirmed by our empirical research of spiritual aspects during an experiential course.

## 5. Conclusion

The conducted research investigation confirmed the possibility of addressing spirituality by means of experiential learning. Although it was not a part of the objectives of either of the two annual experiential courses *Life Is a Gothic Trek*, the participants reported on spiritual experience occurring in the context of the course's dramaturgy. At the same time, the combination of methodological tools (individual semi-structured interviews and the Prague Spirituality Questionnaire) provided the finding that spiritual experience only occurred with individuals who had been adjusted to such a type of experiencing. They tended to perceive themselves more introspectively, to reflect on their previous life, to relate to others more authentically, to be open to what happens in the group, and in some cases, to achieve a transcendental experience (unity, integration with nature). The potential for the application of experiential learning towards spirituality has been confirmed by the affinity of certain concepts: the emphasis on direct experience and stepping out of the comfort zone.

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4<sup>th</sup> International Conference on New Horizons in Education

# Adult learning in the context of comparative higher education

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## Abstract

The growing trend in the interconnectivity of knowledge, ideas and change dynamics is not a preserve of the pedagogical process rather, it is fundamentally driven and sharpened by all forms of andragogical processes. Globally, it is observed that the impact of illiteracy is usually transmitted and predicated on the adults in the society. This then measure the extent of stability, peace, cohesion and sustainability of development. The amount of knowledge acquired by the adults in a knowledge society determines the impact of change, adaptation to change and management of change which may be derived from science, economy, environment, technology, education, peace and literacy itself. There is no doubt therefore that adults contribute significantly to the global dynamics of change and development. Hence, the context of adult learning in terms of what, how, when and where they learn is critical to the new education horizons given the divergence in educational ideas from different societies. This paper therefore takes a comparative perspectives on adult learning, change dynamics in adult literacy and the impact as a new stance in educational global best practices.

*Keywords:* Horizons; Adult Learning; Adult Literacy, Comparative Higher Education, Change Dynamics; Best Practices

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## Introduction

Adult learning in the context of comparative higher education focuses on the quantum of knowledge that the adult population acquire to navigate the global challenges of sustainable development. It is evident that education globally is predicted by four core elements, namely; engagement, empowerment, experience and evidence. These are manifest in the adult population who must have been exposed to higher education of divergent interests. The impact of higher education on these four variables of learning can only be measured in terms of the comparative advantage they bear on the adult through their engagement with sustainable expectations, empowerment for self-reliance, experience that is evident in practice. Therefore, comparative education that enables scholars to examine education in one country (or group of country) by using data and insights drawn from the practices and situation in another country or countries. This is with a view, according Noah (1985) and Joubish (2009) must:

- describe educational systems, practices or outcomes that are related to adult learning;
- assist in the development of educational institutions and practices that are adult learner oriented;
- highlight the relationships between education and society that is, evident based learning among adults; and
- establish generalized statements about education that are valid in more than one country such as andragogy and conscientization in adult learning context.

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Given these frame, comparative higher education then serves as means of data generation for the drawing of insights as to what adult learning is able to enhance in terms of engagement, empowerment, experience and evident in all countries of the world.

## 2.1 Adult Learning in Perspectives

While writing on adult learning emerging perspectives on learning, Conlan, Grabowski and Smith (2003) observed that there are conflicting perspectives on adult learning as it relates to and separates itself from pedagogical development practices and overall approaches to learning. This paper does not wish to engage in these conflict of reasoning, rather, the focus is on the fact that, styles of learning are applicable and adaptable to both pedagogy and andragogy with differences evident in the use of the style based on the learning environment which compels a comparative analysis and clarification. In his submission on andragogy, Knowles (1968) was said to have popularized this European concept about three decades ago to mean “the art and science of helping adults learn” (Knowles 1980 cited in Merriam, 2001).

As an art and science of helping adult learn, Merriam and Caffarella (1999) observed that this emerging technology is based on six andragogical assumptions of the adult learner.

- **Need to Know:** Adults need to know the reason for learning.
- **Experience:** Adults draw upon their experiences to aid their learning.
- **Self-Concept:** Adults needs to be responsible for their decisions on education, involvement in planning and evaluation of their instruction.
- **Readiness:** Readiness to take on a new social role as predicting learning
- **Orientation:** As an adult learns new knowledge, the individual wants to apply it immediately in problem solving.

Hence, andragogy is very self-centred and allows the learner to take charge of his or her learning. It is very broad based and the method can be implemented in a variety of educational situation including higher educational settings. This perhaps informs the view of Merriam (1999) that learning opportunities for adults exist in a variety of settings ranging from a formal institution to a place of employment. One therefore submits that the acknowledgement of prior knowledge and experiences of learners; including their ability to recognize their own skills as lifelong learners is critical to any higher educational provision. It is against this expectation that higher education occurs in a corporate environment involving a variety of training processes and as such, trainer facilitators in such environment need to have a working skill set to meet the demands of fast-paced, changing environment as new trends in adult learning involve instructional designers and facilitators becoming long-term assets to training departments in higher institution of adult learning. The direct consequences are for trainer to arrive not only with delivery skills, but also with design experience, application and adaptation of adult learning theories in a variety of settings (Meyer, 2003).

Training in higher education for adult learners is therefore critical in five areas which (Riddle (2000) identified as stimulating creativity, assessing innovation option, focusing on the clientele, designing new learning services and implementing change. Therefore, to address the growing unemployment, economic strangulation, illiteracy and insecurity in our global communities, it is evident that adult learning provides opportunities for engagement (dialogue), empowerment (acquisition of self-reliance skills), experience (literacy development) and evident (adaptation to change and management of change been the end product of a literate and humane society). There is no doubt that adults contribute most significantly to the global dynamics of change, hence, what, how, when and where they learn is critical to the new thinking given the divergence in educational ideals for the attainment of stability, cohesion, and sustainability development that is derived from and predicated on lifelong learning that is essential for sustainable growth and development.

### 3.1 Comparative Higher Education

Comparative education is a fully established field of research which examines education (at all levels) in one country (or group of countries by using data and insights drawn from practices and situation in another country, or countries. Programmes and courses in comparative higher education are offered in many universities throughout the world, and relevant studies and research are published in scholarly Journals. The field of comparative education according to Altbach (1998) is supported by many research projects associated with United Nations Educational Scientific and Cultural Organisation (UNESCO) and national education ministries and universities of various nations.

Besides, the Comparative and International Education Society (CIES) which was founded in 1956 is to foster “cross-cultural understanding, scholarships, academic achievement, and societal development through the international study of educational ideas, systems, practices, innovations and philosophies”. This can only be achieved through higher educational research that is driven by: critical analysis of issues associated with cross-cultural values in education; proper examination of bodies of educational ideas and thoughts; clarification of concepts, terminologies; facts and assumptions held by education comparativist; evaluation of educational ideas, systems, and practices as evident across the globe; synthesis of various schools of thought associated with comparative education and juxtaposition of educational objectives, vision, mission statement, systems, practices and ideas in order to attain a coherent, consistent but generalized statements about education global.

It is therefore valid to apply the tools of philosophical analysis to the discourse on comparative education with a view to ascertaining the influence of an educational system on another in a comparative perspective. This is evident as the field of comparative education, at least in some parts of the world, has drawn strongly on the theoretical bases of the social science. To some extent, Bray (2003) made us to understand that shifts in dominant paradigms within the social sciences have been reflected in shift in the field of comparative education. While this shift led to a rise in positivism in the 1960s and 1970s, as well as the popularity of postmodernism in the 1980s and 1990s (Psacharopolous1990) Epstein, 1994; (crossly, 2000; Paulston, 2000), comparative education scholars in the view of Bray (2003) have tended to use a fairly limited set of tools from the social sciences to gain deeper understanding of this subject matter (Rust, Soumare, Pescado and Snbuya, 1999).

### 3.2 *In the Beginning of Comparative Education*

To place on scholarship reasoning, it is critical to sketch some dimensions of the historical evolution of comparative education. It is commonly noted that the origins of a clearly defined scholarly activity of comparative education lie in 19<sup>th</sup> century France (Berrio, 1997; Leclerg, 1999). Bray (2003) also reported that the field then spread to other parts of Europe and the United States of America (USA) before been entrenched in other parts of the world.

Another view has it that the field of comparative education has multiple origins (Halls, 1990; Zhang and Wang, 1997; Bray and Gai, 2001), but it is not a controversy to state that, significant scholarly work was developed in Europe and the USA as the first university level course on comparative education held in 1899 as taught at teachers college, Cohumbie, USA (Bereday 1964a) and a famos 1900 speech by Sir Michael Sadler in the UK (Sadler, 1900). Other research as include those of Yu (1917), Standford (1918) and Kandel (1935) which focused on china, Germany, France, UK, the USA, Canada Denmark and Russia respectively.

Most importantly, irrespective of the origin and the scholarly work already done, a global body in comparative education, that is the World Council of Comparative Education Societies (WCCES) was formed in 1970s as evolved from an International Committee of Comparative Education Societies as convened by Joseph Kata of the University of British Columbia in Canada in 1965 (Epstein, 1981). The WCCES is a body of five continental based comparative education societies namely:

- (a) The Comparative & International Education Society (CIES) of the USA, founded in 1968;
- (b) The Comparative Education Society of Europe, (CESE), founded in 1961;
- (c) The Japanese Comparative Education Society (JCEs), founded in 1964;
- (d) The Comparative & International Education Society of Canada (CIESC), founded in 1967; and
- (e) The Korean comparative Education Societies (KCES), founded in 1968.

As at 1998, the WCCES had thirty-one constituent societies, while six had ceased to exist by 2001, additional five from the Asian region had joined the council. The most obvious academic activities of the WCCES have been the organization of periodic World Congress of Comparative Education with the first of its kind held in Canada in 1970s, followed by ones in Switzerland (1974), United Kingdom (1977), Japan (1980), France (1984), Brazil (1987), Canada (1989), Czechoslovakia (1992) Australia (1996), South Africa (1998), and South Korea (2001), Cuba (2004) among others (Bray, 2003). The WCCES therefore serves as an advocacy body that is affiliated to UNESCO an a Non-governmental Organisation (NGO) with focus on interconnectivities of global educational institutions and ministries.

However, the mission of comparative education in a globalised educational environment particularly, that which conceives adult learning within the foci of the core educational elements as noted in (Sanz 1998, Burbules and Torres, 2000; Tickly, 2001; Welch, 2001; Camoy and Rhoten, 2002) must recognized the following issues:

- **Analytical framework:** that is, the location of nation-to-nation comparisons in wider spectrum relative to divergences based on geographical locale.
- **Units of analysis:** that is, the inadequacies prevalent in the traditional ranking of nation in comparative view is becoming unrealistic due to globalization.
- **Focus on cross-border international education:** cross-border transaction in international education has become an important issue of research in higher education itself. Such transaction raises questions about the identities of adult learners, about the attribute required for facilitators, institution and systems. Issues of comparative interest include tensions between pedagogical practices- and national cultures, andragogical pace of multi-media learning communities:
- **Forms of identify-** Globalization opens up a new potential for forms of identify other than national identity. The traditional focus on the nation-state downplayed supranational cultural and religious identities which limits intra-national regional variety in adult learners participation, resourcing and outcomes.
- **Globalization at the National Level-** Modern education systems are still organized locally and nationally, subjected to national regulation. The trends of increased mobility and cosmopolitanism have major implication for policies on the preparation of citizen in education, particularly in terms of engagement, empowerment, experience and evidence or practice.

Therefore, it is important that comparative higher education takes into account the global influence in the organization and training of adult learners for individual learning engagement and empowerment.

#### 4.1 Adults Learning for Inclusion And Employment

The Comparative Index no doubt, we are in a globalized world driven by knowledge society. The basis of adult learning for any comparison is best explained in its goals of inclusion and employment. That is why, this paper has consistently harp on engagement, empowerment, experience and evident. It is also obvious that all adults have their wealth of experience, but to deploy such asset will depend on motivation and conviction that the outcome is worthwhile. Consequently, eventhough there is no universal formulation of the goals of adult learning, some notion do arise frequently in policy documents. For example, organization for Economic Cooperation and Development (OECD) noted that there is ample agreement that adult learning somehow serve the objective of inclusion or social cohesion (OECD, 1997), and thus the fights against the exclusion of individuals and groups from society.

Also related to this social inclusion is the prevention of conflict, referred to as “learning to live together” (UNESCO, 1996) as well as education for a culture of peace (UNESCO, 1997). A critical analysis on the objective of inclusion is central to the attainment of sustainable development. Ravens (1999) wrote that inclusion can be pursued on three levels, namely:

- **Economic-** participation in the labour process, which also define positive engagement in rewarding activities;
- **Social-** full participation in social life aptly contextualised as empowerment in all ramifications of life; and
- **Civil** participation in the democratic process, which defines experience and evidence.

These three levels or domains of participation relate to one another as economic participation is the basic. It is essential, according to Ravera (1999) to survival on a minimum level of prosperity and enhanced individual participation socially. This, in turn, is both a goal in itself and a condition for the higher goal of participation in democratic processes which ultimately constitute the premise of adult learning.

Adult learning is therefore critical for the sustenance of knowledge society. This has been positively acknowledged as new ideas about the creation of knowledge and competencies have come into focus. Nonaka and Takeuchi (1995) have drawn the attention to the fact that knowledge is not only found where looked for during research work in laboratories and libraries. Knowledge as evidence is often the unintended and even unnoticed result of interaction in the work place between colleagues, between suppliers and customers and between various actors in the social systems. Besides, learning as a creation of competencies is an ongoing process in the flow of work and strategies which can be designed through higher educational programmes to further improve the work place as a learning environment. There is therefore the corporate curriculum which Kessels (1996) emphasizes as the motivation area of the learning triangle.

#### *4.2 Adult Learning for Inclusion And Employment: Comparative Case Studies*

In Germany and the Netherlands, the sector (a collection of firms in the same branch of industry) is more than elsewhere. This provides an important level for the co-ordination adult learning, education and training. This sector level thus provides economies of scale which serves as a potent platform for influencing the content and requirements of regular vocational tertiary education.

In Anglo-Saxon countries, the training of workers (adult learner) is on the average- more under the influence of the market mechanism than elsewhere in the world. Government tends to leave work-related higher education to the forces of the free market, more than elsewhere, as the learners own financial contributions are generally higher in comparative context to the German and Dutch experience.

In France the training system is state driven as there is a role for the sector-level and the market. Still, France has distinguished itself by a public policy that set a clear national framework for *education permanente*. For example, the 16 July 1971 Law stipulates that firms (where adults work) should financially contribute to adult learning and that empowered individuals to participate in training activities at the tertiary level. Such policy supported lifelong learning policies among adults of different segments of the French society. Nevertheless, a more recent French policy instrument, designed for young adults (age 16-25) is the credit formation individualist of 1989, which, by the way, resembles the system of youth training credits in the United Kingdom (1990). These learning policies instruments are more realistic and affordable than lifetime learning and also seem to run lesser risk of misallocation than the French, Australian and Dutch fund approach.

Meanwhile Ravens (1999) recalled that the Japanese system of vocational education and training (for adult learners) resembles the Anglo-saxon system, which is the result of the US influence after world war II. The Japanese's system is guided by a philosophy of lifetime employment in large enterprises. Once an individual gets a job, one is confident to have it for lifetime and to enjoy all the privileges that comes with it, such as lifelong learning of higher orientation. However, in the Japanese culture, learning is regarded as something geared at spiritual development rather than utility. Thus, the high Japanese standards of productivity and quality are mainly the result of the organization of the work process and of the dedication and loyalty of the adult worker.

In Nigeria among other African nations, the philosophy of higher education for adult learning is that of self-reliance development through empowerment that is attained by learning specific skills and driven by public policies. Higher education for adult learning also address the issue of egalitarianism, self efficacy, fundamental human right, good governance as enshrined in democratic value and social justice.

In New Zealand, Findsen (2006) wrote that tertiary education sector embraces all learning that occurs in the post-school world. It covers all forms of adult learning and training in all training establishments, workplaces and local communities. According to the New Zealand Tertiary Education Commission (TEC, 2002), there are six goals for a more collaborative and cooperative tertiary system of learning for adults. These are:

- Economic transformation;
- Social development;
- Maori development;
- Environmental sustainability,
- Infrastructural development and
- Innovation.

All these goals fall in the domain of andragogy and not necessary pedagogy as these expectations are consistent with the andragogical framework for higher education. Findson (2006) then noted that, aligned with the goals above are some strategies among which are:

- strengthen research, knowledge creation, and uptake for our knowledge society;
- develop skills New Zealanders need for our knowledge society;
- educate for pacific people's development and success
- raise foundation skills so that all people can contribute to our knowledge society; and
- strength system capability and quality.

The example of New Zealand higher education provision aligned with Ravens' (1999) perspective of adult learning for total inclusion in terms of social, employment and participation in socio-economic activities.

#### *4.3 On Adult Learning And Inclusion Debate*

The justification for adult learning in the context of comparative research, knowledge creation and uptake of knowledge for a literate society is highly justified arising from challenges below.

Indeed, Chang (2008) contended that, universities are at an important crossroad. They have the critical mass for making the potential difference to critical global needs with a leaner population of 200 million by 2030. While higher education have to produce graduates who have skills to operate effectively in a globally competitive environment, it is also widely recognized that their fundamental challenge is to provide an ethical knowledge base (through adult learning) responsive to societal needs, and so contribute to the common wealth (not just financial or economic wealth), and social-well-being; where, social-well-being is a function of equity, employability, efficiency, flexibility, social demand satisfaction and other variants of immeasurable items.

Re-focusing the role of universities; the way knowledge is being produced, including a review (through comparative analysis), of what knowledge is essential in building what kind of society as well as how higher institutions define their role in this regard, is indeed necessary and critical if tertiary institutions are to be of any relevance to society.

Statistically, the current modern capitalist economy while enhancing considerable benefits for many people in terms of longer life expectancy, more access to learning facilities, more equality in terms of gender, race/ethnicity, class etc, more consumerism and consumer choice, and some extension of guided human rights and political freedom; it is also evident that the system has brought about much disparity, destruction, hatred, and exclusion of many people. Some of this destruction manifest in various forms of violence, loss of cultural diversity and critical fundamental values, human/psychological insecurity, terrorism, competition and increasing consumerism, materialism and individualism.

Ramonet (1999) reminded us of more evidence of such worsening inequalities and exclusion which higher education needs to address in its' re-envisioning process. According to Ramonet (1999), exclusion is overwhelming as two hundred and twenty-five (225) of the richest people in the world had a combined wealth of more than 1 trillion equal to the annual income of the poorest 47% of the earth's population estimated at 2.5 billion people. As at today, consumption has increased six-fold in the last twenty-five years and doubled in the last fifteen years. Yet one billion out of the 2.5 billion have been left out of the consumption boom of the past 20 years. While, over 20% of the world's population accounts for 86% of global consumption (UNDP, 1998), people in Europe and North America spend \$37 billion a year on pet food, perfumes and cosmetics with its attendant health risks. Comparatively this same amount is enough to provide basic adult education, water and sanitation, as well as basic health and nutrition to all those who are now deprived of these needs particularly in developing and under-developed economies and still leave \$9 billion.

One is also aware that among 4.4 billion people in developing countries, almost three in every five lack basic education, a third have no safe drinking water, a quarter have inadequate housing; and a fifth are undernourished

(HDR, cited in Huckle 2002). Indeed, in a comparative analysis, UNICEF (1999) recorded that nearly a billion of people entered the 21<sup>st</sup> century unable to read a book and/or sign their names. Hence, inequality, poverty, insecurity and exclusion are pervasive despite the abundance and prosperity amongst some of us.

My submission is that adult learning of higher education programming on inclusion is capable of bridging the existing gap between exclusion and inclusion. This is on account that, exclusion is not just a lack of material resources. It is, according to Walker and Waker (1997) “the dynamic process of being shut out, fully or partially from any of the social, economic, political or cultural systems which determine the social integration of a person in society”. (p. 8). Today, people are excluded not only from access to education and learning, health, work or resources like land, but, from life itself. The forces of economic, social, technological, globalization, and political control over the majority world by forces of global capital have generated and continue to evolve new forms of exclusion and disempowerment.

### 5.1 Conclusion And Hypotheses

In conclusion, adult learning has its’ comparative efficiency in the management, if not, elimination of exclusion through the development and implementation of appropriate higher education strategies which must focus on re-inventing the core element of adult learning in a knowledge society. These elements are engagement, empowerment, experience and evidence. Comparative higher education that addresses adult learning provisions, policies and programme across international frontiers within the framework of the above will

- ensure a deliberate creation of awareness and commitment among all learners to be personally and collectively engaged for economic reasons and job-oriented learning;
- bring about personal and collective empowerment among adults for social inclusion in decision-making and civil advocacy for effective participation in knowledge society;
- ensure full active participation in the democratic processes that influence good governance, equality, transparency, accountability and participatory development;
- promote experiences that can be brought to bear in adult citizens’ collective engagement in the work place and social systems;
- be evidence based in practices and attainment of the variants of social-well-being as encapsulated in the UN millennium Development initiatives.

The task before comparative higher education in adult learning in all parts of the world must be research, centred in areas of multiculturalism and interculturalism programmes to combat illiteracy, the balancing of vocational and general adult education, care for target groups such as migrants regionalization of adult learning and strategic international and comparative research.

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**Appendix A. 1: Global Demand for International Higher Education ('000)**

<b>Region</b>	<b>2000</b>	<b>2005</b>	<b>2010</b>	<b>2015</b>	<b>2020</b>	<b>2025</b>	<b>Growth (%)*</b>
Asia	759	1141	1761	2534	2598	5004	7.8
East Asia	453	698	1059	1565	2319	3389	8.4
South East Asia	148	185	265	356	467	586	5.7
South Asia	110	191	349	501	676	869	8.6
Central Asia	48	67	88	112	136	161	5.0
Africa	169	219	283	362	464	561	4.9
Sub-Sahara	99	127	168	222	295	371	5.4
North Africa	69	92	115	140	168	189	4.1
Middle East	113	143	182	229	286	327	4.3
America	146	167	194	225	260	287	2.7
Europe	568	636	719	804	879	963	2.1
Oceania	8	9	10	12	13	13	2.0
World	1763	2316	3149	4165	5500	7155	5.8

(\* Represents Annual Compound Growth Rate 2000-2025)

Source: Bohm, Davis, Meares & Peace (2002). IDP Australia

4<sup>th</sup> International Conference on New Horizons in Education

# Analysis for why the emphasis of China's higher education research is theoretical speculative

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## Abstract

China's higher education research showed the characteristics of great importance to theoretical speculation. The reasons for this phenomenon are three aspects—traditional culture, social culture, researchers own: The impact of traditional culture expresses as the cultural tendencies of contempt for rational inquiry and empirical spirit, and a tendency of fuzzy thinking; Social structure's effects perform the tendencies of "convergence" of the same class and the influence of official position of different classes; The impact of the researcher's own expresses as the intervention for the higher education research orientation by survival inner anxiety generated by the pressure to survive and the further developed pride.

*Keywords* : Higher education research; Theoretical speculation; Traditional culture; The pressure to survive

China is recognized as a great power of higher education research. Compared with the western research, the study of higher education arose in China with a unique subject form. Since 1978, from small to large, China's higher education researches create fruitful works. Every year tens of thousands of research papers are produced in recent years, professional researchers reach into the thousands, research institutions blossom everywhere on the land in China(Hu Jian-hua, 2003). It appears from the analysis of the history of our higher education that China's higher education research showed mainly the main theoretical speculation characteristics(Ding Xue-Fang & Zhou Yan, 2009). Theoretic reasoning is logically suitable for some great master who is in the field of research for many years with rich experience in person. They can write their own unique thoughts with many years of research experience. Why has the study of higher education in China shown widespread speculative tendency? For the analysis of the reasons, we can carry out from three aspects—the vertical time, the lateral environment, the inner self. Specifically, it appears as the influence of Chinese traditional culture, the characteristics of Chinese social structure and the researcher themselves.

## 1. Longitudinal analysis of time—the influence of Chinese traditional culture

Although the feudal traditional culture has been greatly weakened its influence in the impact of modern China's social revolution, reform and the ideological trend of western culture, the accumulation of thousands of years has deepening in Chinese people's mind, in academic research also shows its traces, the main impact lies in culture tendency and mode of thinking.

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### *1.1. Influence of cultural tendency*

The Chinese traditional culture with Confucian culture as the representative has a contempt for rational inquiry tendency and positivism. The Mohist in old China's Spring and Autumn period has attention to experimental and logical manner, and holds some scientific and technological achievements, but is defeated in the contest with Confucian. This is one of the reasons that caused the backwardness of the modern science and technology in China. Even in the higher education research area for which China has originality, the Confucian culture has also affected the development of positivism. China's traditional culture pays most attention to maintain social stability and personal accomplishment raise, but despises the quest for the truth of nature and precise logic. And the characteristics that higher education itself have the uncertainty and complexity make the cultural tendency more easily recognized. Another point is the tendency of justice hold by Chinese traditional Confucianisms who show disdain for the utility and efficiency, which is inconsistent with the scientific demonstration with pursuit for efficiency and innovation. This makes the China's study of higher education show a trend of humanity research rather than scientific research.

### *1.2. The influence of the way of thinking.*

Chinese traditional culture showed a way of thinking that pays attention to the global rather than the local, focuses on the fuzzy rather than the precise. Most of outstanding researchers in this country's history tend to present exquisite views on social life and the universe at the station in the commanding heights of the thinking rather than to carry on the empirical explore for a microscopic world. In the Chinese traditional culture, we can find such characteristics: The ancients actively promote comprehensive thought but take a certain escape attitude for careful analysis. This way of thinking helps to grasp the research object as a whole but easily lead to a superficial understanding. Especially when higher education research relates to education, economic, political and other factors, to grasp the convex overall shows that we are good at comprehensive strengths, which is helpful to the study of macroeconomic theory but in the concrete has not close contact with reality. Another point, with the fuzzy thinking mode in Chinese traditional culture, polysemy, ambiguity, puns and other characteristics can be found in Chinese words, which is a sharp contrast to the accuracy of western language. This also makes the research of our higher education easy to lose accuracy and be less empirical.

## **2. Analysis of lateral environment—The impact of China's social structure**

The study of higher education in a country must be affected by the government, constitution and characteristics of social structure. Although China is a socialist country, but the traces left by feudal rules of thousands of years still reflect in the layout of social structure and the idea of Chinese people by an implicit way. China's current society inherits the traditional way of composition in a certain extent, with a performance of distinct hierarchical distribution structure. As the society has performance for the "convergence" tendency at the same level, its members have a common mode of thinking and living. And between levels, it shows a higher management level of official standard, the upper class is responsible for the lower classes, lower must obey the arrangement. The two characteristics make a quite impact on the study of higher education in China.

### *2.1. Effects of "convergence" tendency in the same class*

The empirical research not only requires a group of experts and scholars who pay attention to practical problems, but also need that social ethos is in favor of academic research. China's lack of the pursuit of individuality and the atmosphere of pluralism existed in western society. Academic researchers and ordinary people are considered to be two different classes that are separate in ordinary people's consciousness. Chinese people generally believe that academic research just exists in the ivory tower, and social life, which has a set of intrinsic mode, does not need to be studied. As you can imagine, when researchers full of enthusiasm go to interview and survey, often get the disdain with wondering eyes. Even if there is willing for some partners, they will take this as a joke, not serious. This will not only affect the validity of the empirical research results, another recessive negative effect is to make the researchers take a blow, which drives them into the ivory tower. You can say that, empirical studies require researchers and the public closely linked, but the intentional or not separation in the conception of people makes study orientation towards theory thinking direction that does not need the close connection of them.

### *2.2. The influence of official position of different classes*

Because of the reason of history and social reality, a lot of people in China have thoughts of official position, academic field is no exception(Han Qing-xiang, 1996). Theoretical interpretation is a speculative forte for officials to write a report, which are inseparable with the nature of work of the administrant. As academic and administrative areas have a close relation in China, the ideas of official position easily appear in academic field. The thought of official position—He who excels in study can follow an official career—affects the development of higher education research as in other academic areas. In addition to academic studies, often there are also significant demands on administrative affairs for researchers in China. A lot of scientific research personnel have administrative duties, in turn many administrative staff have contribution in the field of academic research. This feature is more apparent in the field of higher education research that involved many administrative aspects. The effect of administration for researches also reflected on their research orientation, makes it present the characteristics of "the administrative style", which makes a favor for theoretical research related to administrative work. But it is important to note that this should be apart from some behaviors that mean to get academic achievements with administrative power, which affect the quality of academic achievements rather than orientation of research.

## **3. The problems of researches themselves—anxiety and arrogant**

In addition to historical and social reality, the researcher themselves also is an important aspect that affects research orientation. Compared with western researchers, the contact between academic research, the survival and development of researchers appears to be closer in China. This is inevitable when our country is still in the primary stage of socialism. When we take academic study, we can not only meet the curiosity and thirst for knowledge, but also consider the reality of existence and the influence on research mentality. In China many

researchers' inner have two complexes—*anxiety* and *arrogant*. The role of *anxiety* stems from the survival pressure, *arrogant* bases on the superiority of winners and self-comfort on losers. The two seemingly very different mindsets have a common root—the pressure to survive, which encourages higher education research orientation towards theory thinking direction that is relatively easy to get results .

### *3.1. The effects of anxiety*

When compared the Chinese higher education research with American, we can see that higher education research in the United States is based on the researchers' interest, which can extend to the whole style and feature of academic research in America with abundant financial resources and support of relaxed political atmosphere. While our research on the one hand is affected by the political and social intervention, on the other hand, by the survival and development of researcher themselves. Most, especially young, researchers' first target for research is trying to remove the inner anxiety that comes from the survival pressure, rather than meet the thirst for knowledge, which embodies on the research achievements a certain academic fickleness derived from the researches' existence. Paper production of higher education research in China is great, but the quoted rate is not high. While there is no lack of wisdom spark collision in the crystallization of researchers' hard work, keen critics put forward that there is a feeling of armchair strategist. Nowadays the general mood of society of utilitarianism also increases the impact that manifests the phenomenon of quick buck in academic research field. Theoretical speculation is apparently more convenient than empirical research as the former just requires the researchers focus on literature analysis and design train of thought, without requirements for money, interpersonal relationship, transportation and so on that empirical study needs, so gets popularity.

### *3.2. The influence of arrogant*

The researchers who strive for survival usually get two results. One is successful to get enough resources for survival, then the superiority compared with someone who not. The other is to fail in the competition because of various reasons, and the comfort for themselves with a lofty academic attitude. Both are prone to generate arrogant that belong to researchers. In addition, the fashion of “Burnished inferior, only to read.” in China also partly constitutes the cause of the focus for theoretical speculation on higher education research in our country. Mentioned earlier, the researches engaged in research for many years are suitable for the work on the theoretical analysis as they have rich experience and profound thoughts. But nowadays many young researches, including some students, think themselves also have the qualification to grasp the higher education research in a macro view. They easily lost themselves in their works and ignore the disadvantages. Yet we also cannot against young people on the study of theoretical speculation. As less constrained by traditional culture, they tend to be easier for innovative research. Construction of references

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4<sup>th</sup> International Conference on New Horizons in Education

# Analysis of Latvian organizational culture in relation to leadership gender roles

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## Abstract

The paper is concerned with the investigation of organization culture and it sees organization as a complicated social mechanism, which is an especially topical issue in matters of state administration. Many researchers consider that organization culture is the principal potential for the survival of an institution, because organization culture is a factor that creates a sense of security and stability among the employees, it shows why people become members of this organization, how their mutual relationships are formed, what norms and principles of organization life and activities they adhere to; what, to their mind, is good or bad, and what image about the organization in general they present to a wider public. Besides, the quality of organization culture, being a substantially specific essence that affects the employees' motivation, often shows how the organization copes with the problems of external adaptation and internal integration.

The authors of the paper study these essential issues in relation to the problem concerning the competence and ability of contemporary women to occupy leading and important positions, which is often questioned in the labor market. The prevailing opinion as well as the existing perceptions and stereotypes about a male as a more capable organization or institution manager than a female, and also the perception that there is a connection between gender-roles and the quality of organization culture served as the basis for the selection and detailed analysis of this research theme.

The "OCAI" methodology developed by Quinn and Cameron (Cameron, Quinn, 1999) was applied in the research on organization culture. The authors analyze the connection of organization culture with gender-roles of managers in various institutions of Latvia and evaluate other criteria of the organization profile as well – determine the criteria of the organization effectiveness, clearness of strategic goals, award system, the prevailing atmosphere in the organization, whether the organization complies with its goals or whether the culture of the organization has to be changed so that it should comply with its goals and should be effective.

The research comprised 20 various state and local-government institutions with similar spheres of activity – 10 of them were managed by men, 10 – by women. Besides, the research involved 357 respondents: 174 employees – women, 183 employees – men. To make a more detailed analysis of the data, all respondents were subdivided into 3 age-groups: the 1st group – from the age of 25 to 34; the 2nd group – from the age of 35 to 44; the 3rd group – older than 45.

To help the institution managers better understand their professional activity at creating the organization culture of the institution, in this research, the authors of the paper underline the role of gender differences and the influence of the employees' age- criterion at resolving such problems.

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Keywords: manager, gender roles, gender differences, organization culture, quality of organization culture.

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## 1. INTRODUCTION

Gender integration is one of the principal strategies adopted by the European Union and its member states in order to achieve gender equality. Latvia is among those European countries that already in 1918 recognized that both sexes have equal rights to hold leadership positions in state administration institutions. In Latvia, women hold 41% of leading positions in various institutions and enterprises. It turns out to be the best indicator in the European Union, because even in Great Britain this number is only 35% and in the EU 32% on the whole (Latvian Statistics Year-Book, 2004).

At involving women in the administration of institutions and organizations the usual “gender division of labor” stops to be universal. It appears that men and women are able to do different jobs equally well, and changes in the nature of activity inevitably affect psyche and self-confidence (Hofstede, 1980).

There is no proof that female and male characteristics as such really exist. All attempts to generalize the leadership traits or abilities that would be typical only of women and never of men have failed at a more detailed investigation (Adair, 2002).

The prevailing opinion, as well as the common perceptions and stereotypes in organizations, that a man is a more capable leader of enterprise or organization than a woman, and also the perception that gender roles relate to the quality of organizational culture have provided the basis for the choice and a detailed analysis of this research theme.

Having studied the scientific terminology used in different sources (Ashmore & Del Boca, 1979; Mead, 1985; Basow, 1992; Bern, 1993; Paludi, 1999; Paludi, Paludi & Doyle, 2000), we have come to the conclusion that the words “gender” and “sex” are often used synonymously. However, the differentiation between them is significant in principle: sex is a systemic set of biological qualities which differentiate a male from a female, but gender is a social sex, thoughts and identities determined socially. Consequently, fields of activity involving men and women do not depend on sex differences but rather on the social organization of the society.

As the gender does not come from nature but has been developed socially, it determines the development of self-confidence and self-determination. Gender identity is a basic, fundamental sense of one’s belonging to a definite sex/gender, of being aware of oneself as a male or a female. Quite possible are cases of gender identity “re-coding” from female to male and vice versa, thus taking upon oneself the needed social gender role model. This phenomenon is often observed in leader roles, which affects the peculiarities of organizational culture.

Gender stereotypes, that are views about inherent female and male qualities, are based on prejudices, uncritical assumptions and non-objective evaluations. Just gender stereotypes often provide the basis for gender

discrimination, denying the representative of one or the other gender the right to choose a specific employment or behavior (Ashmore & Del Boca, 1979; Basow, 1992; Neimanis, 2004). Gender stereotypes instruct what a man and what a woman should be like. If people do not conform to these traditional stereotypes, they may experience a negative attitude towards themselves.

Gender stereotypes tightly relate to social norms that regulate the behavior of people in the society. Sets of norms that contain aggregated information about qualities characteristic of each gender are called gender roles. European stereotypes involve assumptions that a) men are more oriented to authoritarianism, women – to democracy; b) for men, the directive management style oriented towards problem solving comes easier, for women – interactive management, and they often underline the contribution made by their subordinates, quite often diminishing the importance of their own role for a common result, which, thus, creates the “team spirit” and promotes the growth of employees.

The gender role, the leader has taken on in the organization he/she manages, determines, to a great extent, the quality of organizational culture.

In studies by different authors (Hofstede, 1980; Schein, 1992; Brown, 1998; Cameron, & Quinn, 1999; Black, 2004 etc.), organizational culture is viewed as the basic potential for organization life, because organizational culture is just the thing that creates the sense of security and stability in the employees, it shows what is it the people become members of this organization for, how their mutual relationships are formed, which stable norms and principles of life and activity of this organization they observe, what perceptions about the organization in general they spread in the society.

In the initial empiric research on organizational culture (Dalton, 1959; Sayles, 1964; Stewart, 1967a, 1967b; Reddin, 1970; Mintzberg, 1975; Handy, 1976), it has been treated as the instrument for motivation to encourage the employees to work properly and, thus, to increase the productivity of labor in the enterprise. The findings of the above mentioned research have confirmed that within the organizations there exists a special substantial essence which affects employees' motivation.

Further research (Cameron, Quinn, De-Graff & Thakor, 2006; Waterman; Ouchi, 1978; Deal & Kennedy, 1982; Ouchi & Wilkins, 1985; Parker, 2000) paid a special attention to various traditions, customs and rituals practiced in the organization, and the distinction and evaluation of external features of organizational culture started to be studied.

The research by G. Hofstede (Hofstede, 1980; Hofstede, Pedersen & Hofstede, 2002) and A. Berio (Berrio, 2003) comprised demographic indicators: sex, age, and also profession and length of service in the organization. The authors came to the conclusion that from his/her national culture an individual receives a series of attitudes in the form of fundamental values and that these attitudes apply to all spheres of individual's life, including the organization he/she works at.

In “*Organizational Culture and Leadership*” E.H. Schein (Schein, 1992) has distinguished indicators for determining a much wider organizational culture: behavioral stereotypes and human cooperation; group norms; declared values; formal philosophy of a group; game rules at working in the organization; climate in the organization; the existing practical experience of organization members; way of thinking, mental models and/or linguistic paradigms of organization members; psychological compatibility of organization members; “base metaphors” or integration symbols used in the organization.

The comprehensive nature of organizational culture, like a specific social adhesive, holds all employees together and gives the employees the sense of shoulder and guarantees them social support (Schein, 1992). In his work E. H. Schein describes how organizational culture develops: he speaks about four ways of the development of organizational norms, basic assumptions and values:

1. Organizational culture is developed by leaders of the organization. The employees gradually start imitating the behavioral style, manner of speech and behavior, customs of leaders and, of course, adopt their values;
2. The development of organizational culture is influenced by critical moments and situations of crisis, which directly relates to the indicators of its development and effectiveness;
3. Organizational culture (especially customs, norms and rituals) is determined by the necessity to achieve certain job results and success level;
4. Organizational culture is formed by the internal environment which determines its forms and specificity of activities in the field.

If we speak about the factors of the development of organizational culture in perspective, it is especially vital to emphasize the uniqueness of organizational culture: according to K. Cameron & R. Quinn (Cameron & Quinn, 1999), the success of an organization depends on such unique abilities of organizational culture as: to reduce the level of uncertainty in the organization, to establish public order, to ensure integrity, to create a feeling in people that they belong to the organization, a feeling of loyalty to a common cause; to create a vision of future.

At analyzing various classifications of organizational culture (Harrison, 1972; Denison, 1990; Cameron, Quinn, 1999) the authors of this research base themselves on the conception by K. Cameron and R. Quinn (Cameron & Quinn, 1991), paying attention to types of organizational culture in relation to the peculiarities of leadership gender roles.

**Research object:** types of Latvian organizational culture.

**Research aim:** to investigate the relatedness of types of organizational culture of Latvian organizations to leadership gender roles.

**Research question:** how do the types of organizational culture relate to leadership gender roles in Latvian organizations?

## 2. METHODOLOGY

To make an analysis of organizational culture types in relation to leadership gender roles, an investigation in 10 different organizations with similar field of activities (state and municipality establishments, including educational establishments) and functioning in different regions of Latvia (Latgale and Vidzeme) was carried out in 2012. As regards to leadership gender roles, the organizations were selected according to the following distribution: five with predominantly male gender roles in leadership and five with predominantly female gender roles in leadership. The gender roles were determined by using a survey of employees of the above mentioned organizations.

The relatedness of the types of organizational culture to leadership gender roles was studied by employing "OCAI" methodology for determining the organizational culture type developed by K. Cameron & R.Quinn (Cameron & Quinn, 1991), because to our mind this methodology is the most appropriate for studying the current situation in Latvia.

K. Cameron & R.Quinn (Cameron & Quinn, 1991) distinguish four organizational culture types:

1. *Clan culture* is characterized by a great unity, by a complete unity of the collective, by common goals and values. The basic assumptions of a clan culture are as follows: the best results can be achieved by working in a team and increasing employees' efficiency; the main task of management is to delegate authority to employees, which would contribute to their loyalty to the job and organization.
2. *Adhocracy culture* has structures that can be quickly re-configured, thus adapting them to new conditions. The basic goal of this type of organization is to speed up the process of adaptation to situations which are typically uncertain, ambiguous and/or overloaded with information, thus ensuring flexibility and creative approach to work. Adhocracy does not use centralized power and authoritarian interactions: the emphasis is laid on individuality, on encouraging risk, on creativity in work, which would promote the implementation of innovative ideas. Great importance is attached to readiness for changes in environmental conditions, to a future perspective within the context of a sustainable development of the organization.
3. *Market culture* is oriented towards results, profit increase, ultimate results, forces on the market and a stable base of consumers, which on the whole characterizes an aggressive strategy. Criteria of effectiveness in a market culture are: achieving the goals, winning the competition, increasing a market share and the level of a financial turnover.
4. *Hierarchy/bureaucratic culture* is characterized as a formalized and structured work place: all human activities are managed through procedures; the organization work is based on formal rules and official policy. Criteria of effectiveness in hierarchy/bureaucratic culture are: profitability, everything done in due time, smooth functioning and predictability.

The differences between organizational culture types according to the criteria by K. Cameron & R.Quinn (Cameron & Quinn, 1991) are presented in Table 1.

Table 1. Differences between organizational culture types according to uniform criteria

Criteria	Clan	Adhocracy	Hierarchy/ bureaucratic	Market
<b>Structure</b>	Team work	Short-term, dynamic (project principle)	Rigid, hierarchic specialization	Individualism
<b>Typical goals</b>	Positive psychological climate	Rapid growth and offering of unique goods	Equability, stability of the organization	Profit, achieving goals
<b>Leader's type</b>	Educator, parent	Stimulating creative processes	Organizers	Good employers, fierce rivals, exacting
<b>Employees</b>	Having social needs, collectivists, those who can and wish to work in a team	Creative	Like a stability, do not like to undertake initiative	Individualists, active, ambitious, having initiative
<b>Dominant values</b>	Loyalty, traditions	Innovation, ability to predict	Stability, internal control	Competitiveness, productivity
<b>Oriented to</b>	Internal environment	Future perspectives	Fulfillment of the procedure	Environment, results
<b>What success ensures</b>	Team work, collective decisions	Creative approach	Relatively low costs, stable quality	Aggressive policy, orientation to market needs

“OCAI” methodology allows determining the type of organizational culture and helps to see the general picture of how the organizations work and to what values priorities are given in them.

### 3. SAMPLE

357 respondents took part in the questionnaire survey: 174 employees – women, 183 employees – men, which makes up 90% of all those working in the organizations participating in the survey. To make a more detailed analysis of the obtained data, all the respondents were split into three age groups: the 1st group – from 25 to 34; the 2nd group from 35 to 44; the 3rd group – over 45.

### 4. RESEARCH RESULTS

On summarizing the data according to “OCAI” methodology, the types of organizational culture were determined depending on the predominance of male or female gender roles there:

Table 2. Types of organizational culture depending on the predominance of male or female gender roles, expressed in percent (N=357)

<b>Organizations with a predominantly female gender role in leadership</b>		
<i>Organizational culture types</i>	<i>Present culture</i>	<i>Preferable culture</i>
Clan	11	18
Adhocracy	15	22
Hierarchy/bureaucratic	29	28
Market	45	32
<b>Organizations with a prevailing male gender role leadership</b>		
<i>Organizational culture types</i>	<i>Present culture</i>	<i>Preferable culture</i>
Clan	16	11
Adhocracy	9	16
Hierarchy	21	34
Market	54	39

The data obtained show that in organizations with a predominantly female gender role in leadership the prior present type of organizational culture is a market type (45%). This implies that a) the organization is results-oriented; b) the main thing is the fulfillment of the set goals; c) the employees of such organization are purposeful and compete with among themselves; d) the leader is strict and demanding. In the assessment of a preferable culture the priority was also given to a market organizational culture type (32%). As the least important type of organizational culture, both present and preferable, in organizations with predominantly female gender role in leadership, the respondents mark clan organizational culture type (11% and 18% respectively). This means that in organizations with a predominantly female gender role in leadership such things as the consolidation of the collective, team work, and delegating work tasks to others are not much supported. These results are in contradiction to the stereotypes dominant in the society concerning the peculiarities of a predominantly female leadership.

What concerns the organizations with a predominantly male gender role in leadership, the prior type of the present organizational culture is also a market type (54%), the preferable type of organizational culture is also a market type, but with a lower percent indicator (39%). As the least important present type of organizational culture the respondents mark adhocracy (9%). This implies that in organizations with a predominantly male gender role in leadership, such things as uncertainty, ambiguity and overloading with information, encouraging risks, creativity in work that would promote the implementation of innovative ideas are not much supported. In

respondents' opinion, the least important preferable type of organizational culture is a clan type (11%), which agrees with their opinion concerning the organizations with a predominantly female gender role in leadership.

If we speak about a hierarchy type of organizational culture, organizations with a predominantly female and male gender role in leadership yield almost similar results, and they make up almost a third of respondents' extractions. This testifies to the fact that the employees do not want to have a formalized and structured work place and that they do not highly value formally dictated regulations and strict hierarchy in the organization. Only approximately a third of employees are oriented to work in the organizations of such type.

This research looks at how in the organizations under the research women and men assess organizational culture in both organizations with a predominantly female gender role in leadership and with a predominantly male gender role in leadership; and the assessments given by women and men are differentiated also according to the previously mentioned age group distribution.

Speaking about the assessment of organizational culture in organizations with a predominantly women gender role in leadership given by women, we see that 42% of women assess this organizational culture as a market culture, while 30% of them – as hierarchy culture. The most preferable cultures for them would be a market culture and a hierarchy culture – 34% and 30% respectively. One fifth of women (21%) would like to have adhocracy culture at their work places. Very few women wish to have clan culture either as a present culture (13%) or as a preferable culture (15%).

Men, too, assess a present culture mainly as a market culture (48%), leaving hierarchy culture in the second place (28%). Very few men assess a present culture as a clan culture (9%) or as an adhocracy culture (15%). The assessment given by men to a preferable culture is quite interesting – the respondents' opinions are almost equally distributed among the four organizational culture types: 30% of men mention market culture as a preferable culture, 26% - a hierarchy culture, 23% - adhocracy culture and 21% - clan culture of organization. We have to admit that the assessment given to the organizational culture by men shows that a present type of organizational culture considerably differs from a preferable type of organizational culture.

In the research, the analysis of the assessments of organizational culture in organizations with a predominantly female and male gender role in leadership, given by respondents of different age groups, was made (1st age group – to 34 years; 2nd age group – from 35 to 44; 3rd age group – over 45).

Concerning the organizations with predominantly female gender role in leadership, the greatest difference between the assessments of a present and a preferable culture exists in the first age group: for 44% of women the dominating present organizational culture is market culture, but the preferable organizational culture is a clan culture (41%). Besides, the assessment of hierarchy culture is very close to both the assessment of the present organizational culture and the assessment of a preferable organizational culture: the difference is minimal (4%). The women of the first age group wish to have more features of clan and adhocracy organizational type in their workplaces than they are in reality at present.

The assessments made by the second and third age groups are quite interesting: both a present organizational culture and a preferable organizational culture are assessed quite similarly (about 40%), because the respondents of these groups give a high assessment to market organizational culture. We have to add that the assessments of a present and a preferable organizational culture given by women do not differ much in the above mentioned age groups.

Speaking about the assessment of organizational culture in organizations with a predominantly female gender role in leadership made by the corresponding age groups of men (having the same distribution as above), it should be mentioned that, compared to the views expressed by women, there are more considerable differences between the assessments of a present and a preferable organizational culture: the biggest differences between the assessments of a present and a preferable organizational culture are observed in the second and the third age groups. The assessments of a present organizational culture, given by all men age groups, include market culture (from 46% to 50%). It is the most dominant (50%) in the age group from 35 to 44 years.

The most considerable differences in the assessments made by various age groups are seen in the extractions of adhocracy organizational culture: men of the second age group see features of adhocracy culture only in 10% of cases, but those of the first and the third age groups in 17% and 18% of cases, respectively. A similar picture is observed in the assessment of hierarchy culture: it is 31% in the assessment of the second age group, but 27% and 26% - of the first and third group, respectively.

Now let's look at the assessment of organizational culture in organizations with a predominantly male gender role in leadership.

The assessment of organizational culture made by both men and women is quite similar: 53% of women and 55% of men have assessed the present culture as being a market culture. Adhocracy culture as a present culture has also been assessed similarly in both groups – in women's assessment it is 10%, in men's assessment – 8%.

Bigger differences can be seen in the assessments of hierarchy and clan cultures. In women's assessment hierarchy culture is assessed by 19%, while men's assessment is 4% more – it is 23%. The assessment of clan culture is similar: women assess it as 18%, but men – 14%.

The analysis of the assessments of a preferable organizational culture made by the representatives of both genders indicates that correspondences can be observed in the assessments of market and clan organizational cultures – 39% and 11% respectively. The assessment of a preferable hierarchy and adhocracy organizational culture differs: 6% more men than women prefer features of adhocracy organizational culture in their work places, while 6% more women than men – features of hierarchy culture.

What concerns the assessment of organizational culture made by women about a male gender role in leadership, the assessment of the present market culture given by all three age groups is similar – it is from 52% to 54%.

The assessments of a preferable culture show an interesting extraction dynamics in all three age groups: women of the second and third age groups want to see more features of market and hierarchy organizational type in their work places than they actually function at present. Women of these age groups wish a more formal work environment and feel greater need for a strict and demanding leader: this could testify to the fact that with years, women pay less attention to the atmosphere and traditions in their work place and do not feel a special need to work creatively.

The analysis of assessment of organizational culture performed by men concerning a male leadership gender role in organizations indicates that like in the assessment given by women there are considerable differences between the assessments of a present and preferable organizational culture.

The most insignificant differences are in the second age group of men, which implies that men in the age group of 35 - 44 are more satisfied with the present organizational culture type than respondents in other age groups.

Men of the first age group are considerably less satisfied with the present organizational culture. They want to lessen the features of market and clan cultures by 11% and 9% respectively. But at the same time, men of the first age group want to increase features of adhocracy and hierarchy cultures in their work places by 13% and 8% respectively.

The men of the third age group do not want to change the features of clan culture in their work places. What they want to change most of all is to decrease the features of market culture by 24%, which means that men of this age group are not satisfied with demanding leaders and with concentration on the set goals. Men over the age of 45 wish to considerably change features of adhocracy culture increasing them by 18%, which indicates that they want to work creatively. However, at the same time they want to increase the features of hierarchy culture by 5%.

## 5. CONCLUSIONS

- At summarizing the research results about the assessments of the present organizational culture, we can conclude that in all investigated organizations the most predominant culture is market culture, but in organizations with predominantly male gender role in leadership the market culture is more dominant (by 11%). Hierarchy culture, too, greatly dominates in all organizations, especially in those with a predominantly female gender role in leadership. Clan culture is more dominant in organizations with a predominantly male gender role in leadership. Adhocracy organizational culture prevails in organizations with predominantly female gender role in leadership. However, the difference between indicators of organizations with a predominantly female and those with a predominantly male gender role in leadership is not so great to be statistically significant.
- At summarizing the research results about the assessments of the present organizational culture, we can After summarizing the respondents' views about the assessment of a preferable organizational culture, we infer that the employees of organizations with both a predominantly female and predominantly male gender role in

leadership most of all want to have market and hierarchy cultures, however a more convincing result is shown in organizations with a predominantly male gender role in leadership. Features of clan and adhocracy cultures are preferred more in organizations with a predominantly female gender role in leadership. The results of data analysis display such a tendency: the employees of organizations with both a predominantly female and a predominantly male gender role in leadership want that less attention should be paid to work results and there should be a greater demand for a creative activity. This might imply that in their work places people wish to express their personality, work creatively, but under the current conditions of the increasing tempo of life in Latvia it is not always possible.

- In organizations with both a predominantly female and a predominantly male gender role in leadership, the opinions of women about the assessment of organizational culture in different age groups show such tendencies: in the age group from 35 to 44 and in the group with the age over 45, the assessments of the present and the preferable cultures are similar, which testifies to the fact that women whose length of service is considerable do not want to change the situation at work place, they accept the present situation. Whereas women who are under the age of 34 years, by their assessments of the present culture as a market and a hierarchy culture, display a tendency indicating that they would more willingly work in organizations with adhocracy culture. This raises hopes that the younger generation is oriented towards future perspectives, towards innovative and creative activity, and they are ready to work in teams having leaders who promote creative processes.
- In organizations with both female and male gender role in leadership, the opinions of men about the assessments of organizational culture in different age groups reveal the following picture: the assessments given by age groups show a reverse situation if compared to those given by women, because in their assessments of the present and the preferable cultures men under the age of 34 take a constant attitude – for them it is a market culture; whereas in the age group from 35 to 44 and even more predominantly in the age group over 45, men express a wish to work creatively, to contribute to innovations, to be able to predict and be development- oriented.
- The research results revealing that the assessment of the present organizational culture is in favor of a market culture (especially according to the opinions expressed by women and men in older age groups) can be attributed to the fact that under the current situation of crisis, the Latvian society is oriented to market demands, productivity, to achieving the goals, competitiveness and profit.

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# Analysis of problematic mobile phone use, feelings of shyness and loneliness in accordance with several variables

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## Abstract

This research aims at determining the effect of several variables on problematic mobile phone use, and the feelings of shyness and loneliness. In this research conducted on university students, T-test and Anova test, which approaches one of the variables as dependent and others as independent, have been used. In the study, Problematic Mobile Phone Use levels of university students and their shyness and loneliness levels were taken as dependent variables, whereas gender, grade level, internet use and place of residence were taken as independent variables. In the research, Problematic Mobile Phone Usage Scale, UCLA Loneliness Scale and Shyness Scale were used. According to research findings, significant relationship were found between dependent variables, discussed as problematic mobile phone use and shyness and loneliness level, and some independent variables. It was seen that male students used more problematic mobile phones than female students, female students feel more sense of loneliness than male students, students staying at dormitories use more problematic mobile phones than students staying at home and carry more sense of shyness. In addition, it was also discovered that students, who do not use internet, feel lonelier than students who use internet. In our study, those who come from villages to study at university are more shy than those who come from cities.

Key Words: Problematic Mobile Phone Addiction, Sense of Shyness, Sense of Loneliness, Gender, Grade Level, Internet Use and Place of Residence.

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## Introduction

While, on the one hand, rapid changes in technological areas facilitates, on the other it also brings a lot of negativities along with it. Tools, mobile phones and internet in particular, are being widely used all over the world. These tools of communication takes all the people, young or old, under their influence and are also being used to satisfy a number of needs in addition to communication. These tools, allowing many activities such as watching television, playing games, messaging etc., due to very rich programs they contain, are thought to isolate people since they personalize them, and worst of all, render them addicted. This addiction is estimated to be more especially among young people.

There are various opinions about how this addiction occurred. Behaviorists explain it as such: "If satisfaction and a pleasant situation (positive reinforcement) are being achieved after a certain behavior or if behavior helps to get rid of a negative behavior (negative reinforcement) such as tension and stress, thus that particular behavior increases and individual continues to repeat that behavior in order to get rid of a negative behavior" (Cüceloğlu,1993). If we try to explain the situation from behaviorist point of view, use of mobile phones, since

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they meet with people's needs, give pleasure and keep individual away from stress and worries by letting them play games, take photos, and chat online. Especially with the use of smart phones, everyone easily reach various services offered (booking bus and plane tickets, using them as a navigation device in the car, etc..) and thus they provide satisfaction and reduces their anxiety.

In Jacobs' (1988) general theory of addiction, the formation of addiction was described as a situation in an individual in order to maintain balance. According to Jacobs, low or high stimulations, low self-esteem as well as negative early childhood experiences lead to negative feelings and upset the individual's homeostatic balance (items necessary in order for living beings to survive such as body temperature, oxygen, water and blood sugar). Therefore, in order to escape from these negative feelings and to ensure the homeostatic balance, individuals turn to behaviors that tend to cause addiction (Jacobs, 1988). People, using mobile phones at high ratios, have low self-esteem level and these individuals are seen to use mobile phones frequently in order to increase their self-esteem (Phillips, Ogeil and Blaszczyński, 2011). According to Hollander, mobile phone addiction is expressed as a disorder, similar to obsessive compulsive disorder, causing worry or forcible behavior in order to eliminate an impulse. However, there is a difference between these two behaviors. According to this, while obsessive compulsive behavior carried out mostly for reducing anxiety, behaviors, like problematic mobile phone and internet use are practiced for enjoyment (Şar, Işıklar, 2012).

The concept of "loneliness," in our society, is known as individual's state of being alone. Loneliness or staying alone is a sense that is a mixed with a feeling himself/herself detached from the world and a human being's feeling empty. Human beings that are suffering from loneliness feel themselves to be isolated from the society. They experience difficulties in establishing meaningful contact with other people. Lonely people are filled with feelings emptiness and detachment. In several literatures, too, the concept is generally defined as "an offensive and psychological condition arising from the difference seen between the social relations that individual lives and the relations he/she wishes to live" (Peplau and Perlman, 1982). When evaluated from this aspect, loneliness, as perceived in social literature, is not a feeling that is as easy as individual's state of being alone. As can be understood from these statements, inefficacy of experienced social relations and low level of satisfaction as opposed to intended level of satisfaction from these relations can determine the basis of a sense of loneliness (Öztunç, 2012).

Gerson and Perlman (1979) found out that communication skills of university students who are suffering from constant loneliness are more inadequate than students who are suffering from situational loneliness. In another study, Jones et al., (1981), in their study, identified that university students who are feeling lonely evaluated others negatively in comparison with students who do not feel lonely and they also expect to be negatively evaluated by others.

Moore and Schultz (1983), researching sense of loneliness on adolescents, identified that adolescents frequently use these methods such as watching television or listening to music; finding something to keep himself/herself busy with and talking to each other, in order to cope with loneliness.

Conducting research on the determination of the feelings of loneliness of university students in our country, Demir (1990) obtained some considerably significant findings. According to his findings; it is observed that male students experienced feelings of loneliness more than female students, academically unsuccessful ones more than successful ones, ones spending free-time alone more than ones spending with others, ones considering their monthly income insufficient for social activities more than ones considering sufficient, those who do not get social support from their environments more than those who get social support, those who have less intimate friends more than those who have many, those who are unwilling to establish social relations more than those are willing, those who consider their social skills inadequate more than those who consider them adequate, and those who do not share their problems with other more than those who share them.

Sense of shyness is a major problem affecting interpersonal relationships. Shyness is defined as sense of uneasiness and limitation experienced in the presence of others (Jones, Briggs & Smith, 1986). Shyness is seen as

the most important factor in rendering it difficult for individual to meet with new people, to make new friends and to get enjoyment from different experiences (Zimbardo 1977). Enç (1980) defined shyness as an uncomfortable feeling which is experienced during relationships with others and which frustrates right behavior.

Carducci (2000) considers shyness to be an interpersonal problem resulting from excessive shyness during interpersonal relationships, low self-esteem and fear of rejection. Shyness is suggested to be a universal concept, and exists in every culture even though it is not experienced at the same rate and is not defined in the same way (Carducci & Zimbardo 1995).

In literature, there are studies evaluating shyness from different aspects. Some of these studies are related with psychological responses that shyness cause in the body. Shyness is felt as a mixture of feelings such as fear, concern, tension and pleasantness. Increase in heart rate and blood pressure physiologically accompanies these feelings (Hyson & Van Trieste, 1987). In addition, restlessness, reactions of frustration and anxiety, excessive awareness towards oneself and remaining silent in the presence of others are quite apparent in shyness (Jones, Briggs & Smith, 1986).

The period in which shyness is experienced most intense and interactions with other individuals are most affected is the period of adolescence (Carducci & Zimbardo, 1995; Alm & Lindberg, 1999). There are great changes not only in individual's physique but also in his/her social life. Shyness can become a major problem of adolescent period, a process in which individual can meet with his/her basic needs such as belonging to a group, being approved by a group, expressing himself/herself and understanding others and thus recognizing himself/herself. The most important anxiety of adolescent period is acquiring identity. Shyness negatively affects individuals' chance to develop successful identity and their psychosocial developments (Hamer & Bruch, 2002). This situation makes it essential to take protective measures that will enable adolescents to cope with shyness, make them feel psychologically better and need more social support (Williams & Galliher, 2006).

Booth, Barlett & Bohnsack (1992) characterize lonely students as individuals who are probably restricted socially and thus whose interpersonal skills are not developed. It is assumed that people with sense of shyness have less number of friends since they do not participate much in social environments. This is known to push them further into loneliness. Rejection arises from shy individuals' not participating in social environments and not having sufficient social skills (Carducci 2000). Shy individuals are doomed to loneliness as a natural result of estranging themselves social environments (Carducci & Zimbardo 1995).

The purpose of the study is to examine the effect of problematic mobile phone use on the feelings of shyness and loneliness in accordance with several variables. For this purpose, answers to the following questions are sought:

- 1- Is there any significant difference between Problematic Mobile Phone Use and the feelings of Shyness and Loneliness in terms of gender?
- 2- Is there any significant difference between Problematic Mobile Phone Use and the feelings of Shyness and Loneliness in terms of place of accommodation?
- 3- Is there any significant difference between Problematic Mobile Phone Use and the feelings of Shyness and Loneliness in terms of internet use?
- 4- Is there any significant difference between Problematic Mobile Phone Use and the feelings of Shyness and Loneliness in terms of place of residence?
- 5- Is there any significant difference between Problematic Mobile Phone Use and the feelings of Shyness and Loneliness in terms of grade level?

## Method

### Research Model

Research is a correlational study that aims at explaining relationship between Problematic Mobile Phone Use and some selected variables.

The dependent variables of the research are Problematic Mobile Phone Use, Shyness and Loneliness and its independent variables are gender, grade level, state of accommodation, whether internet is used or not and place of residence.

### Study Group

In data collection phase of the research, 273 students, studying in Education Faculty and Faculty of Science and Letters at Sakarya University in the academic year of 2012-2013, were given surveys. Of the respondents, 62.3 % of them were female students, 37.7% of them were male students.

### Tools of Data Collection

#### 1- Problematic Mobile Phone Use Scale

Problematic Mobile Phone Use Scale was developed by Bianchi and Phillips and scale's validity and reliability were tested (Bianchi and Phillips 2005). Scale was published as 27 items. In the calculation of the internal consistency of the scale Cronbach's Alpha was calculated as 0.93. This result indicates that scale has quite a high reliability, options were homogeneous in terms of internal consistency and were quite related with the structure of problematic mobile phone use. In another study conducted on reliability, relationship between problematic mobile phone use and weekly-time spent on the phone was examined. In the calculation of Pearson correlation coefficient used in the research, correlation coefficient was obtained as  $r=0.45$ ,  $p < .001$ . This result shows that there is a strong correlation between problematic mobile phone use and weekly-time spent on the

phone. In a study conducted on validity, problematic mobile phone use scale was used together with another mobile phone addiction scale with high validity and reliability. Correlation coefficient was calculated as  $r=0.34$ ,  $P < .001$  in both applications. This coefficient indicates that there is a strong relationship between these two scales. Scale was one-dimensional and this structure, consisting of 27 items, explained 74.45% of total variance (Bianchi and Phillips 2005). After obtaining necessary permission from the developers of this scale, Adriana Bianchi and James G. Phillips through e-mail for starting adaptation works of the scale, adaptation procedure related to this scale was commenced. After creating Problematic Mobile Phone Use Scale in 27 times, necessary changes were made upon obtaining opinions of specialists. It took almost 25 minutes to fill the scale. Participants of the scale marked their participation level in each statement found in the scale between it doesn't describe me at all (1) and it describes me very well (5). In the marking process, the score of 1 at lowest and 135 at highest can be obtained. Higher scores indicate higher problematic mobile phone use (Şar, A. H., Işıklar, A.. 2012).

The process of translating scale into Turkish was carried out by researchers. After having been translation by researchers, scale, transformed into a structure containing original item, translated item, and proposals to be taken, was distributed to specialists in order to obtain their opinions. For obtaining specialist opinion, it was given to 9 specialists working in the fields of Guidance and psychological counseling (4), English language (2),

Turkish language (1), Computer and Instructional Technologies (1) and Measurement and Evaluation (1). In the forms given for expert opinions, appropriate and inappropriate statements were included for each item and specialists were asked to mark whether each item is appropriate or inappropriate. Experts were divided into two as language specialist and field specialist and their opinions were evaluated accordingly. For each item, 80% of appropriateness was sought and items, receiving below this rate, were corrected in accordance with the suggestions obtained from experts. The structure of the scale was prepared as: it does not describe me at all (1), it describes me a little (2), it describes me quite well (3), it describes me well (4) and it describes me best (5). After these changes, scales were distributed again to get their opinions and the result at the minimum 80% of appropriateness was achieved for all items (Şar, A. H., Işıklar, A.. 2012).

## 2. UCLA Loneliness Scale

Being developed by Russel, Peplau and Ferguson (1978), UCLA Loneliness Scale (University of California Los Angeles Loneliness Scale) was, later on, revised by Russel, Peplau and Cutron (1980) and items of the scale were re-arranged in a way that half of the items would be positive and the other half would be negative (cited by Demir, 1989). For example, one of the items of the scale is "I feel in harmony with the people around me." The adaptation work of the scale was carried out by Demir (1989), the internal consistency coefficient was as  $\alpha = .96$ , and test-retest test reliability was found to be  $r = .94$ . UCLA loneliness scale consists of 20 items of which 10 were directly coded and other 10 were coded in the opposite direction. Individuals were asked to indicate at what frequency they experience situations found in items on a four-point Likert-type scale. Scale was marked by giving scores to items containing statements in positive direction such as "I never experience it" 4, "I rarely experience it" 3, "I sometimes experience it" 2, and "I often experience it" 1, whereas the items containing negative statements were marked in exact opposite of this such as: "I never experience it" 1, "I rarely experience it" 2, "I sometimes experience it" 3, and "I often experience it" 4.

## 3. Shyness Scale

The shyness level of students was determined by using a 20-item "Shyness Scale" developed by Güngör (2001). Shyness Scale, originally developed by Cheek and Buss in 1981 as a 9-item scale, and later on, number of its items were increased to 13 by Cheek in 1983, was used with the purpose of revealing the shyness levels of the individuals. Standard scale method was chosen in the validity process of original scale and Social Anxiety Scale was used as a standard scale. As a result, correlation of .77 was found between shyness and social avoidance and that of .86 were found between shyness and social anxiety. In addition, individuals were asked "how much is shyness problem for you?" and a correlation of .68 was obtained between the responses received and shyness scale scores. In the reliability work of the scale, Cronbach Alfa, which was calculated in order to determine internal consistency, was found as .90. The second method used for determining the reliability of the scale was test-retest test method. Scale was applied twice with the interval of 45 days and a correlation of .88 was found between these two applications.

In Turkey shyness scale was adapted into Turkish by Güngör (2001) and its validity and reliability were confirmed. In the process of adapting scale, firstly, scale was translated into Turkish and expert opinion was referred to in order to measure whether statements in this translated scale reflect "shyness" or not. Secondly, 300 university students were asked an open-ended question of "at which situations they feel shy?" and thus a list was made. Items that are same or similar to the list created from the responses students gave and to the items in Cheek's shyness scale were taken out and 7 items obtained from the responses students gave were added to

Cheek's 13-item scale and thus a new 20-item scale was created. Güngör, (2001) found the reliability coefficient of scale obtained by test-retest test method as .83 and Cronbach Alfa coefficient, calculated with the purpose of determining internal consistency as .91. For scale's validity, "Related Validity" method was used and "Self-Assessment Inventory in Social Situation" was used for this purpose. The relationship between them was found to be .78. Factor analysis, conducted with the aim of construct validity, concluded that scale would be assessed as one-dimensional. Shyness scale is a 5-point Likert-type scale consisting of 20 items, containing statements with the aim of determining how shy individuals perceive themselves to be and feelings and behaviors they can manifest. Scale is applied by asking individuals to choose one of the choices found next to statements in the scale such as "Never Applicable," "Not Applicable," "Undecided," "Appropriate," and "Very Appropriate." Shyness scale was scored by giving scores following statements: "Never Applicable" 1 (One), "Not Applicable" 2 (Two), "Undecided" 3 (Three), "Appropriate" 4 (Four) and "Very Appropriate" 5 (Five). Highest score that can be achieved from the scale is 100, whereas the lowest score is 20. Individual with high score indicates that he/she perceives himself/herself to be "shy."

### Analysis of Data

In this research, whether problematic mobile phone use and feelings of shyness and loneliness differ or not is being examined. During data analysis, t test was used in the analysis that was aimed to determine whether there is a meaningful difference between the averages in the cases of two variables and ANOVA test was in the cases of multiple variables and Tukey test was used in determining the source of difference in cases where difference was present. SPSS 15.0 package program was used for processing data.

### 3. Findings and Comments

#### *1- Is there any significant difference between Problematic Mobile Phone Use and the feelings of Shyness and Loneliness in terms of gender?*

Table 1: Mean averages, standard deviation and t-Test results related to the scores of Problematic Mobile Phone Use, Shyness and Loneliness in terms of gender.

		N	X	SS	Sd	t	p
PMK	Female	166	47.83	13.92	267	-2.70	.007
	Male	103	53.25	18.80			
Shyness	Female	166	50.48	15.21	260	-1.71	.088
	Male	103	53.80	16.01			
Loneliness	Female	166	50.78	5.54	267	2.62	.009
	Male	102	48.86	6.26			

p<.05

As can be seen in Table 1, significant difference was found between problematic mobile phone use and gender variable. It can be stated that male students use mobile phones more than female students. Significant difference was found between feeling of loneliness and gender variables. It can be seen that female students experience the feeling of loneliness more than male students. No significant difference was found between the feeling of shyness and gender variable.

**2- Is there any significant difference between Problematic Mobile Phone Use and the feelings of Shyness and Loneliness in terms of place of accommodation?**

Table 2: Mean averages, standard deviation and t-Test results related to the scores of Problematic Mobile Phone Use, Shyness and Loneliness in terms of place of accommodation.

		N	X	SS	Sd	t	p
PMK	Home	145	48.17	16.45	267	-1.91	.05
	Dormitory	124	51.93	15.60			
Shyness	Home	148	50.03	15.07	270	-1.98	.04
	Dormitory	124	53.78	16.98			
Loneliness	Home	146	49.53	6.03	267	-1.58	.11
	Dormitory	123	50.67	5.67			

$p < .05$

Significant difference was found between problematic mobile phone use and place of accommodation variable. It can be stated that students living in dormitories use mobile phones more than students living at homes. Significant difference was found between feeling of shyness and place of accommodation variable. It can be seen that students living in dormitories experience the feeling of shyness more than students living at homes. No significant difference was found between the feeling of loneliness and place of accommodation variable.

**3- Is there any significant difference between Problematic Mobile Phone Use and the feelings of Shyness and Loneliness in terms of internet use?**

Table 3: Mean averages, standard deviation and t-Test results related to the scores of Problematic Mobile Phone Use, Shyness and Loneliness in terms of internet use.

		N	X	SS	Sd	t	p
PCP	Yes	222	49.48	15.16	267	-.92	.35
	No	47	51.93	20.24			
Shyness	Yes	225	50.89	15.64	270	-2.04	.045
	No	47	55.78	14.76			
Loneliness	Yes	222	49.94	5.81	267	-.631	.50
	No	47	50.57	6.28			

$p < .05$

Significant difference was found between problematic mobile phone use and internet use variable. It is seen that students, who do not use internet, experience more shyness than students who use internet. No significant difference was found between the feeling of loneliness and internet use variable as well as problematic mobile phone use and internet use variable.

**4- Is there any significant difference between Problematic Mobile Phone Use and the feelings of Shyness and Loneliness in terms of place of residence?**

Table 4: Tukey Test Results according to place of residence and shyness.

Place of residence	Type of Place	Mean Difference (I-J)	Standard Deviation	p
City Center	District	-1.46	2.00	.883
	Town	1.03	6.45	.999
	Village	-8.75*	3.37	.049
District	City Center	1.46	2.00	.883
	Town	2.50	6.48	.980
	Village	-7.28	7.03	.148
Town	City Center	-1.03	6.45	.999
	District	-2.50	6.48	.980
	Village	-9.78	7.03	.506
Village	City Center	8.75*	3.37	.049
	District	7.28	3.42	.148
	Town	9.78	7.03	.506

A significant difference was found between place of residence and feeling of shyness in Tukey test conducted for determining the source of difference between students' place of residence and sense of shyness. It was seen that students living in villages were shyer than students living in cities. No significant relationship was found between students' place of residence with problematic mobile phone use and the feeling of loneliness.

**5- Is there any significant difference between Problematic Mobile Phone Use and the feelings of Shyness and Loneliness in terms of grade level?**

Table 5: ANOVA Results According to Grade Level

Feature	Source of Variance	Total of Squares	St.d	Mean Average of Squares	F	p
PCT	Inter-groups	947.46	3	315.82	1.214	,305
	Within-groups	68963.22	265	260.24		
	Total	69910.68	268			
Shyness	Inter-groups	710.763	3	236.921	,976	,405
	Within-groups	65057.222	268	242.751		
	Total	65767.985	271			
Loneliness	Inter-groups	126.071	3	42.024	1.215	,305
	Within-groups	9168.093	265	34.597		
	Total	9294.164	268			

As shown in Table 4 above, no significant difference was found between grade levels that students study with problematic mobile phone use and loneliness and shyness variables in the ANOVA test conducted.

### Discussion

Significant findings were obtained from the factors causing increase in the feelings of loneliness and shyness in the individuals in various scientific studies conducted. Zimbardo (1977), explaining the way shyness affect social relationship, states that “shyness makes it difficult to think clearly and to establish effective communication.” Shy individuals are concerned not with social life, environment they are in, or other people, but are constantly concerned with their own behavior. When they remember their negative believes, they feel quite stressed and their shyness increases (Carducci & Zimbardo 1995).

The research, which we conducted, revealed that students, who grew up in rural areas (Village-Town), were shyer than students who grew up in cities. Individuals, who grew up in villages, fall under the influence of culture they grew up with and the way of growing up. This finding that we obtained supports the opinions mentioned above.

In a research discussing the effect of social skills training program on the shyness level of adolescents, it was seen that social skills training programs have positive impact on the shyness levels in coping with shyness (Kozanoğlu:2006). In our research, it was seen that students living in dormitories carry more sense of shyness than students living at homes. This fact makes it essential to prepare a variety of functional types of programs in order for students living in dormitories to be able to spend their time effectively and to develop their social skills. Looking at the results of this study, it is thought that there will be a significant decrease in shyness levels provided that social skills training program are prepared for students of higher education and students participate in these programs. At the same time, this will also reduce problematic mobile phone addiction.

In a research conducted by Öztunç (2012) on the effect of loneliness and shyness on problematic mobile phone use, when shyness and loneliness correlations, which are taken as predictor variables, were examined, it was identified that there is a positive meaningful relationship between shyness and loneliness ( $r=353$ ). In this case when shyness increases, loneliness also increases. It is seen that shy individuals prefer to be alone and refrain themselves from making friends or remaining in that environment.

Again in the same research, a positive significant relationship was determined between shyness and problematic mobile phone use ( $r=232$ ) and it was concluded that when shyness increases, problematic mobile phone use also increases. There is also a positive significant relationship between loneliness and Problematic Mobile Phone use ( $r=225$ ). When loneliness increases, problematic mobile phone use also increases considering this situation. According to results obtained from data, it is observed that, generally speaking, states of shyness and loneliness increase the problematic mobile phone use. It became the subject of our research to determine at what extent various variables such as gender, place of accommodation, grade level, internet and environment of birth and bringing up affect problematic mobile phone use, and situations of loneliness and shyness. In general context, even if not much effect of these variables was seen, some results that were obtained support the results of the above-mentioned research.

### **Conclusions and Recommendations**

It is not a desirable situation to see that feelings of shyness and loneliness show continuity in the individual. It is also known that individuals are not pleased with the feelings of loneliness and shyness that they experience. Adolescence is a period in which shyness is intensely seen and shy individuals are most affected. Therefore, shyness is very serious problem for university students who are in the last period of adolescence and at the beginning of adulthood (Öztunç,2012). Öztunç, in a study he conducted, found significant relationships between shyness and loneliness, shyness and problematic mobile phone use and loneliness and problematic mobile phone use. It was observed that when feelings of loneliness and shyness increase in individuals, problematic mobile phone use also increases. In our study, we found a significant relationship between gender factor and problematic mobile phone use. It was also observed that male students use more problematic mobile phones compared to female students. The reason for this is not really possible to predict. No significant relationship was found between gender factor and feelings of loneliness and shyness.

Significant difference was found between problematic mobile phone use and place of accommodation. It was seen that students living in dormitories use more problematic mobile phones than students living at homes. Similarly, it was seen that students living in dormitories carry more feeling of shyness than students living at homes. It is assumed that limited facilities of students living in dormitories in comparison with students living at homes, entering-exiting times, rules and insufficiency of dormitory facilities for students to pass their time can cause them to turn to problematic mobile phone use. No significant difference was found between feeling of loneliness and place of accommodation variable.

In our research, significant difference was found between feeling of shyness and internet use. It is seen that students, who do not use internet very frequently in their daily lives, feel much shyer than students who use it. Students, who communicate with others and develop their social aspects by frequently using internet, are expected to carry less sense of shyness. In a sense, it can be interpreted that using internet reduces the feeling of

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shyness. No significant difference was found between feeling of loneliness and internet use variable and between problematic mobile phone use and internet use variable.

As can be seen in Table 4 above, no significant difference was found between students' grade level and problematic mobile phone use, loneliness and shyness variables in ANOVA test conducted.

No significant difference was found between place of residence and feeling of shyness in Tukey test conducted with the aim of determining the source of difference between students' place of residence and feeling of shyness. Those who grew up in rural areas like a village were seen to be shyer than those who grew up in cities. The reason for this is thought to be arising from effects of village life being more closed and controlled, the way families raise their children and of social and cultural life. No significant relationship was determined between students' place of residence and problematic mobile phone use and feeling of loneliness.

If an overall assessment is needed to be made in terms of the effects of several variables on problematic mobile phone use, and feelings of loneliness and shyness, students can be suggested to get psychological counseling and guidance services adequately primarily in pre-school, primary school, secondary school and high schools in order to cope with these negativities. It is necessary to render guidance services more active and to healthily carry out student personality services at schools. Most of the students in primary, secondary, high school and higher education have mobile phones with internet access and they spend time with their mobile phones even during the class. This prevents them from acquiring sufficient academic skills and behaviors. This situation, which is thought to increase addiction, also contributes to the increase in feelings of shyness and loneliness in individuals. Our children and young people use internet more as tools of fun and chatting rather than accessing information. This prevents them from using their leisure time effectively and efficiently. At the same time, this constitutes an obstacle to socialization and also hampers students' reading books, sportive activities and studying their regularly. Increasingly widespread use of mobile phones in our country has come down to the level of primary school students. It is necessary to impose limitations on problematic mobile phone use. It is suggested that students studying at higher educational institutions should be encouraged to participate in social activities and advisory services and especially student personality services should be conducted in a healthy manner.

In the studies to be conducted after this, it can be suggested that variables such as provinces where institutions of higher education are located, campus areas where schools are situated and facilities universities offer to students etc., should be discussed, their effect on the states of loneliness and shyness should be researched and whether these variables increase problematic mobile phone use or not should be examined.

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# An assessment of critical thinking skills based architectural project course in terms of student's outputs

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## Abstract

There is a judgment and interrogation deed in the origin of the word of criticism. This interrogation is a process that could occur by asking questions, by establishing empathy. Critical thinking requires thinking a lot of things at the same time. Therefore, to see that only the positive or negative aspects of a thing might not be enough. Important point is to see both aspects at the same time, be able to make transition between them and at this time is to find a “new” one.

Being with a critical approach to the design process in architectural education is thought to include a loop that keeps the process alive, to make dynamic training process. Constantly, rapidly opening of different subject to be discussed nowadays, adopt to this speed and nor using the existing data rethinking in multiple environments may be realized with critical thinking skills.

In Karabük University Safranbolu Fethi Toker Fine Arts and Design Faculty Department of Architecture, 2011-2012 academic term, fall semester, ARCH305 Architectural Project 5's term project includes varies exercises with the aim of to boast the students' this skills. Mentioned with varies exercises emphasized that students could make criticize for familiar situations, could look to them by interrogating. There was a competition whose subject was criticized of housing estate organized by TMMOB Chamber of Architects Ankara Office. The competition subject was decided the main project subject of the semester. At the end of the process a student in this class won a prize.

Target of this study is to discuss the importance of critical thinking skills in architectural education with supporting term project. In this way both architectural educations will be rethinking and to discuss how to approach can be found a “new” one in architectural education nowadays.

Keywords: critical thinking, architectural education, architectural competitions.

## 1. Introduction

Architecture is defined by the following statement; “the making of architecture calls for clear thinking, but this is a specific embodied mode of thought that takes place through the senses and the body, and through the specific medium of architecture” in the book, named “The Eyes of the Skin”, which is written by Pallasmaa (2011). He remarks that freethinking is the core of the architecture, and the process of experience and expression of this freethinking can be satisfied via senses. In architecture, the freedom of these senses is important. This freedom provides critical thinking about environment. To look with an investigating and interrogating eye, and to experience the environment with such a point of view have a potential to product “new”s on that environment. Otherwise, all of the products will be same with each other, whereas architecture should be a discipline which can be expressed with individual view. One of the most important aims which are expected to be earned by students during the education process is getting over their frame, and having awareness about requisiteness of

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multiple points of view. Ponty states that the mission of Cezanne's paintings is "to make visible how the earth touches us". Pallasmaa (2011) adopts this view and states that architecture's mission is also similar.

It is emphasized by Pallasmaa (2011) that the architect is in a contrary perspective continuously. Actually, this contrary perspective is a point of view which people should have at the process of their own investigation. Reaching to a conclusion by considering the statement of Aalto, which indicates that "in every case one must achieve a simultaneous solution of opposites", by the help of the mutual interrogations forms the basics of the comprehension of the architecture.

Architectural education in Turkey possesses some contradicting points in itself. The links between some related processes are broken, so these processes, which should be handled as a whole, are alienated from each other. In this context, the main aim of these studies is to convey a process about the experience between educational and practical environment, the absence of which is one of the most serious problems of the educational system. The following questions are interrogated by project team; how can the integrity between the theory and the practice be provided and how can the students become aware of the relations with their environments. Sharing the term project process that is supported by Pallasmaa's ideas is also aimed.

## 2. Architectural Education

The architectural environment of the present time has a set of problems, which are especially related to the education. However; the rapid lifestyle, which has been adopted during the last century, prevents the interrogation of these problems and causes the acceptance of them as they are. When the problems are not seen from a critical point of view, the products that are constructed become identical one with another, whereas it is required that the qualifications of these products should have variances due to the variation of the environmental factors. The students should adopt the awareness of this fact in the first place, so that they can interrogate and think about the variation of necessities for different environments. Increasing this awareness and transforming it to experience and consciousness is a personal gain, the effects of which can be varied from person to person. This gain is notably important for the process of architectural education.

In this context, one of the most important problems is that the fields of architectural education and of the practical area are not supporting each other. However, the architecture is a pattern that should collate these two fields. Summer practices, which are done to provide the integration between the fields of practice and education, are limited only with a little learning of technology related to the work (Yürekli and Yürekli, 2004). Nowadays, the architectural education, which covers the theoretical aspects, ignores the practical aspects. Final products are constructed with the theoretical basis provided by the universities. In fact, not only the final products, but also the process used to achieve these products is important. But each institution has its own approach, and there are some institutions which do not have a process like this. On the other hand, in the field of practice, the mechanism of the capitalist approach is dominant in the applications, and mostly the process is ignored. For this type of a final production, which does not have an apprehension, the identicalness and the qualifications of the products are seen to be insignificant, but quantity is at the foreground.

In this education system, students are pushed into a dilemma at the debut of the undergraduate studies. The students, who get the feeling of the necessity of the choice between these two situations, adopt the practical field in order to choose the real one but cannot link that field to educational knowledge. So they don't care the education and ignore it. At this point, the students mostly adopt the concrete products, because samples that they experience from their environment provide such a mechanism or a thinking way of architecture. However; it is emphasized that the architecture should has a holistic point of view and involve both abstract and concrete approaches together. For this reason, it is required that the qualifications of the architectural education should possess this type of an integrative point of view.

From frame of this theoretical basis, in this report one semester studio with juniors of the Department of Architecture of Karabuk University Safranbolu Fethi Toker Fine Arts and Design Faculty will be shared. At that experience process, a competition subject was given to students as their semester studio project topic, which was launched nearly at the same time. Notice that, the same topic is analyzed in different universities in Turkey at the

same semester. At the end of the process, a lot of subjects, which are thought to be unrelated by students, are discussed on the content of unity. Sharing about semester, process, team and studies are discussed under the title of “Term Information and Project Process” in detail.

### 3. Term Information

One semester of architectural project education program, which was prepared for the junior students of the Department of Architecture in the Safranbolu Fethi Toker Fine Arts and Design Faculty in Fall semester in 2011-2012 Academic Year, was examined in this study.

At the beginning of academic semester, a meeting was organized by academicians; Prof. Aydan Balamir, Asst. Prof. Timuçin Harputlugil, Lect. Fatih Dökmeci, Lect. Elif Köse, Res. Assist. Bengi Yurtsever, Res. Assist. Gözde Çakır. At the end of the meeting, the purpose of architectural project was determined as the concept of housing and existing housing environment to be interrogated by thinking the concept of social in Turkey and alternative idea project to be obtained. Accordingly, it was aimed at developing alternatives models of housing for social housing applications in Turkey.

As part of Urban Dreams Project Idea Contest, “sosyal@sosyalikonut” national student idea project competition was organized by the Chamber of Architects Ankara Branch Office (Url-1, 2013; Figure 1). This competition has chosen project course subject because aim of course was parallel to that of competition; students of architecture would catch a chance to compare themselves to other participating students in competition; experience of competition would provide positive contributions in their architectural profession; and competition would increase motivation to work for the period.



Figure 1. “sosyal@sosyalikonut” competition web site.

### 4. Project Process

The first week in semester the project subject was announced to students and specification of competition was distributed. Second week, group of project organized a technical trip to Ankara Mamak Municipality which is field of project (Figure 2, 3). Students explored the field of project, obtained maps and information about Mamak region from the municipal authorities. Students got information about their expectations from urban transforming by interviewing with the habitants of “Mamak” region (Figure 4, 5).



Figure 2. Mamak, competition's project area.



Figure 3. Mamak, competition's project area.



Figure 4. Technical trip to Mamak.



Figure 5. Technical trip to Mamak.

Students analyzed of the region by dividing into groups. They learned intense of the current population, rates of young population and unemployment, and the values of the area, public transport networks, and the existing buildings. By using this information, they prepared analysis presentations and abstract model. Once groups had given own design decisions, students divided in order to begin individual design stage.

By the time the semester finished, students had continued getting critics about their projects. In addition to project subject, academicians focused on ecological problems of current architecture; students were given readings on ecology. At the end of these readings “room with garden” and “60m<sup>3</sup>” projects were studied, students were asked to use knowledge, obtained from these studies, on their projects.

During the period students watched social housing documentaries, including housing applications of famous architectures and providing physical and social transformation at the same time. Students prepared reports concerned with these documentaries at the end of the semester.



34 student projects were evaluated by academician at the final exam and successful students were encouraged in order to participate in the competition (Figure 6, 7). Although some students are successful in final exam, they didn't want to participate in the competition.

Figure 6. Final jury.



Figure 7. Final jury.

In this competition, 43 student projects were evaluated and as one of our students, Eyyüp Türker's project was awarded and this condition satisfied his lecturers and friends (Figure 8, 9, 10). In addition, students had a chance to see other projects which were exhibited in competition colloquium.



Figure 8. Competition ceremony and colloquium.



Figure 9, 10. Eyyüp's project.

## 5. Conclusion

Observation and experience of different approaches of the process of solving the problems on architectural education is very important. The semester which is experienced with the students of Karabuk University is also important in this context. On the other hand, this does not mean that "this problem can easily be solved with a simple competition". But it has been an intermediary which focuses the students to their architectural projects, also providing them to pass a pleasant semester. Getting involved in the subject always supports products of project at this process. Every participant compares their locations, problems, user components related with the project in a multi suggestion environment. This situation develops a way of thinking in a critical way and this critical point of view is not only directed to their own projects, but they also think about the other's projects. Students achieve awareness about the problem which is related to architectural environment, and one of the most important results of this may be that, they interrogate and search with their own ideas. Additional works, readings, movies which are done in semester, have always been in a supportive contribution to these productions. One year later, in another semester, with different students, another competitive project strategy is given, because of the positive effect on the process of previous semester. It is observed that similar gains are occurred at that semester too.

In short, it is thought that arguing over competition subject in the content of courses provides to students to feel closer to their own projects and to study in a more pleasant way. Generally, it is possible to say that the process' gains are in a "positive" way. But, it is thought that this process can be enriched by trying some alternative options. Actually, "critical thinking" is not observed only on the general study process of students, but

also observed on instructors with evaluating their approaches, and this makes this process holistic. In other words, the gains of this process are not on one way or static which is adopted only by students, but it is also adopted by instructors, so it is dynamic. By this way, this process becomes an act which has mutual gains pervasively.

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# An assessment of teacher training programs in public and private university foreign languages department preparatory schools and the instructors' perception and relevance

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## Abstract

Teacher education has always been a main concern in the English Language Teaching (ELT) domain. Starting from the very beginning of educating student teachers from their freshman year, ELT departments want to show their students who are prospective language teachers the best new techniques and approaches in ELT. Thus, ELT departments design their curriculum according to the latest developments in the field so that their students can benefit the utmost and apply their academic knowledge in their future teaching careers. This leads naturally to continuous learning and development in teachers' careers. Teacher training programs are held in order to remedy this issue. The aim of this study is to evaluate the effectiveness of these teacher training programs, to what extent instructors who work at both public and private universities benefit from these trainings, and finally attempts to find out if there is any other factor that influences the effectiveness of these programs.

**Keywords:** teacher training programs, effectiveness of teacher training programs, continuous learning and development.

## 1. Introduction

The world of education is getting more and more technical and more complex day by day and that is why teacher education is paid the utmost attention: To raise competent educators who are able to follow the latest innovations as well as being creative when tailoring curricula according to the needs of their learners. To raise a competent teacher is an issue for faculties of education. However, no matter how feasible a curriculum for prospective teachers is when designed during their university education, the need for lifelong learning and continuous improvement for teachers continues to be a necessity to incorporate the many rapid and comprehensive innovations in the world of teaching.

In the world of English Language Teaching (ELT), teachers often feel the need to refresh themselves with the newest teaching techniques and approaches to make the most of their teaching for their learners. In today's ELT world, it seems almost impossible to stick with one approach or technique for every kind of learner. The innovations are vast, and keeping up with them is thus hard work, particularly if teachers do not have a notion of how to benchmark and implement new ideas and teaching approaches in their classrooms and teaching philosophies. For teachers of English to have relevant views and to raise awareness in them is the fundamental aim of approaching ELT in an eclectic way both for teachers and curriculum designers alike. A language teacher

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is required not only to be proficient in using the target language, but also to be knowledgeable about the rules and conventions that govern its use in an authentically communicative context (Liyanage & Bartlett, 2008, p. 1829).

As mentioned above, Teacher Development (TD) as a whole is considered to be one of the main goals within the domain of ELT. “Much of the impetus for change in approaches to language teaching came about from changes in teaching methods. For this reason, the quest for better methods was a preoccupation of many teachers and applied linguists throughout the twentieth century” (Richards & Rodgers, 2001, p. 1). Therefore, to train creative practitioners of the eclectic approach in the world of ELT, a lifelong process of TD is needed for better outcomes in terms of teaching in different environments. Teachers should be willing to evaluate and reform their teaching under the influence of TD. TD is crucial in following the latest innovations in their domain, designing and evaluating their curricula, and finally being a reflective educator. This is the reason why being a “reflective” and creative teacher is the desired outcome of many teacher training programs (TTP). The best answer to the quest for one’s own personal and integrated understanding of how people learn a second language is an eclectic application of methods: “[T]here is no single theory or hypothesis which will provide a magic formula for all learners in all contexts. [The] teacher will be urged to be as critical as he can in considering the merits of various models and theories and research findings” (Brown, 2000, p. x). However, as Brown suggests “the problem of raising capable teachers who are creative enough to tailor their lessons according to their learner needs still remains unsolved” (p. x). What teachers learn as pedagogic content knowledge at university programs may not be readily viable in the actual teaching world (Liyanage & Bartlett, 2008, p. 1829). Thus, a well-designed TTP to suit teachers’ needs plays a vitally important role.

However, this answer is not as easy as it seems. Being able to learn the best techniques and approaches along with theory does not necessarily mean that they have been internalized properly to the level needed to actualize them in the classroom. “In clear terms teacher development is the process of becoming the best teacher you can be. It means becoming a student of learning, your own as well as that of others” (Scrivener, 1994, p. x). This brings into mind the concept of continuous learning and, therefore, it should be a part of a teacher’s life. “One of the most invigorating things about teaching is that teachers should never stop learning so as to be beneficial to their learners” (Brown, 2001, p. 426). Studies also reveal that teachers exercising more advanced teaching behaviour in their classrooms have better student outcomes. Advanced teaching behaviour comprises the skills concerned with new teaching approaches and differentiation (Kyriakides, Creemers & Antoniou, 2009, p. 12).

The act of teaching is essentially a constant processing of options. “At every point in each lesson a teacher [is required to entertain a great array of options and fulfilments], they can decide to do something, to do something else, or to do nothing at all. In order to become a better qualified teacher it seems crucial to be aware of as many options as possible” (Scrivener, 1994, p. 1). As Davis (cited in Scrivener, 1994) puts forward in his unpublished paper, teacher development is a voluntary process. Moreover, he defines that process as holistic, long term, ongoing and continual. Within that process there is an internal agenda along with awareness based, angled towards personal growth and the development of attitudes and insights. It is definitely non-compulsory and a bottom-up approach. Furthermore, teacher professional development might be of help with the dynamic character of effectiveness since not only do they move to a higher level but it also helps refresh the ones who drop to a lower level for several reasons including burnout (Kyriakides et al., 2009, p. 13). On the other hand, teacher development as learning is carried out by practitioners in collaboration with their colleagues. As many related studies suggest, “teachers must rethink their teaching role in order to facilitate communicative situations suited to the peculiarities of various interactions” (Guasch, Alvarez & Espana, 2010, p. 199).

The term teacher development was coined in the 1980s as something separate and different from teacher training and in reaction against over-rigid and over-behavioristic models of teacher training. The distinction made is between initial pre-service (training) versus continuing in-service (development). Today, the two terms are often used with more specific, contrasting meanings; implying differing approaches to the nature of professional learning (Finocchiaro, 1988, p. 2).

Continuous learning as Brown describes it, takes form in several ways. It can either be through in-service training or special courses which are held by globally-recognized institutions. The process of continuing to develop professional expertise as a teacher is sometimes difficult to manage alone. In a similar point of view, Brandl (2000) states that “having a second method course would further support the notion that becoming a teacher is a long-term process that requires ongoing training and that it constantly changes according to trainees’ developmental stages” (p. 368). The challenges of teaching in a rapidly changing profession almost necessitate collaboration with other teachers in order to stay on the cutting edge (Brown, 2001, p. 426).

Much has been said and written about the importance of continuous learning in teachers’ careers. In language teaching, where major developments arise with surprising rapidity, there is no doubt that teaching professionals need to ‘refresh’ and revise their teaching styles throughout their professional lives. When teachers are exposed to various methods and asked to reflect on their principles and actively engage with their techniques, they can become clearer about why they do what they do. They become aware of their own fundamental assumptions, values, and beliefs (Freeman, 2000, p. x). Taking this one logical step further, Prabhu (1990, cited in Freeman, 2000) states that interacting with others’ conceptions of practice helps keep teachers’ teaching alive. Interaction in this way helps prevent it from becoming stale and overly routinized. Such continuous revitalization should be made regardless of the experience they have acquired (p. x).

As Arends (1998, cited in Freeman 2000) summarizes, “knowledge of methods helps expand a teacher’s repertoire of techniques. This in itself provides an additional avenue for professional growth, as some teachers find their way to new philosophical positions, not by first entertaining new principles, but rather trying out new techniques”(p. x). All in all, teacher development is for everybody who wishes to keep themselves up-to-date regardless of their experience teaching. Last but not least, Larsen-Freeman (1991), sums the situation up nicely: “teachers are not mere conveyor belts delivering language through inflexible prescribed and proscribed behaviours but they are professionals who can, in the best of all worlds, make their own decisions” (Freeman, 2000, p. x).

### ***1.2 The Aspects of Foreign Language Teachers.***

In his research, Borg (2006) nicely puts forward how being a foreign language (FL) teacher is different from being a teacher of another subject. To start with, being a foreign language teacher is in many ways unique within the profession of teaching. “FL teaching is the only subject where effective instruction requires the teacher to use a medium the students do not yet understand” (p. 5). Secondly, effective FL teaching requires interaction patterns, which means group work or pair work is essential. There is also always a “challenge for teachers of increasing their knowledge of the subject” (p. 5). Simultaneously, in some institutions FL teachers may experience the feeling of isolation more than that of teachers of other subjects because of the absence of colleagues teaching the same subject. It is widely accepted that “FL teachers have to find ways of providing extracurricular activities through which naturalistic learning environments can be created” (Borg, 2006, p. 5). At that point the issue of “how” comes to mind. Although there might be many different possibilities, teacher training programs (TTPs) play a key role in meeting this ‘naturalistic learning environment requirement. Due to the reasons mentioned above, TTPs can really be beneficial, as the contents of the sessions are designed according to the needs of the FL teachers (p. 27).

Finally, FL teachers must find ways of creating good teaching and learning environments; creating a good learning environment through tasks is the major concern of TTPs (Borg, 2006, p. 5). All in all, TTPs, if designed according to the principle of fit-for-purpose, may well contribute highly to the development of ELT professionals.

Various reasons have been mentioned above why continuous learning must take place in FL teachers' careers. Therefore, this study aims to shed light on the outcome of TTPs from FL teachers' points of view, thereby attempting to describe: How FL language teachers benefit from TTPs, why they do not feel satisfied after

attending certain TTP sessions, and whether they really feel that there has been any enhancement after attending TTPs.

In other words, the aim of this study is to evaluate the effectiveness of teacher training programs. In particular, this study intends to investigate how much teachers of English as a foreign language benefit from these training sessions, and in which direction their perception improves in accordance with the relevance of these trainings. This study also attempts to find out if some specific factors such as gender, experience and education level influence the effectiveness of the training sessions. The study, therefore, seeks to find answers to the following questions:

1. Do the instructors who have attended teacher training programs (TTPs) feel that they have benefited from these programs?

2. Do certain variables such as gender, experience and education level, affect subjects' attitudes towards teacher training programs?

## **2. The Study**

### **2.1 Population and Sampling**

The population of this study comprises 306 English Language Instructors (all non-natives) selected from 25 University Preparatory Schools in Turkey. In this study, the subjects have been chosen from 25 Participant Universities both private and public. These universities are as follows:

Arel University, Ankara University, Atılım University, Başkent University, Beykent University, Boğaziçi University, Çankaya University, Dokuz Eylül University, Erciyes University, Hacettepe University, İstanbul Aydın University, İstanbul Commerce University, İstanbul University, İzmir University, Kavram Vocational School, Karadeniz Technical University, Maltepe University, Marmara University, Melikşah University, Okan University, Özyeğin University, Sabancı University, TOBB University of Economics and Technology, Yeditepe University and the Air Force Academy.

Convenience sampling method was used to choose the appropriate sample for the current study. Convenience sampling is a non-probability sampling technique where subjects are selected because of their convenient accessibility and proximity to the researcher. The subjects are selected just because they are easiest to recruit for the study. As Castillo puts forth, this sampling method is also used when the researcher is unable to gain access to a wider population, for example, due to time or cost constraints. Thus, convenience sampling generally assumes a homogeneous population, and that one person is pretty much like another, since the sample was colleagues who work in similar environments (Castillo, 2009).

## 2.2 Subjects

The sample of the study was chosen through convenience sampling method from University Preparatory School Instructors in Turkey. Table 1 describes the instructors involved in the study.

**Table 1 Descriptive Statistics of the Sample**

Variable	Groups	<i>F</i>	%
<b>Gender</b>	Female	204	66,7
	Male	102	33,3
<b>Graduation</b>	Faculty of Education	175	57,2
	Faculty of Art and Sciences	131	42,8
<b>Education</b>	BA	159	52,0
	MA	126	41,2
	Ph. D.	21	6,9
<b>International Certificate</b>	Holders	125	40,8
	None holders	181	59,2
<b>Occupational Seniority</b>	1-5 year	100	32,7
	6-10 year	109	35,6
	11-15 year	54	17,6
	16 year and above	43	14,1
	<u>Minimum</u>	<u>Maximum</u>	<u>Mean</u>
<b>Working Hours (Weekly)</b>	4	35	20,1

As is seen from the table above, 66.7% of the foreign language instructors are female and 33.3% of them are male. While 57.2% of the instructors graduated from an education faculty, 42.8% of the instructors are from a faculty of arts and sciences. Participants in the study work between 4 to 35 hours weekly with a mean of 20.1 hours.

## 2.3 Data Collection Instrument

In this study, a questionnaire with two main parts was designed to obtain data about university preparatory school instructors' attitudes towards teacher training programmes (TTPs) at both public and private universities. In the questionnaire a 5-likert scale was applied. The questionnaire is comprised of two parts: one section focuses on subjects' academic and personal background and the other has 45 questions specifically

designed to elicit relevant answers and attitudes towards TTPs. All of the questionnaires were pilot tested with 20 English Language Instructors. The layouts of the questionnaires were designed accordingly before the actual study. Before the questionnaires were handed out to the instructors, a cover sheet explaining the purpose of the study, asking for their cooperation and assuring that their responses would be kept confidential was added in order to make the study meaningful for the subjects.

After the pilot study questionnaires had been completed, it was found that 5 extra questions had to be added in order to cover all research questions. Out of 50 questions, 16 of them are reverse questions and the rest are direct questions. The questions in the questionnaire were mixed up in order to elicit the true attitudes and feelings of those who attended teacher training programs. The reverse questions were also included for the same reason during the design of the questionnaire.

## 2.4 Data Collection Procedure

Twenty five universities were found to be available to circulate the questionnaires to be answered by the instructors. After that, the questionnaires were printed out and sent via post to addressees throughout Turkey. After a couple of weeks' time the institutions started to post the envelopes back to the researcher's address. A total number of 306 subjects answered the questionnaires and sent them to the researcher. The participation number for each institution differed. Out of 25 Universities some contributed to the study with 30 subjects, whereas some sent 15 or so back because the questionnaires were completed on a voluntary basis. Some of the instructors failed to complete questionnaires due to various reasons.

### 2.4.1 Occupational and Personal Information Form

In this form, instructors' gender, faculty in which they studied, educational degree, international certificates (if there are any), occupational seniority and working hours (weekly) were asked (Table 1).

### 2.4.2 Effectiveness of the Teacher Training Scale

In the second part of the questionnaire, instructors were asked the effectiveness of the teacher training programmes, seminars and/or workshops in their profession. Fifty questions were asked on a 5-type likert scale (1=totally disagree/never to 5=totally agree/always). The scale's items, mean scores and standard values are given below in Table 2.

**Table 2 Means and Standard Variation Values of the Items**

ITEMS	<i>X</i>	<i>sd</i>
1. I feel adequate in reading analysis	4,30	0,68
2. I feel competent in the conduct of reading in-class activities.	4,15	0,75
3. I give reading homework as follow-ups to be used in reading courses.	3,59	0,84
4. I utilize authentic materials in reading courses.	3,59	0,87
5. I do "warm-up" activities in reading courses.	4,47	0,75
6. I prefer audio-lingual method in grammar teaching.	3,14	1,13
7. I use teacher-centred approach in reading courses.	3,51	1,06
8. I use content-based teaching.	3,83	0,74
9. I give homework for writing as the follow-up of reading courses.	3,36	0,87
10. I do grammar-based activities in reading courses.	3,40	0,94
11. I hold "student-centred" teaching approach in reading courses.	3,80	0,78
12. I give homework for pre-reading activities.	3,10	1,15

13. I use grammar-translation method in grammar courses.	3,52	1,01
14. I conduct speaking activities as follow-ups in reading courses.	3,84	0,72
15. I practise “step-by-step” method in writing courses.	3,96	0,78
16. I do not consider the necessity of doing “schemata” in reading courses.	3,31	1,52
17. I do “warm-up” activities prior to reading courses.	4,28	0,85
18. I hold the necessity of “schemata” in listening courses.	4,40	0,77
19. I explain the rubrics in listening courses.	4,09	0,96
20. I give homework in the aftermath of reading courses.	3,21	0,91
21. I do not consider “student-centred” activities necessary in listening courses.	3,40	1,45
22. I hold the necessity of the activities for guessing meaning from context and vocabulary from context in reading courses.	4,64	0,59
23. I feel competent about the various activities learned to be used in listening courses.	3,84	0,82
24. I ask students to do synonym, antonym, vocabulary and phrasal words activities in reading courses.	4,03	0,76
25. I ask the students to do writing works during the writing courses.	2,97	0,95
26. I extend the post-listening activities into speaking and writing courses.	3,68	0,80
27. I utilize schemata activities in writing courses.	4,01	0,85
28. I believe in the necessity of Q&A, role plays and related in-class activities as a part of speaking courses.	4,29	0,85
29. I don't consider process-oriented approach as proper in writing courses.	3,46	1,52
30. I conduct activities for the improvement of essay-writing.	4,05	0,81
31. I conduct activities for sentence-construction in writing courses.	3,57	0,90
32. I consider that student studies be evaluated as “holistic” in writing courses.	2,45	1,04
33. I do not take “culture-gap” into consideration in speaking courses.	3,48	1,45
34. I think sentence-construction is enough for paragraph-making in writing courses.	3,61	1,24
35. I utilize adequate authentic materials in speaking courses.	3,45	0,80
36. I hold that students' studies be “analytically” corrected in writing courses.	3,87	0,77
37. I evaluate speaking course activities within pronunciation, fluency, word selection and content criteria.	3,85	0,87
38. I find the writing correction much time wasting.	2,79	1,32
39. I use error correction symbols in the control of students' writings.	3,63	1,16
40. I extend post-speaking activities into writing homework as follow-up.	3,56	0,94
41. I believe that writing skills learned in L1 could well be utilized in English writing practices.	3,53	1,05
42. I get students to do speaking practices in compliance with lexical competence.	3,68	0,78
43. I feel adequate in a great variety of activities that I have learned through workshops, and/or on the job and in-service trainings.	3,99	0,81
44. I conduct a student-centred approach in speaking courses.	4,04	0,76
45. I feel adequate in various activities that I have learned to utilize in speaking courses.	3,90	0,76
46. I have gained a creative teaching philosophy in the aftermath of TTPs that I have so far attended.	3,86	0,89
47. I can create a variety of activities, apart from those already learned, for speaking courses.	4,03	0,77
48. I am open to different activities even while I hold a student centred approach in writing courses.	4,32	0,77
49. I change the flow of the course, as I find necessary, to draw students' attention.	4,42	0,63
50. I believe that there has been development in my teaching philosophy as the result of TTPs.	4,11	0,98

## 2.5 Data Analysis Procedure

For this study, quantitative data were gathered via a questionnaire. The data gathered via questionnaires were coded and entered to the SPSS 17.0 (Statistical Package for Social Sciences). Afterwards, the descriptive analysis was used to investigate the demographic characteristics and background information of the subjects. Through descriptive statistics frequencies, means, percentages and standard deviations were calculated. The reliability of each scale and sub-scales were calculated as well as the analyses of each research question.

Descriptive research describes and interprets the present. Its primary purpose is to analyze trends that are developing as well as current situations. Thus, data derived can be used to diagnose a problem. For this reason, it can be inferred that descriptive research is designed to solve present day problems. Information relevant to the present condition is a prerequisite in solving problems (Taylor, 2005, p. 93). That's why this study is a descriptive study which tries to describe the present issues of FL teachers' perceptions of TTPs. Under various headings they were asked to show their attitudes towards the sessions they had attended.

In this study, the survey method was used to gather data from the sample. The data obtained from the instructors were analyzed with SPSS 17.0 (Statistical Package for Social Sciences). The statistical techniques below were used to summarize the findings:

1. Demographics of the sample summarized with frequency ( $N$ ) and percentage (%).
2. In order to see foreign language instructors' perception of the effectiveness of the teacher training programs on factors, mean scores ( $\bar{X}$ ) and standard deviation ( $sd$ ) were calculated.
3. An independent samples t-test was conducted in order to determine if gender and faculty of graduation of the instructors significantly affect their level of perception of the effectiveness of the TTPs.
4. One-way analysis of variance (ANOVA) was applied to see if educational degree and occupational seniority of the instructors significantly affect their level of perception of the effectiveness of the teacher training programs. When a significant difference was found with ANOVA, a post-hoc Scheffe test was conducted to determine between which groups there was a significant difference.

Occupational seniority's groups were re-arranged as; '1-5 years', '6-10 years' and '11 years and above. The significance level for all statistical analysis was found to be .05. Since the significance level stayed at lower than .05, the differentiations between independent variables were accepted as "significant" and results were evaluated accordingly.

## 2.6 Factor Analysis and Reliability of the Scale

After researching the literature, interviewing professionals about the subject and conducting a pilot study with the foreign language instructors, whether the developed scale consisted of a single or multiple dimensions was tested with an explanatory factor analysis.

**Table 3 KMO and Bartlett's Test**

Kaiser-Meyer-Olkin Measure of Sampling Adequacy		0,778
Bartlett's Test of Sphericity	Approx. Chi-Square	3858,510
	df	1081
	$p$	0,000

*Kaiser Meyer Olkin (KMO)* test showed that the data obtained with the scale was sufficient and reliable to conduct a factor analysis ( $KMO=.778$  ve  $p<0,001$ ).

After Kaiser-Meyer-Olkin Measure of Sampling Adequacy test, the conducted Principal Component Analysis and Varimax with Kaiser Normalization statistics indicated that 50 items of the scale were gathered

under 5 factors. In order to determine in which factor the items were gathered, the minimum loading value accepted was 0.30 or greater (Leech, Barrett&Morgan, 2005, p. 83-86).

Seeing items 8, 14, 25, 32 and 36 of the scale were not gathered under any factors, they were omitted from further analyses and the factor analysis was repeated with the remaining 45 items. After the second factor analysis, it was found that item 49 was loading more than two factors, thus it was omitted in this stage from the other analyses, too. It was also found that after the third factor analysis of all the remaining 44 items of the scale were loading under 5 factors (dimensions).

### 3. Results

#### 3.1 Results of Descriptive Statistics

**Table 4 Descriptive Statistics for Instructors' Perception of the Factors**

<b>Factors</b>	<b><i>N</i></b>	<b><i>Min.</i></b>	<b><i>Max.</i></b>	<b><math>\bar{X}</math></b>	<b><i>sd</i></b>
Efficiency of the TTPs	303	2	5	3,98	0,67

<u>OPTION</u>	<u>OPTION</u>	<u>SCORE RANGE</u>
Totally disagree	Never	1,00-1,80
A little	Seldom	1,81-2,60
Somehow	Sometimes	2,61-3,40
Mostly	Often	3,41-4,20
Totally agree	Always	4,21-5,00

From a general perspective, it is seen that the general attitude of the subjects in the survey was positive; however, the attitude did not reveal the “totally agree” level. It can also be seen that at no sub-category was the “always/totally agree” response given.

### 3.1.1 Results of the Instructors' Perception of the Factors Regarding Their Gender Differences

**Table 5 T-test Summary Table Comparing Instructors' Gender Groups on Scores of the Factors**

Factors	Gender	n	$\bar{X}$	sd	t-test		
					t	df	p
Efficiency of the TTPs	Female	20	4,1	0,6	2,24	30	0,016*
		2	3	9			
	Male	10	3,8	0,6			
		1	2	3			

\*Significant at .05 level.

It was also found that there was a significant differentiation as regards the effectiveness of TTPs between female and male subjects and that this differentiation favoured female subjects with ( $t=2.24$  and  $p<.05$ ). The data analysis also revealed that female subjects considered the effectiveness of the TTPs higher than male subjects ( $\bar{X}_{Female}=4.13$  and  $\bar{X}_{Male} = 3.82$ ).

### 3.1.2 Results of the Subjects' Perception of the Factors Regarding Their Graduation

**Table 6 T-test Summary on Instructors' Perception of the Factors Regarding Their Graduation.**

Factors	Educational Degree	n	$\bar{X}$	s	t-test		
					t	Sd	p
Efficiency of the TTPs	Faculty of Education	17	3,	0,	0,	30	0,166
		5	97	68			
	Faculty of Arts and Science	12	4,	0,			
		8	00	67			

\*Significant at .05 level.

There is no significant difference between the graduates of Education faculties and Arts and Sciences faculties regarding the effectiveness of TTPs ( $t=0.94$  and  $p>.05$ ). It is derived from the table that subjects'

perceptions of the effectiveness of TTPs in connection with their graduation level is not significantly different ( $\bar{X}_{Faculty\ of\ Education} = 3.97$  and  $\bar{X}_{Faculty\ of\ Arts\ and\ Science} = 4.00$ ).

### 3.1.3 Results of the Instructors' Perception of the Factors Regarding Their Educational Levels

**Table 7 One-way Analysis of Variance Summary Table Comparing Instructors' Educational Levels on Scores of the Factors**

Factors	Groups		$\bar{X}$	sd	ANOVA		Post-hoc Scheffe
	Educational Degree	n			F	p	
Efficiency of the TTPs	BA (1)	158	3,97	0,64	0,91	0,40 3	-
	MA (2)	124	3,97	0,73			
	PhD(3)	21	4,01	0,60			

\*Significant at .05 level &. \*\*Significant at .001 level.

It was found that education level did not reveal a significant differentiation in the perception of the effectiveness of the TTPs ( $F=0.91$  and  $p>0.05$ ). In other words, in connection with their education levels, the perception of the subjects of the effectiveness and benefits of TTPs stayed very close to one another ( $\bar{X}_{BA}=3.97$ ,  $\bar{X}_{MA}=3.97$  and  $\bar{X}_{PhD}=4.07$ ).

### 3.1.4 Results of the Subjects' Perception of the Factors Regarding Their Occupational Seniority

**Table 8 One-way Analysis of Variance Summary Table in the Perception of the Subjects' Occupational Seniority**

Factors	Groups		$\bar{X}$	sd	ANOVA		Post-hoc Scheffe
	Occupational Seniority	n			F	p	
Effectiveness of the TTPs	1-5 Year (1)	100	3,92	0,61	1,13	0,32 4	-
	6-10 Year (2)	109	3,95	0,72			
	11 Year and above (3)	94	4,01	0,			

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\*Significant at .05 level & \*\*Significant at .001 level.

It was found out that occupational seniority did not produce a significant differentiation in the perception of the effectiveness of TTPs ( $F=1.13$  and  $p>0.05$ ). As is gathered from the table, the perception of the subjects about the effectiveness of TTPs in connection with their occupational seniority remained almost the same ( $\bar{X}_{1-5\text{ year}}=3.92$ ,  $\bar{X}_{6-10\text{ year}}=3.95$  and  $\bar{X}_{11\text{ year and above}}=4.01$ ).

#### 4. Discussion

After evaluating the results, there are some items justifying the efficiency outcome of TTPs. Here are some of them as follows: For the item *“I conduct a student-centred approach in speaking courses”*, 253 of the subjects claim that they prefer a student-centred approach in speaking courses. As seen up to this point TTPs seem to have reinforced instructors’ positive attitudes in terms of teaching speaking. For the item *“I feel adequate in various activities that I have learned to utilize in speaking courses”*, the attitudes of the subjects reflect positive outcomes for the activities they learnt after TTPs. For the item *“I feel adequate in reading analysis”*, 281 subjects said they found themselves adequate in reading analysis. With this item a general question was asked and the responses seemed to be fairly satisfactory for the subjects who participated in TTPs in terms of reading skill. For the item *“I feel adequate in a great variety of activities that I have learned through workshops, and/or on the job and in-service trainings”*, Of the 306 total responses, 227 of them indicate that they feel adequate in a great variety of activities that they have learnt through workshops, seminars or in-service trainings. Finally, TTPs in general worked well with instructors’ professional development, which further consolidates subjects’ philosophy in line with latest improvements. For the item *“I have gained a creative teaching philosophy in the aftermath of TTPs that I have so far attended”*, 221 of the subjects claim with deep contentment that they have gained a creative teaching philosophy in the aftermath of TTPs. On the other hand, by taking a closer look at the statistics not all of the subjects are very content with TTPs. The reason why some of the subjects have been left out might be because of not taking a fit-for-purpose principle into consideration. For the item *“I believe that there has been development in my teaching philosophy as the result of TTPs”*, 235 of the subjects indicate with a marked composure that they believe there is a development in their teaching philosophy as the result of TTPs, while 53 of them indicate that they feel little development in their teaching. Although the subjects have recorded low mean scores with some of the items in terms of sub-skills, on the whole it is understood that they feel competent after TTPs.

##### 4.1 Discussions on the Results of Descriptive Statistics

**Research Question 1:** Do the instructors who have attended TTPs feel that **they have benefited from these programs?**

Subjects evaluated highest t mean value for the question of “the benefit from TTPs” with 3.98. Hence, it is seen that subjects consider themselves all the more proficient as the result of the TTPs they have received ( $\bar{X}_{\text{Effectiveness of teacher training}}=3.98$ ). As is seen, after attending TTPs the instructors who took part in the study have the belief that they have benefited from the sessions.

From a general perspective, it is seen that the general attitude of the subjects in the survey was positive; however, the attitude did not reveal the “totally agree” level. It can also be seen that at no sub-category was the “always/totally agree” response given.

**Research Question 2:** Do certain variables such as **gender, graduation, education level and occupational seniority** affect subjects’ attitudes towards TTPs?

#### 4.2 Discussions on the Instructors’ Perception of the Factors Regarding Their Gender Differences

A significant differentiation between male and female attitudes towards writing was found and that differentiation was in favour of females with ( $t=2.65$  and  $p<.05$ ). The statistical analysis revealed that female subjects developed a more positive attitude towards TTPs. In another study, Yavuz (2005) claims that female EFL teachers displayed greater efficacy than males because of a common belief that language teaching is a feminine task since this field has mainly been dominated by female language teachers (p. 81). Although some of the studies reveal such data, this might still not be the reason why female instructors display greater efficacy since EFL/ESL teaching is not only a feminine but also a masculine task.

#### 4.3 Discussions on the Subjects’ Perception of the Factors Regarding Their Graduation

It is derived from the table that subjects’ perceptions of the effectiveness of TTPs in connection with their graduation level is not significantly different ( $\bar{X}_{Faculty\ of\ Education}=3.97$  and  $\bar{X}_{Faculty\ of\ Arts\ and\ Science}=4.00$ ).

#### 4.4 Discussions on the Instructors’ Perception of the Factors Regarding Their Educational Levels

The ANOVA test shows us that education level is a significant predictor for two factors ( $F_{Writing}=6.43$  and  $p<.05$  &  $F_{Listening}=10.11$  and  $p<.001$ ). In order to inspect the significant differences among the groups, a post-hoc Scheffe test was conducted. It was found that for both factors, instructors with BAs scored lower than the other two education groups. The mean scores in reading for instructors with a BA were lower than that of instructors with an MA and instructors with a PhD ( $F=6.43$  and  $p<.05$ ). The post-hoc Scheffe test (Table 18) displays that there is a significant differentiation between Group 1 and Group 1-2. Instructors with a BA degree have a lower level of positive perception about the effectiveness of the TTPs on reading than the other two education groups ( $\bar{X}_{BA}=3.76$ ,  $\bar{X}_{MA}=3.93$  and  $\bar{X}_{PhD}=3.95$ ). Table 17 shows that subjects’ perception of listening in connection with their educational degree is found to be significantly different ( $F=10.11$  and  $p<.001$ ). In accordance with the Post-hoc Scheffe test (Table 18), subjects with a BA (Group 1), graduate subjects (Table 2) and PhD graduate display a significant differentiation in terms of listening. The mean scores in listening for subjects with a BA displayed a lower level of perception about the effectiveness of the TTPs on listening than the other two education groups ( $\bar{X}_{BA}=3.72$ ,  $\bar{X}_{MA}=3.96$  and  $\bar{X}_{PhD}=4.02$ ).

This data demonstrates that the more educated the subjects, the better they benefited from reading/listening sessions in TTPs. This may also prove, just like the data on perceptions of subjects regarding the faculties they graduated from, that subjects who hold Masters and PhDs may not have had high expectations before attending TTPs because they may have thought that they did not have more to learn from those reading/listening sessions. It can also be concluded that the TTPs which subjects attended may have lacked the necessary needs analysis for the BA holders who may have had other needs than that of the topics of the TTPs. All in all, as mentioned several times in this study, without a seriously conducted needs analysis it is less likely that TTPs can reach the desired outcome for anyone.

#### 4.5 Discussions on the Subjects’ Perception of the Factors Regarding Their Occupational Seniority

In accordance with the ANOVA test, which was conducted in order to find out if there is significant differentiation in the perception of the subjects' occupational seniority, a significant difference was found.

There was a significant difference regarding subjects' occupational seniority ( $F=4.01$  and  $p>0.05$ ). According to a post-hoc Scheffe test for subjects with 1-5 years of experience (Group 1), those with 6-10 years of occupational experience (Group 2) and for subjects with 11 years and more experience (Group 3), a significant difference was discovered.

## 5. Conclusion

To start with, some problematic areas may stem from needs analyses not being carried out prior to designing the TTPs. Sessions should be relevant to the instructors' home context and also they need to be included in the design process unless the trainers or department heads want the training to go over the instructors' heads. Teachers are less likely to be convinced with knowledge that is irrelevant to their local context. They want it to be specific, contextualised, observable, and testable. This may demonstrate that the TTPs that the instructors took part in for the study did not pay attention to the concept of fit-for-purpose.

The concept of being competent from the instructors' point of view is to be able to adjust themselves into new contexts as well as peculiarities. The conclusion can be drawn that instructors may not have felt very competent and this could be the reason why they were never at a "totally agree" level in this study. Then again, they might have attended those TTPs which were way beyond their home context or lacked the concept of adjusting the activities to new situations.

As seen from the above statistics, the instructors who have less experience than others claim that they have not benefited much from listening, reading and writing sessions in TTPs in comparison with those who have more than 6 years and above field experience. There are two conclusions that can be drawn from this fact. Given the instructors who have less than 6 years of experience are considered as younger instructors than the other subjects in the study, it can be concluded that they graduated from their schools having learned the latest innovations, techniques and/or approaches since they have had the most up-to-date ELT education so far. If these subjects had cutting edge techniques, then one can ask the question if the TTPs they attended failed to keep up with the latest innovations in the profession and could not convey these new approaches to the sessions or if these TTPs did not conduct any needs analysis prior to the sessions. In either case it can be seen that less experienced instructors may not have been covered as a significant target group in TTPs, according to the statistics. Hence, TTPs should be able to keep up with the latest innovations in the profession and keep their programs flexible as well as conducting needs analysis for particular audiences.

Taken from this perspective, there does not seem to be any prejudice against TTPs from any age group. The core of the discussion is that sessions should cover the needs of the audience. Stated briefly, the instructors who have less than 6 years of experience should be considered as the most important group to cover since they may need important clues and approaches for their professional careers. The second important group to take into consideration prior to designing TTPs is the ones who have more than 11 years of experience since this group of language teachers may have lost the latest track of the profession due to not having taken part in any research or academic study.

On the other hand, further study is needed after a needs analysis to elicit the real needs for experienced teachers' classroom practice. This time the study should aim to include instructors who have 16 years and more experience in the profession.

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# An assessment on media literacy education in Turkey and the problems experienced in practice

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## Abstract

Media exists in every area of our societal lives, together with the fast improvement of novel communication technologies. Produced media texts reach to individuals via mass communication tools with very different contents, from newspapers to television programs and from news to cartoons. In this cyclical process of communication, the segment that might each be in the status of a passive receiver by being exposed to the negative influences of media texts is children and young people. Therefore, because of this role of the media that increases each day, many countries have developed a national education policy about media literacy in the education system. Instead of a protective approach about the contents of media texts; creating awareness, increasing the consciousness level, preparing basis for students to be able to comprehend the skill of critical approach are among the goals and gains of the education that will be given in this area. Improving the ability of questioning, commenting and evaluating media messages is only possible through a media education centered on critical thought.

This study aims to investigate the media education given under the elective course named “media literacy”, which started to be taught in primary education 6th, 7th and 8th classes since 2006 in Turkey with the cooperation of RTÜK (Radio and Television Supreme Council) and MEB (Ministry of National Education), and aims to develop recommendations by identifying the problems in operation.

Key Words: Media education; media literacy; Turkey

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## 1. Introduction

Alongside the process which started with the systematized address of media in education since the 1920s and its recognition as an education subject, lecturers at primary and secondary levels together with communication scholars nowadays stress that information and awareness raising in media must start at very early phases. (İnal, 2009: 16-17) Although “Media literacy” is a new Notion, it has a past which goes back to the start of the 20<sup>th</sup> century as a discipline (İnal, 2009: 15). It has initially been taken up in Great Britain during the 1930s as an educational tool aiming at protecting individuals, especially children, from the detrimental effects of media (Taşkıran, 2007: 91).

Media literacy is defined as a pedagogy which ensures the analysis of media codes and traditions, criticizing media’s values and ideologies, construal of messages generated by media texts, assessing and selecting media

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content, becoming aware of the effects of media and a reasonable use of media. (Uysal, 2007:47) One of the two constituent notions of media literacy is media, while the other is the mass which can develop its literacy skills.

The following principles have been agreed on as regards what must be taken into consideration in the analysis of media messages in light of the models developed under the leadership of English and Canadian academicians on the matter of media literacy which is a developing field being subject of conceptual discussions “media messages are constructed within a certain generation process, media messages are generated in an economic, social, political, historical and aesthetical context, while how we construe the message and the meaning we perceive from that message manifests itself as an outcome of the interaction between the receiver of the message, sender of the message, text/ message and culture; media uses a language peculiar to itself. This language characterizes various communication forms, types and symbol systems, while media representations play a role in people’s grasp of social reality. (Quoted from Aufderheide: Algan,2006:38)

Hobbs analyzes the problems and discussions which focus on various education philosophies as well as the education provided by these lecturers in their classes in media and those which guide the education they provide by reference to seven questions. These discussions are continued around the following questions: Must education in media literacy aim at protecting children and youngsters from the negative effects of media? Must media production be a basic trait of media literacy? Must media literacy focus on popular culture texts? Must media literacy have a more direct political and ideological agenda? Must media literacy focus on school based primary and secondary educational environments? Must media literacy be taught as a specialized subject or placed within the context of current subjects? Must media literacy entrepreneurs be financially supported by media organizations? (Hobbs, 2004:122-140). These discussion topics are meaningful in terms of showing us that the notion is taken up in the US within the framework of education problems. Media literacy is seen as an umbrella notion with a wide spectrum composed of different education philosophies, theories, frameworks, practices, environments, methods, targets, purposes and outcomes (Hobbs, 2004:134).

It is possible to speak of two approaches in the relation between media and education. The first approach uses media as a tool. I.e. articles published in newspapers and magazines as well as programs broadcast on radio and television are utilized in general education branches of primary and secondary education, especially in history, geography, Turkish and sociology classes. The second approach however analyzes media by discussion in detail. News sources, mechanisms comprising the news or program are researched; tendencies or interests guiding these sources and mechanisms are determined. Thereby, students learn to think critically and assess the media. The said two approaches differ significantly from one another (Topuz, 2007: 18). In particular with the change gone through in media education after 1960s, media which has been viewed from an instrumental viewpoint has come to be replaced by learning about media.

Individuals who start to learn about media become able to acquire the skill in viewing the media messages they encounter from a much more critical viewpoint. On this basis, education in media literacy, going beyond protecting students from the negative effects of media messages, assists students in developing their skills in critical thinking and problem solving. It aims at teaching students to ask basic questions while sorting out media messages:1- Who has generated this message?2- Which techniques have been used in this message to draw my attention?3- How might other people have understood this message in divergence with how I have understood it?4- Which lifestyles, values and views have been included in this message and which others have been neglected?5- Why has this message been sent? (Quoted from Jolls and Thoman by: Toker Erdoğan, 2010:54)

This circumstance of the media points at the importance of the development of a critical media awareness. This process has especially in the post 1980 period been accompanied by the wear-out of the understanding in public services media or public broadcasting being the requirement of the social state approach alongside the rapid rise in the global media market. Mass communication instruments which have also been used as one of the significant instruments of modernization during 1960s and 1970s has arisen as a source by which social change and democratic participation will manifest. The development of communication technologies accompanying all

these developments had further increased the discrepancy between those who can reach technology and those who cannot reach technology, initiating the processes expressed as digital separation. Another dimension of media literacy is thought of as a new pedagogy to eliminate the difference between those who reach information and those who cannot reach information.”(Uysal, 2007:47)

This study, after questioning the requirements of media education pursuant to all these discussions, aims at analyzing and evaluating the educational program of media literacy, which has been practiced in Turkey since 2007, over the content of the program model’s content. Problems concerning the implementation of the course program shall be set forth and suggestions for the solution thereof shall be developed.

## **2. Why is education in media necessary?**

We can base the foundations of the idea of media education on discussions in the effects of mass communication tools and how these effects may be utilized positively in education experiences.

The target of media education is to raise individuals who can read media messages correctly, question what they see and watch, assess these from a critical viewpoint and who have developed analysis skills. “The development of media literacy education with a critical viewpoint will provide an important contribution to individuals’ interpretation of media messages. In other words individuals will acquire skills of assessing media messages, thereby becoming able to discern the differences between the “truth” and the “reality” provided by the media. Individuals with critical media literacy, will be able to become aware of the roots of messages circulated in media texts in daily life alongside reading these messages” (Binark and Gencil Bek, 2007: 103).

For the model being applied in Turkey which pioneers many projects in this area, UNESCO, the studies of which are used for the preparation of guides, has organized various international meetings and has assumed an important place in the conceptualization of media education. UNESCO, which points out that “The purpose of media education is to research and assess the place of media in society and its social implications in all areas and throughout history, had in 1982 introduced the importance of education in media literacy with the “Grünwald Media Education Declaration” for all national audiences.

The purpose of media literacy is to render students proficient, critical and literate in all kinds of media; thereby ensuring that students are the controllers of what they see and hear and not the ones who are controlled thereby (quoted from Jolls and Thoman: Toker Erdoğan, 2010:53) In line with the increasingly student focused approaches in the education area, autonomy and active participation also in the education of media literacy is gaining in importance.

According to Renee Hobbs (1998), who is closely interested in education in media literacy with its studies and projects in the US, media literacy encompasses the skill in generating its own messages by reading and writing, speaking and listening, access to new technologies, critical watching and the use of a great variety of technologies. According to Hobbs, practical implementation within the scope of education in media literacy ensures that children bring out their creative skills while expressing themselves and provides the opportunity to inform oneself about the media industry. For students to become critical watchers in its real sense, they must go through various experiences such as photography, acting in front of the camera or writing a news story. Unless such practical implementations are used throughout the education in media literacy, education in media literacy is not considered to have taken place in its full sense. (Hobbs, 2004:122-140)

During the implementation stage of the media literacy project in Turkey, the then Vice Director of the Board of Education and Discipline of the Ministry of National Education, Vahap Özpölat speaks of the importance of developing criticizing skills in students as regards media’s possible disinformative and manipulative messages, their skills in analytical thinking, and their awareness raising for them to be informed of the truth that there may be a certain cultural, conceptual or even ideological context behind media messages. (Özpölat, 2007:61)

Accordingly, in order to educate individuals who can observe with a more conscious and critical view against structured media messages, the necessity of media education is indispensable.

The media education centered around critical thinking which is needed for the development of media and society relations in a healthy and democratic environment has also brought about discussions as regards ‘how one can become a good media literate’. In fact, the importance of media literacy course whereby the social role of media has come to be discussed for a long time after its initial gain in such an effective standing in the public area was initially brought to life in 2007 with the problems experienced in practice as a belated project in Turkey.

### 3. The media literacy project in Turkey

**3.1. Start of the Project:** With the protocol signed between the Radio and Television Supreme Council and the Board of Education and Discipline of the Ministry of National Education in 2006, the medial literacy course, which was taken into the primary schooling program was primarily brought to life as a pilot project in five cities. In the 2007-2008 schooling year however, it has been aimed that 1.5 million students attending 6<sup>th</sup>, 7<sup>th</sup> and 8<sup>th</sup> grade of elementary education take media literacy courses; however according to the research of the Radio and Television Supreme Council this number could not be reached and a total 388 thousand students could take this course. (RTÜK, 2008) When one looks at the official website called *medyaokuryazarligi.org.tr* however, no up to date information could be seen on the number of students taking this course during the current term across Turkey.

In order to educate lecturers teaching media literacy however, the three days media literacy lecturer education seminar was organized in Ankara by the end of the 2006-2007 schooling year. A total of 103 social science teachers representing all cities have attended the said seminar and during the 2007-2008 schooling year, teachers selecting this course were trained by these lecturers (RTÜK, 2007a). When we look at the official website, we see that the course’s target population is separated into four sections. These are; “adults, teachers, students and media employees”. The materials which comprise the content of the course within the project and which were used for the lecturing of the course are mentioned under the titles of teachers and students. In the part related to teachers we see the page for “media education manual, annual plan, teaching plan, teachers’ guide, manual, pool of activities and the project page. The part reserved for teacher activities is however not yet filled in. Under the title related to students in the website however are the media literacy manual for students, schooling program, useful links and games. The teachers’ Handbook for Primary School Media Literacy Course, Media Education Handbook for Teachers prepared for teachers and the Media Literacy Handbook for Students prepared for students are the Turkish translations of texts prepared by UNESCO. Said materials are uploaded in the media literacy web site set up by the Radio and Television Supreme Council.

**3.2. Analysis of the Content of the Schooling Program:** The method of qualitative content analysis was used when analyzing the content of the program. During the qualitative content analysis, the formative sub titles of the media literacy schooling program were looked into. Therefore the content of the program and the sub titles predicated on were analyzed. These are the “media literacy course schooling program approach, general purposes of the program, the basic approach of the program, the structure of the program, skills which are aimed to be acquired, values which are wished to be vested, measuring and assessment, activities and the subject headings of the course, i.e. the units specified”.

**3.3. Schooling Program Approach :** “Research and assessments made on such research set forth that children, who are unprotected receivers against visual, audial and written media must be raised in their awareness against media by starting therewith during primary education. Thereby the student; shall become able to read the

media, reach the consciousness level to deconstruct the language of media and participate in the notion of communication as an active individual instead of being a passive receiver against media.” (Commission, 2007a) These expressions are an indication of the definition of media literacy by the notions of “protection” and “control” and in a sense points at the fact that the didactical understanding of education based on learning “correct thoughts” by heart could not be deserted. In the foreword of the Teachers’ Handbook of Media Literacy in Primary Education, it was stated that “... perhaps the most effective way of protecting children from the negative effects of mass communication tools is to let them gain media literacy skills”, thereby displaying a protective understanding again. (Toker Erdoğan, 2010:80) It is understood by the language used in the preparation of the Program and the Guide that the priority was attached to a protective approach. It is obvious that effort has been spent to draw attention to the adverse effects of the media by the explanation in the Guide quoting “The earlier individuals start learning and grasping the difference between the present reality and the reality provided by the media, the more they shall reduce the adverse effects of media on themselves” (2006: 6). Therefore the program stands close to the media literacy approach rather than critical media literacy. Mainstream media literacy displays a character which is far from questioning present media structure and which sees media merely as a message content and which aims at protection from media and attachment to values especially when children are the case.

**3.4. General Purposes of the Education Program:** The program has generally aimed at vesting certain basic skills and values alongside overall targets and yields and that students acquire these skills and values through accomplishments. The overall purposes of the program however were stated as follows: “by reading media from different angles he raises his awareness to become sensitive to the environment he lives in, aware of the problems of his country, processes what he sees in the media through the sieve of reason, reaches messages in television, video, cinema, commercials, written media, internet and similar environments, whereby he acquires the skills of deconstructing, assessing and transmitting these, acquires a critical viewpoint towards the written, visual and aural media, puts a transition from finding answers for the generation of messages and the analysis thereof towards questioning on the agenda, becomes a conscious media literate, participates in social life more actively and constructively, contributes to awareness raising for carrying public and private broadcasting forward to more positive points. (2006: 7) When the overall purposes of the program are assessed, it is seen that an attitude towards raising individuals who can look at media with a critical point of view comes to the forefront. However, this viewpoint contradicts the “protective approach” which comes to the forefront at many stages of the program and the guide. Moreover, the question as regards how this critical viewpoint shall be gained in practice is not expressed clearly even when one analyzes the in class activities part formed within the annual plan. It is obvious that the critical thinking skills of the teacher will effectively guide students’ conceptualization. Therefore, the matter of educating the lecturer preserves its importance especially in fields centered on critical thinking such as media literacy. Adopting a critical pedagogy understanding is an attitude which a lecturer in media education must have.

**3.5. Basic Approach of the Program:** The basic approaches of the educational program are stated to be as follows: “it ensures the development of knowledge, skills and values, thereby putting learning and the actualization of learning in the forefront, induces students to observe, research and see their environments with a critical viewpoint, aims at raising students as healthy and happy individuals in physical and emotional terms, aims at students’ development in spiritual, moral, social and cultural aspects, provides students with the opportunity to use their experiences during the learning process and interact with the environment, takes the multiple intelligence theory as well as the variety in the methods and techniques for learning and educating in order to reach students, provides the opportunity to assess learning and teaching processes within their progress by looking into the student study files to be drawn up (2006: 6-7). When we look at the overall attainments of the program, we can say that they display parallel traits with the attainments of any primary school education

program. However, attainments which develop a viewpoint peculiar to the positioning of mass communication tools in social life by students must be placed under this titling.

**3.6. The Structure of the Program:** Director of the Education and Programming Department of the Ministry of National Education Mehmet Akif Sütçü has stated that the program has been prepared by a constructivist approach based on an activity based education strategy and predicating on multiple intelligence theory, that students shall associate information he had observed in his environment in near or distant past by this approach, data he had transformed into knowledge or information he had obtained by various courses in the educational institutions he has attended with the knowledge he shall acquire in this class, that thereby with the guidance of the teacher he shall reach certain brand new skills and values. (Sütçü, 2006:55) What is important in Sütçü's statement here is whether students who while in practice read media with an analytical viewpoint will acquire a critical questioning skill with respect to the messages they watch, see and encounter. Only by this principle can the structure of the media literacy education program be effective in letting students gain skills in using an analytical viewpoint when integrating theory and practice.

**3.7. Skills Which are Aimed at being Acquired:** Another field for which the question as to "how" remains vague in practice is basic skills which are aimed to be vested in students such as "skills in observation, research, critical thinking, creative thinking, communication, problem solving, using information technologies, entrepreneurship, using Turkish correctly, beautifully and effectively as well as skill in social and cultural participation". (2006: 7-8) These are shown as "skill targets" yet no explanations have been given as regards how these targets will be met. Therefore these need detailed study.

**3.8. Values Which are Aimed at Being Attained:** Within the scope of the program; respect for the privacy, aesthetical sensitivity, honesty, responsibility, loyalty to ethical rules, respect for differences, sensitivity to enlivening cultural heritage, attaching importance to inter family communication, conscious consumption, active participation in social life, being scientific, equality, solidarity, helping each other and sharing have been stated as values which are wanted to be vested in students (2006: 8). The media has an important function in the generation and circulation of cultural values and social behavior codes. Therefore, we see that the media literacy program aims rather at vesting students with common cultural values. It is not very clear with which meaning the value of "equality" from amongst these values is used. However, the role of media literacy in ensuring social gender equality cannot be neglected. When we look at the course units, it is striking that social gender discrimination is not mentioned. This field is the one where ethical infringements are committed most frequently. It must be added to the educational program both as a value to be acquired and as an approach for social gender equality.

**3.9. Measurement and Assessment:** It has been stated in the "Measurement and Assessment" part that this course shall not be graded and that only the name of the course shall be mentioned in students' school reports. Therefore the tools for measuring and assessing this course are tools other than grades. (2006: 16). For example, it is striking that some of the tools and methods for measuring students' success over the annual plan are observation, open end questions, self-assessment forms, group assessment forms, performance home works and student portfolios. In the "units, attainments, activity samples and descriptions" sections present respectively in the annual plan, describes what the attainments for each unit are as well as what must be borne in mind when making assessments for in class activity samples and the said unit or doing home-work or a project. In the "Units, attainments, activity samples and descriptions" section, explanations have been made as regards attainments for

each unit, activity samples, matters to be taken into consideration as well as measuring and assessing methods (2006: 32-39). Activities related to the attainments have been included although the activities have not been assessed.

**3.10. Activities:** It is utmost significant that the present attainments in an education program are made to be acquired in an effective, permanent and meaningful way and activities are designed in line thereto. When we look into the in class activities included in the annual plan of the media literacy course, we see that the activity designs have been included by diversifying the unit headings according to the mass communication tools. When we look at works such as surveys, individuals or group performances, banner works, drawing up one's own newspaper, observations after watching a 15 minutes media product, word hunt or puzzles for finding notions related to communication we see that these are activities which increase student participation and ensure active individual participation. However, it is possible to say that such great variety of activities is too much to be included in a weekly one hour course. For activities to be performed efficiently in line with the attainment, the student must get more than an hour's course on media literacy.

**3.11. Media Literacy Course Subjects / Units:** In order to realize the said goals, the following units were included in the Selective Media Literacy Course Educational Program: *“Introduction to Communications; Mass Communications; Media; Television; Family, Children and Television; Radio; Newspapers and Magazines; Internet (Virtual World).”* As may be understood from the unit topics, the subjects are generally selected on the mass communication tools basis and mostly for the presentation of the said tools. However, the preparation of course contents in conformity with the requirements of critical pedagogy as a basic approach of the media literacy educational program will be much more appropriate for the real *raison d'être* of this course and its purposes.

#### **4. Problems determined in the implementation of the media literacy project and suggestions for the solution thereof:**

When we bear in mind that the idea of media literacy is being discussed throughout the world since 1930s, it is obvious that Turkey has been lagging behind in terms of education in media literacy. We may list the problems determined in the practice of media literacy project and solution suggestions for said problems as follows: 1-) It is observed that the media literacy course, which has been included in 6<sup>th</sup>, 7<sup>th</sup> and 8<sup>th</sup> grade elementary schooling programs for the last six years in Turkey, is insufficient primarily in its critical dimension. It is striking that the approach of “how can we protect children and youngsters from the adverse effects of media” prevails both in the education program and in the manuals and guides prepared for teachers. We know that the media literacy course are directed towards education programs and course contents whereby the protective approach is being deserted and the road of critical questioning is being paved throughout the world, that there is a tendency for student centered active participation to come to the forefront. Therefore, the need for the development of the schooling program in Turkey in this direction is the case. 2-) Media literacy course in Turkey is provided as a selective course. The teaching of the course as a selective course lowers the importance level of the course in terms of its scope and efficiency. Likewise, when we look at western countries we see that the media literacy course is included in the schooling programs as must courses or associated with other disciplines. Moreover, by leaving media literacy course merely at the 6<sup>th</sup>, 7<sup>th</sup> and 8<sup>th</sup> grade levels, it might have been late for the critical reading of media messages. However by taking steps in associating with the contents of other courses as an intermediary discipline at the first stage, elementary education will lay the bases for providing a much more efficient and effective media literacy education with the course to be taken at the second stage. Thereby the continuity of media literacy education will also be ensured. 3-) The lack of grading for the assessment and measurement of this

course may decrease the student's interest in the course. Moreover, as stated before, the weekly one hour course is insufficient for the several number of activities included in the education program and for vesting the students with a critical viewpoint in this field. 4-) The fact that the Media Literacy Course Teachers' Guide is the same for all three grades (the 6<sup>th</sup>, 7<sup>th</sup> and 8<sup>th</sup> grades) is another problem being endured. The guiding book must be drawn up and developed separately for all three grades. The lack of a printed source as a course book for students impedes students to gain information on the subject beforehand. Only one printed source in the form of a course book has been encountered. It is suggested that studies are made in this direction. 5-) It is striking that media literacy course program is based on informative grounds as regards the introduction of mass communication tools and the means for protection against the negative effects of these tools rather than an education in media. It is necessary in this field especially to follow up on the developments in the US and western countries and revising the education program by taking the shortcomings into consideration. Although there are different approaches therein, it is very important, as stated by Renee Hobbs, that one must focus on ensuring "critical questions on what we watch, see and read" in the media literacy field and the educational understanding adopting a critical pedagogical approach. 6-) Media literacy requires being taken up as a life-long educational process. Media literacy is a skill which includes the skill in reading media messages correctly. Therefore, it must be developed not only at the primary school level but also to encompass the pre-school period and parent cooperation, while interest in this area must be kept alive especially through guidance in parental education. 7-) It is important that students are induced especially to generate their own media, and learn through experience. An adequate budget to be used in the activities as well as those to be supported by out of school activities will ensure positive contributions in this process. 8-) Another dimension of the studies in media literacy is comprised by the training of educators to assume duty in the media literacy education program. Media literacy courses are being taught by social science teachers in Turkey. Social Science teachers were given the authority to teach the course provided they undergo a three-day media training. (There are teacher who haven't even been given the said training) However, media literacy classes must be taught by Communication Faculty graduates having a pedagogical formation. 9-) For the quality of this educational process, teacher will have to undergo a qualified in service training in media literacy and supported by quality publications. 10-) For the education of teachers, providing must and selective courses on media literacy at undergraduate, graduate or doctoral levels especially in Education Faculties an academic studies in the field will make significant contributions.

## 5. Conclusions and assessment

This project which is tried to be brought to life in Turkey with the cooperation of the Ministry of National Education and the Radio and Television Supreme Council is a belated yet significant step for Turkey. Therefore, it has been determined that problems are encountered in the functioning of this media education project when putting theory into practice, i.e. in the implementation thereof. This study assesses the point arrived at by taking up both the standing of the media education provided in elementary schools within the media literacy project which has a six years past in Turkey and the problems encountered in practice. Media education which provides a multi directional perspective for becoming a conscious citizen who can analyze the thousands of messages generated by the media in the information age as we encounter on a daily basis and who can think critically, is a field which may make very significant contributions in the formation of a healthy democratic environment. Therefore problems determined in practice, discussions made for the determination of setbacks lay the bases for a better media education. The suggestions made within the scope of his study are directed towards this goal.

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# An automatic maximum word alignment of parallel corpus for ESL learners

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## Abstract

In this paper, we propose an approach that automatically aligns words extracted from paired sentences in English-Korean parallel corpus. Word-to-word mappings from aligned sentences are easily accomplished if a bilingual lexicon is provided. However, newly coined words cannot be aligned automatically since they are not registered in the lexicon. For automated alignment of newly identified words, we introduce new heuristics to align maximal number of words, using structural transfer patterns between the two languages. Provided maximum word alignments together with paired sentences in a parallel corpus, Korean learners of English can benefit from recognizing distinctions on sentential structures as well as vocabularies between the two languages.

*Keywords:* Parallel corpus; ESL learner; maximum word alignment

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## 1. Introduction

A parallel corpus is one of the richest resources from which various kinds of linguistic knowledge can be extracted. It is indispensable for building a statistical machine translation system as well as building a bilingual lexicon. A bilingual concordance system consists of a parallel corpus and a few programs that can retrieve a list of pairs of sentences including a user's query and make a view exactly the way a user wants to see them. A bilingual concordance can be a great mechanism for bilingual lexicographers, human translators, and second language learners for studying the two languages in question since they can acquire similarities as well as differences between the languages by comparing them on a sentence-by-sentence basis (Elke, 2001, May & Xu 2002, Wu et al., 2003).

Although a widely accepted objective of a bilingual concordance is to present a list of paired sentences to users, second language learners can benefit from additional information such as word alignments provided by a bilingual concordance. Especially when self-learners begin to learn a new domain in a language, word alignments along with aligned sentence pairs provide an opportunity for them to learn vocabularies occurring in the domain of the two languages.

A word alignment can be automatically established if a bilingual lexicon is provided. However, newly recognized words cannot be coined automatically since they are not registered in the lexicon. Figure 1 below shows an example of an aligned sentence pair between English and Korean collected from a news article.

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Samsung Electronics is developing technologies to introduce OIS (Optical Image Stabilization) and shutter functions to the Galaxy Note 3.

삼성전자가 갤럭시노트 3에 손떨림 보정 (OIS), 셔터 기능 등을 채택하기로 하고, 기술 개발을 추진 중이다.

Fig. 1. The sample of a pair of sentences (English vs. Korean) with basic alignments.

The gray boxes show the words aligned by exact string matching and a bilingual lexicon lookup. Most of the proper nouns in this example cannot be aligned because they are neologism and not registered in the bilingual lexicon. The verb ‘introduce’ in the sentence also cannot be aligned since its meaning has been paraphrased in Korean.

Presumptive maximum alignments are marked with blank boxes as in Figure 2 below.

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Fig. 2. The sample of a pair of sentences with presumptive maximum alignments.

The alignment is performed by applying several heuristics which presume as many word alignments as possible, rather than by referencing the bilingual lexicon. In this paper, we introduce these heuristics in order to automatically align words between English and Korean even though they are not listed in a bilingual lexicon. Key factors of the heuristics include structural transfer patterns between the two languages and corresponding positional information in the structures.

Parallel documents are easily accessible from Internet nowadays. As they include not only proper nouns but also various neologisms, they become one of the useful resources from which second language learners can learn a modern usage of languages. We propose a prototype which can automatically perform a sentence-level alignment as well as a word-level alignment for a parallel document. In addition, we suggest how to make a view for maximum word alignments along with aligned sentences. This interface helps ESL learners to recognize distinctions on sentential structures as well as vocabularies between the two languages.

## 2. Word alignment for a parallel corpus

### 2.1. Overall procedure

Creating bilingual concordances undergoes several steps. The overall procedure of preparing a parallel corpus for bilingual concordances is depicted in Figure 3.

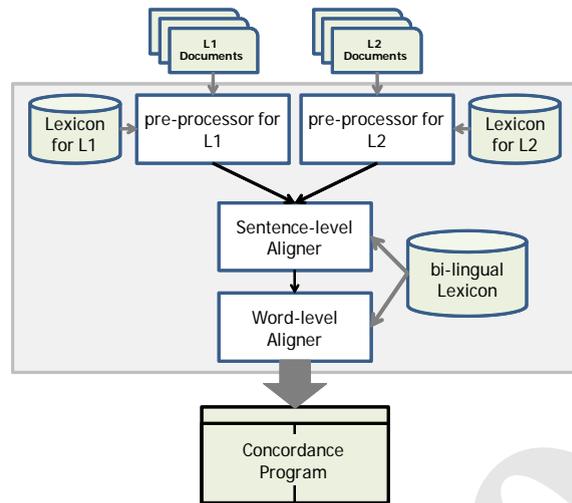


Fig. 3. The overall procedure

First, a pair of parallel documents written in the languages,  $L1$  and  $L2$  is processed separately. A pre-processor segments a document into sentences, and lemmatizes each word in a sentence, using a mono-lingual lexicon. Part-of-speech tagging is then performed, which is followed by a sentence-level alignment between the two documents. The Champollion algorithm (Ma, 2006) was adopted for aligning sentences. The algorithm maps  $n$  source sentences to  $m$  target sentences. A word-level aligner aims to do a word-to-word mapping by referencing a bilingual lexicon. A result of sentence-level alignments accompanied with word-level alignments is used as an input to be fed to a bilingual concordance program.

## 2.2. Presumptive maximum word alignment

A presumptive maximum word alignment algorithm (Lee, 2013) is described in Table 1. The algorithm aims at producing as many alignments between  $L1$  and  $L2$  as possible. It presumes word-level alignments by using structural transfer patterns between  $L1$  and  $L2$ . An input to this algorithm is a collection of words which could not be aligned when a basic word-level alignment was performed. A list of a pair of words in  $L1$  and its presumed translation in  $L2$  is an output of the algorithm. Prior to the explanation of the algorithm, we define the functions  $R()$  and  $L()$  as follows. Subscripts ' $a$ ' and ' $u$ ' refer to 'aligned' and 'unaligned', respectively in the functions.

$R_a(W)$ : A left-most **aligned** word which is located at the **R**ight side of word  $W$ .

$L_a(W)$ : A right-most **aligned** word which is located at the **L**eft side of word  $W$ .

$R_u(W)$ : A left-most **un**-aligned word which is located at the **R**ight side of word  $W$ .

$L_u(W)$ : A right-most **un**-aligned word which is located at the **L**eft side of word  $W$ .

Table 1. A Maximum Word Alignment Algorithm.

```

01 // Presumptive Maximum Word Alignment Algorithm
02 // INPUT: L1_unaligned_list & L2_unaligned_list
03 // OUTPUT: presumptive_word_alignment_list
04
05 for each Ws in L1_unaligned_list:
06
07     WLL = Lu(Map(La(Ws)))
08     WLR = Ru(Map(La(Ws)))
09     WRL = Lu(Map(Ra(Ws)))
10     WRR = Ru(Map(Ra(Ws)))
11
12     Wi = best_presumptive_alignment(Ws, WLL, WLR, WRL, WRR)
13     if Wi != None:
14         add [Ws, Wi] into presumptive_word_alignment_list
15

```

‘Map()’ is an aligning function which maps a word in *L1* to a corresponding word in *L2*. For instance, ‘*W<sub>LR</sub>*’ is a candidate word in *L2* for an alignment, which is located at the right-hand side of an aligned word in *L2* to a left-hand side word of *W* in *L1*. It can be a presumptive translated word of *W*. From line 7 to 10 in Table 1, four possible candidate alignments are calculated. Figure 4 below shows four possible candidate words *W<sub>LL</sub>*, *W<sub>LR</sub>*, *W<sub>RL</sub>*, *W<sub>RR</sub>* for aligning a word *W*.



Fig. 4. Four possible candidate nodes of *W*'s alignment.

A function ‘best\_presumptive\_alignment(·)’ in line 12 decides the best candidate alignment out of *W<sub>LL</sub>*, *W<sub>LR</sub>*, *W<sub>RL</sub>*, *W<sub>RR</sub>* in *L2*, using heuristics. The heuristics uses structural transfer patterns described in Table 2.

The heuristics can be explained with a graphical example. Figure 5 shows a result of basic word-level alignments linked each other.



Fig. 5. A result of basic alignments.

Table 2. Structural transfer patterns and their preferences. (LexTrans means a Lexical Translation)

	English/Korean structural transfer pattern		preference
(1)	W/noun	<b>X</b> /noun → LexTrans(W) Y	Ru(Map(La(X)))
	<b>X</b> /noun	W/noun → Y LexTrans(W)	Lu(Map(Ra(X)))
(2)	<b>X</b> /adv	W/verb → Y LexTrans(W)	Lu(Map(Ra(X)))
	W/adv	<b>X</b> /verb → LexTrans(W) Y	Ru(Map(La(X)))
(3)	W/noun [of from]	<b>X</b> /noun → Y [의 에서부터] LexTrans(W)	Lu(Map(La(X)))
	<b>X</b> /noun [of from]	W/noun → LexTrans(W) [의 에서부터] Y	Ru(Map(Ra(X)))
(4)	W/verb [by as with]	<b>X</b> /noun → Y [에 의해 로서 로 와] LexTrans(W)	Lu(Map(La(X)))
	<b>X</b> /verb [by as with]	W/noun → LexTrans(W) [에 의해 로서 로 와] Y	Ru(Map(Ra(X)))
(5)	W/adj	<b>X</b> /noun → LexTrans(W) Y	Ru(Map(La(x)))
	<b>X</b> /adj	W/noun → Y LexTrans(W)	Lu(Map(Ra(X)))

The alignments are achieved, referencing a normal bilingual lexicon. A list of bold-faced unaligned words [‘Lauder’, ‘Gucci’, ‘brand’s owner’] becomes an input to the algorithm described in Table 1. In a word-level alignment, we exclude functional words representing a grammatical relation in a sentence. Figure 6 represents how to decide the alignment word for an unaligned English word ‘Lauder’.

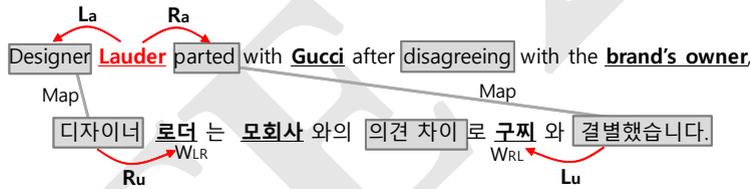


Fig. 6. A presumptive alignment using a preference  $R_u(\text{Map}(L_a(\cdot)))$ .

In this case, both  $R_a(\text{'Lauder'})$  and  $L_a(\text{'Lauder'})$  are possible for an alignment in L1, English. Obtaining possible Korean candidates for an alignment of ‘Lauder’ are twofold: 1)  $W_{LR}$  by applying  $R_u(\text{Map}(L_a(\text{'Lauder'})))$ , and 2)  $W_{RL}$  by applying  $L_u(\text{Map}(R_a(\text{'Lauder'})))$ . To determine the best candidate, a function `best_presumptive_alignment(·)` utilizes a structural transfer pattern. In this example, sub-structures ‘Designer/noun Lauder/noun’ or ‘Lauder/noun parted/verb’ can be considered as structural transfer patterns of the source language. Since pattern (1) in Table 2 can be applied to this example, a preferred presumptive alignment can be determined by applying  $R_u(\text{Map}(L_a(\cdot)))$ . As a result, [‘Lauder’,  $W_{LR}$ ] becomes a pair of a presumptive word-level alignment.

The list of the heuristics introduced in Table 2 is a collection of frequently used structural transfer patterns between English and Korean. While the left-hand side of an arrow represents English sub-structures, the right-hand side is the same structures transferred to Korean. Among the notations of the patterns, ‘W’ refers to an aligned word and ‘X’ is an unaligned target word. The ‘preference’ column indicates which word should be preferred as an alignment of ‘X’ for a sub-structural transfer pattern.

The structural transfer patterns and their preferred alignments are built manually. In order to write the patterns, a parallel corpus had to be annotated with sentence-level and word-level alignments. Annotation is achieved semi-automatically with the support of a statistical machine translation system Moses (Koehn, 2010). Moses

can automatically generate a phrase mapping table between a source language and a target language if a parallel corpus is provided. A pair of a source sub-structure and a target sub-structure is automatically collected from the annotated parallel corpus. The collected transfer patterns are a list of pairs that are always mapped to each other whenever an alignment is performed. A corresponding node in a transfer pattern and a preference rule to trace its correspondence are automatically extracted from the corpus. Finally, a human annotator selects a list of structural transfer patterns and their preference rules, as shown in Table 2.

### 3. Interface of a bilingual concordance

We can easily access various kinds of parallel documents from Internet. A bilingual concordance system that we implement is designed to handle any kind of parallel documents. The system preprocesses a parallel document to annotate with sentence-level and word-level alignments by using a module described in Section 2. A parallel document annotated with both sentence-level and word-level alignments is fed as an input to a bilingual concordance. Figure 7 shows an interface of a bilingual concordance of when a user's query is 'parted'.

The family	<b>parted</b>	during the 1950-53 Korean war.
Several years ago, she bitterly	<b>parted</b>	with her dearly beloved per dog because
together till dawn and finally	<b>parted</b>	ways, but you called me at around 11:00
economic adviser to Roh, but has	<b>parted</b>	company with him on this issue.
Designer Lauder	<b>parted</b>	with Gucci after disagreeing with the brand's
가족들은 1950-53년 한국전쟁 때 헤어졌다.		
몇 년 전, 그녀는 알레르기 때문에 아끼던 강아지와 별거하는 아픔을 겪었다.		
작년에 형이랑 새벽까지 술 먹고 헤어졌는데 아침 11시쯤인가 형이 전화를 했어.		
그는 노대통령의 경제 자문가로 오래 재직했는데, FTA 협상에 대해서는 뜻을 달리하고 있다.		
디자이너 로더는 모회사와의 의견 차이로 구찌와 결별했습니다.		

Fig. 7. A resultant view of bilingual concordance with a query 'parted'.

When a user clicks a pair of sentences in the interface, a list of word-level alignments is displayed for the selected pair of sentences on another window. A view of (a) in Figure 8 shows basic word-level alignments for the selected pair of sentences, and (b) presents presumptive maximum word-level alignments.

1	Designer	디자이너	1
2	Lauder	로더	
3	parted with	는	
4	Gucci	모회사	
5	after	와의 의견 차이	6
6	disagreeing with	로	
7	the	구찌	
8	brand's owner	와 결별했습니다	3
9	.	.	

(a)

1	Designer	디자이너	1
2	Lauder	로더	2
3	parted with	는	
4	Gucci	모회사	8
5	after	와의 의견 차이	6
6	disagreeing with	로	
7	the	구찌	4
8	brand's owner	와 결별했습니다	3
9	.	.	

(b)

Fig. 8. A resultant view of bilingual concordance with word-level alignments.

Each English word is assigned with its own identifier number. An aligned Korean word is specified with its corresponding English identifier number. In order to make a distinction between basic alignments and presumptive alignments in the interface, a presumptive alignment is marked with a light color while a basic alignment is marked with a darker color. The design of interface for the app is completed and to be implemented with further work.

#### 4. Conclusion

In this paper, we suggested an algorithm to presume word-level alignments using structural transfer patterns between the two languages, English and Korean. A word-level alignment can be easily achieved if a bilingual lexicon is provided. However a newly-coined words occurring in documents cannot be aligned automatically because it has no translated target word in a bilingual lexicon yet. Structural transfer patterns can give a clue how to correspond the nodes between the two structures. Utilizing the transfer patterns, we can find a presumed translation for a newly coined word. As a result, we generate maximal number of word-level alignments between the two sentences. A bilingual concordance provided with maximum word-level alignments can enhance ESL learners' abilities to acquire the language.

The algorithm proposed in this paper is yet to cover multiword-level alignments. A future research will focus on how to presume a multiword-level alignment between the two languages.

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# An evaluation of the educational software about precipitation titrations

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## Abstract

The aim of study is to evaluate the views of student chemistry teachers about an education software concerning precipitation titrations. The participants are 13 student chemistry teachers. The study employs the method of survey and the data were collected through the use of "the scale of educational software evaluation" developed by Kara (2007). The reliability and validity study of the scale was also carried out. The scale has a total of five dimensions, namely content, easiness of the use, technical specifications, educational specifications and personal views. After the analysis of the data, it is observed that, computer-assisted teaching material has an important effect on understanding the subjects.

Keywords: computer-assisted teaching, educational software, evaluation of educational software, evaluation criteria

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## 1. INTRODUCTION

In order to improve the quality of the learning-teaching process the efficient use of teaching technologies in concept teaching has become significant. One of the advantages of the use of computers as a teaching tool is that computers address more than one sense, improving the learning level and quality. It is stated that learning environments in which animation, sound and picture are used together are not traditional settings and improve the level of learning (Clark & Craik, 1992).

Developing countries have been completing their work on infrastructure for computer-assisted teaching. Uşun (2000) argued that there are some problems related to computer-assisted teaching and the educational use of computers. Major problems in this regard are as follows; equipping schools with computers whether or not quality education is provided; limited number of software and no consistency between the content of software and educational programs, time consuming process of development of high-quality and appropriate software, teachers' and school administrators' lack of training in using software and inefficient software.

One of the most significant problems is the need for high-quality software (Saka & Yılmaz, 2005). The ministry of national education has began to equip schools with technology classes in which computer-assisted education is delivered. However, software for such classes is mostly translated from foreign language materials, indicating the insufficient research and development activity in this regard. Software that is developed without necessary academic studies and research cannot meet the educational needs and expectations. (Dulger, 2004 cited in Kolomuç, 2009) Therefore while selecting a software educators should be careful. Educators should select a software that is the most appropriate for the concepts to be taught. However, there are other points to be taken

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into consideration while choosing a software, including educational potential of computers. (Simsek, 1998) In fact there are four major points used in evaluating educational software: appropriateness of content, easiness of use, technical competency and educational competency. These are briefly given as follows: (Kara, 2007)

***Appropriateness of content:*** Appropriateness of content refers to the fact that software includes necessary contents and topics for the educational activities planned. It may be evaluated based on the following points: up-to-date content, correctness of the content, no unnecessary and redundant information, content closely related to objectives and desired behaviour, appropriateness in terms of educational program, appropriateness in terms of students' readiness, content written in an intelligible language, content with integrity of ideas, modular organization and opportunities for further learning.

***Easiness of use:*** An efficient software should be appropriate for students and teachers and should be easily adopted to the educational program. This feature can be evaluated through the following points: easiness of installation, being used by inexperienced students, provision of supplementary materials, opportunity for users to continue their study whenever they want, opportunity for users to make corrections, instructions, appropriateness of instructions, selecting window and easiness of exit, efficiency of menus.

***Technical competency:*** Technical competency refers to the correct functioning of the software. The points to be taken into consideration in evaluation of the software in this regard are as follows: being used with different operating systems, correct functioning, fast initiation, using different screen representations, having proper colours, choosing screen representation, correct functioning of instructions, having sounds that improve the listening skills, setting the sound level and opportunity to restart.

***Educational competency:*** Education competency of software refers to the fact that it provides appropriate educational activities that are in parallel to the objectives of the course. The points that can be used to evaluate the software in terms of its educational competency are as follows: covering different methods, being appropriate for age- and development-level of students, having educational animations, feedback system and provision of multi-question asking forms, being related to objectives, provision of reinforcement, having achievement test, having questions and having complementary activities.

Teachers play a significant role in successful use of the computer-assisted teaching activities. Student teachers should be informed about these activities and materials. In addition their views about the computer-assisted teaching are significant. They should also be given opportunity to express their views about the newly developed materials (Kutluca & Birgin, 2007).

Therefore, the aim of this study is to evaluate an educational software concerning precipitation titrations based on the views of student chemistry teachers. The topic of precipitation titrations is covered in the course of analytical chemistry at the university level and in the course of quantitative chemistry at the secondary level.

## 2. METHOD

Descriptive studies provide a description of the situation at hand and have the aim of describing it as it is (Karasar, 1993). This study is a descriptive research in that it tries to describe the existing situation of the software of precipitation titrations.

### 2.1. Participants

The participants of the study were thirteen student teachers who were taking the course of analytical chemistry II at Hacettepe Universities' chemistry education branch during the academic year of 2012–2013 Spring semesters.

### 2.2. Data collection tools

The data of the study were collected through the administration of a survey questionnaire, named the “scale of evaluation of the educational software”, developed by Kara (2007). The scale is made up of five major categories, namely appropriateness of content, easiness of use, technical competency, educational competency and personal views regarding the software. The scale includes a total of 47 items with a five-Likert scale. The items are evaluated one of five options.

### 2.3. Procedure

Before the evaluation, the participants were informed about the computer-assisted teaching, the aims of the study, the evaluation of educational software, and the administration of scale.

The software was installed and each participant worked on it independently. The courses were delivered through class discussions. However, the participants are allowed to work independently. Therefore, they were given opportunity to repeat the topics, make experiments, develop graphics, solve problems and answering a multiple-choice test. Finally student teachers were asked to evaluate the software. For this aim a questionnaire, named the “scale of educational software evaluation”, was administered to the participants.

### 2.4. Data analysis

The data obtained were analyzed through descriptive statistics. The answers to the items in the scale were scored as follows: 1.00–1.79 very weak, 1.80–2.59 weak, 2.60–3.39 moderate, 3.40–4.19 good, and 4.20–5.00 very good.

## 3. FINDINGS

The findings of the study are given in this section. Table 1 indicates the participants' views about the appropriateness of the software in terms of its content. It is seen that the views of the participants fall in the range of 4.20-5.00 in terms of up-to-date content, correctness of the content, no unnecessary and redundant information, appropriateness in terms of educational program, appropriateness in terms of students' readiness, content with integrity of ideas, modular organization and opportunities for further learning. Therefore, the software was evaluated to be “very good” by the participants in these regards. However, in terms of content closely related to objectives and desired behaviour, and content written in an intelligible language the software was evaluated by the participants as “good” indicating the score range of 3.40–4.19.

Table 1. Participant views about the content appropriateness of the precipitation titrations software

Content QUALITY	S	X
Content is appropriate to realize objectives and desired behaviour.	0.760	4.08
Content is in parallel to educational program.	0.519	4.54
Information covered by the software is up-to-date.	0.832	4.23
Information covered by the software is correct.	0.660	4.54
Software is appropriate in term of students' readiness level.	0.725	4.23
Software was written in a clear and understandable language without any spelling error.	0.899	4.15
Topics are presented in a fluent and integrated way.	0.725	4.23
Software does not cover any unnecessary information.	0.832	4.23
Content is organized into modules.	0.519	4.54
Software provides the students with the opportunity to learn further and get more detailed view about the content.	0.870	4.38

Table 2 shows the views of the student teachers about the easiness of use of the software. The scores given by the participants to the software are higher than 4.20 in terms of easiness of installation, use of software by inexperienced students, provision of additional materials, easiness of menu, choice over screen and easiness of exit. Therefore, the software was regarded as "very good" in these points. The mean score of the software ranges between 3.40 and 4.19 in terms of provision of opportunity to make corrections, instructions and appropriateness of instructions and provision of opportunity to resume work whenever users want. The software was regarded as "good" in terms of these qualities.

Table 2. Participant views about the easiness of use of the precipitation titrations software

Easiness of use QUALITY	S	X
Software can be easily downloaded.	0.776	4.46
Software can also be used by students who have no intensive experience of computer use.	0.630	4.31
Software includes helpful tools such as dictionary and calculator.	0.376	4.85
Software provides the students with the opportunity to make corrections.	1.387	3.62
Software provides the students with necessary instructions when they have difficulty.	1.000	4.00
There is help menu explaining the steps to be followed that is easily accessible.	0.376	4.85
Instructions to use are brief, simple, clear and consistent.	0.760	4.08
Software provides the students with the opportunity to use another screen when needed.	0.630	4.69
Software provides the students with the opportunity to resume their work.	1.441	3.92
User can exit from the software easily when they wish.	0.599	4.77

Table 3 shows the participant views about the technical competency of the precipitation titrations software. As can be seen, the participants considered the software to be “very good” in terms of being supported by different operating systems, correct functioning, easiness of restart, screen, correct functioning of instructions, and fast functioning. It was regarded as “good” in terms of using different screens, colours, quality of sounds and setting the sound level.

Table 3. Participant views about the technical competency of the precipitation titrations software

Technical competency QUALITY	S	X
Software can be used with different operating systems.	0.855	4.31
Software correctly functions whenever it is used.	0.660	4.46
It can be easily restarted.	0.660	4.54
There are different screens in the software.	0.862	4.08
The colours used in the software do not distract attention.	0.801	4.15
The screen representations used in the software do not distract attention.	0.751	4.31
Instructions function properly.	0.506	4.38
Pages can easily be viewed.	0.480	4.69
The sounds used in the software can improve the listening skills.	1.450	3.54
User can set the sound level of the software.	0.927	3.77

Table 4 shows the participant views about the educational competency of the precipitation titrations. The participants considered the software to be “very good” in terms of provision opportunity to study in accordance with the pace of students, and being age- and developmental-level appropriate. It was regarded as “good” in terms of clear objectives, involving different methods, reinforces, question formats, feedback, animations, additional activities and achievement test.

Table 4. Participant views about the educational competency of the precipitation titrations software

Educational competency QUALITY	S	X
Educational objectives of the software are stated clearly.	0.760	4.08
The software includes various methods of teaching.	0.707	4.00
Topics and skills involved in the software are age- and development-level appropriate.	0.599	4.23
The software provides the students with opportunity to study based on their own pace.	0.439	4.77

Reinforces included in the software improve student motivation.	0.832	3.77
The software includes animations that are in parallel to the objectives.	1.450	3.54
At the end of the software, there is an achievement test.	1.251	3.31
There are multi-question forms such as multiple choice, Coorrect or False, etc.	1.127	3.54
When student gives incorrect answer, s/he is given feedback about the correct answer.	1.266	3.46
The student provides the students with the opportunity to deal with additional activities about the topic.	0.961	3.62

Table 5 indicates the personal views of the participants regarding the software. It is seen that the software was regarded by them as “very good” in terms of being instructional, student achievement, motivation, being a complementary material, being used to provide complementary information and instruction. It was considered to be “good” in terms of being used as an exercise opportunity.

Table 5. Participants’ personal views about the precipitation titrations software

Personal views Quality	S	X
I believe that the software is instructional.	0.870	4.38
I believe that the software will improve student achievement.	0.947	4.31
I believe that the software will increase students’ motivation to learn.	0.947	4.31
I believe that the software is helpful as a complementary material.	1.182	4.31
I believe that the software can be used to complement missing information of the students.	0.480	4.69
I believe that the software can be used as an exercise opportunity.	1.573	3.85
I believe that the software can be used to teach the topic.	0.855	4.31

The answers of the participants indicate that the software is considered to be “vey good” (Table 6). More specifically, they regarded the software as “very good” in terms of content, easiness of use and technical features. It was viewed to be “good” in terms of educational competency.

Table 6. Views of the participants about the software

	Item no.	S	X
Appropriateness of content	10	0.737	4.32
Easiness of use	10	0.939	4.35
Technical competency	10	0.874	4.22
Educational competency	10	1.043	3.83
Personal views	7	1.019	4.31
EYDÖ	47	0.941	4.20

#### 4. CONCLUSION AND DISCUSSION

The aim of study was to evaluate the views of student chemistry teachers about an education software concerning precipitation titrations. The findings of the study indicated that the educational software is viewed as “very good” in general terms.

Since the software was regarded as “very good” in terms of content, easiness of use and technical features, it can be argued that it functions correctly and facilitates the interaction with users. On the other hand, it was viewed to be “good” in terms of educational competency. Therefore, the software includes necessary activities that reinforce the educational objectives.

The findings also suggest that the software was developed well in terms of general design features such as screen, colour and sound. Furthermore, the software is user-friendly in that it has help menu, instructions and flexibility in using the screens. In addition, the software is both instructional and helpful since it involves variety of animations and pictures, up-to-date topics and interesting questions.

The views of the participants indicate that the software is very well developed and can be employed in accordance with the criteria stated by Hannafin and Peck (1988).

One of the advantages that educational software offer is that they provide the students with the opportunity to study based on their pace. (Kara, 2007) Since the software analysed in the study also provides such an opportunity it was regarded as efficient by the participants.

Research suggests that teachers lack of competency in developing materials and providing optimal learning environment. (Akdeniz, Yiğit & Kurt, 2002) Therefore, such software may assist them in their attempts to develop learning materials. For instance, they may use the software to develop other software or similar techniques for other chemistry topics. The software as evaluated by the participants seem to meet the needs of teachers.

In terms of student needs, other educational software can be developed for other units, facilitating the learning. Research suggests that appropriate educational software improve both student attention and motivation. It is also reported that using non-traditional learning environments for the subjects that are not liked by students is helpful in improving student achievement (Bakar, Tuzun & Çağıltay, 2008; Teyfur, 2010; cited in Gül & Yeşilyurt, 2011).

In short given that educational software should meet the needs of teachers and students, it should be evaluated by them to develop much more effective software. However, it should also be reviewed by technical experts in order to meet the needs of students.

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# An investigation of goodness of model data fit

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## Abstract

IRT models have many advantages over CTT. However, the model-data fit should be verified as a prerequisite to use IRT models. Therefore, in this study it is aimed to investigate which IRT model will provide the best fit to the data obtained from SBS 2009 science subtest. For goodness-of-fit analysis, first the model assumptions and then the expected model features were tested. The model assumptions unidimensionality and local independence were investigated. In the expected model features part the invariance of ability parameter estimates and invariance of item parameter estimates were analyzed. To determine the best model, the results of the chi-square statistics of  $-2 \log$  likelihood values of models were compared. The results suggested that three parameter logistic model is the most appropriate model for data fit.

*Keywords:* Item response theory, model-data fit analysis, person and item statistics

## 1. INTRODUCTION

The science of psychological tests is known as psychometrics. Psychometrics had its origins in the mid to late 1800's as part of an effort to quantify cognitive and affective attributes in humans (Crocker & Algina, 1986). Psychological tests scores are calculated, they can be used to compare achievement results at the student, school or state level. The scores then analyzed in a way that their results can be appropriately interpreted. The classical test theory and item response theory are used in practice. In classical test theory, the model of measurement error is based on the correlation coefficient. The correlation coefficient, developed by Charles Spearman, attempts to explain error using two components: a true correlation and an observed correlation (Crocker & Algina, 1986). Mathematically, this can be written as  $X_p = T_p + E_p$  where  $X_p$  is the observed score,  $T_p$  is true score and  $E_p$  is the error associated with the score. The observed score is the actual score an individual received on that particular test and the true score is the average score an individual would receive on a test if they repeated it many times. Unfortunately, classical test theory is limited to simply describing the total test score for one particular test and group of examinees.

The initial theoretical groundwork for an alternative to the CTT paradigm known as Item Response Theory (IRT) was laid down in the 1940's by D. N. Lawley (McDonald, 1999). A more comprehensive theoretical framework for IRT was subsequently developed and shaped from the 1950's to the 1970's by a number of prominent psychometricians and statisticians, including Frederick Lord, Georg Rasch and Benjamin Wright

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(Baker, 2001; McDonald, 1999). The mathematics and computational algorithms of IRT are far less tractable than CTT and therefore the practical implementation of IRT had to wait until the 1970's and 1980's for the development of computers that could carry out the necessary computations for IRT.

Item response theory differs from classical test theory by focusing on measuring some latent trait possessed by the examinees, usually ability. The key feature of IRT that sets it apart from CTT is the explicit mathematical modeling of the stochastic relationship between the performance on an individual item and the underlying continuous scale of the latent construct that the item is theorized to be measuring (Embretson & Reise, 2000; Hambleton, Swaminathan, & Rogers, 1991). IRT uses a mathematical model to express the probability of an examinee answering an item correctly as a function of the examinee's ability. These functions (for each item) are the item response functions (IRFs) which serves as the mathematical model linking the observable data (item performance) to the unobservable data (ability). One useful feature is that of the test characteristic function that is the sum of the item characteristic functions that makes up a test and can be used to predict the scores of examinees at given ability levels. If the test is made up of test items that are relatively difficult, then the test characteristic function is shifted to the right and examinees tend to have lower expected scores on the test than if easier test items are included.

Unlike classical test theory models, the model parameters in IRT can be adjusted to account for different ability distributions possessed by the examinees. This is known as the invariance property. That is item parameters estimated using one group of examinees can be transformed to match those from another group of examinees. If the item is binary (the item is either correct or incorrect) then the IRFs are commonly assumed to be monotonic, unidimensional, and locally independent. Monotonicity means that as the examinee's ability increases, the probability that the examinee will respond correctly (for a particular item) also increases. Unidimensionality means that only one ability or trait is necessary to explain for examinees' test performance. Item response models that assume a single latent ability are referred to as unidimensional (Hambleton & Swaminathan, 1985). The assumption cannot be strictly met since there are always other factors affecting the test performance. Therefore, the requirement for the assumption is to have a dominant factor. Local item independency means that an examinee's responses to different items in a test are statistically independent. For this assumption to be true, an examinee's performance on one item must not affect, either for better or for worse, his or her responses to any other items in the test (Hambleton & Swaminathan, 1985).

The item analysis in the item response theory consists of (a) determining sample-invariant item parameters using relatively complex mathematical techniques and large sample sizes, and (b) utilizing goodness-of-fit criteria to detect items that do not fit the specified response model. The property of sample invariance inherent within IRT means that test developers do not need a representative sample of the examinee population to calibrate test items. They do, however, need a heterogeneous and large examinee sample to insure proper item parameter estimation. Also IRT requires larger sample sizes to obtain good item parameter estimates, the test developer must ensure that the examinee sample is of sufficient size to guarantee accurate item calibration (Hambleton & Jones, 2005).

However, measurement specialists cannot benefit from the advantages mentioned above unless model data fit is achieved (Hambleton, Swaminathan, & Rogers, 1991). Although there are several studies that investigated model-data fit, few studies investigated the fit of IRT models to data obtained from achievement tests administered to elementary school students. Therefore, in this study model-data fit investigations were conducted on the data obtained from examinees that were preparing for Seviye Belirleme Sınavı (SBS) in Turkey.

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## 2. METHOD

### 2.1. Study Group

This study examined SBS science subtest data for 2009. SBS is administered to 8<sup>th</sup> grade students. Total of 1 million 15 thousands of students took the 2009 SBS and all of them were responsible for answering questions in science subtest constitute the population of the study. Among the students took the exam, 1964 students were randomly selected as the study group. Among 1964 subjects, 56.2 % of them is male and 43.8 % of them is female.

### 2.2. Instrument

The data set was obtained from the 8th grade examinees that took the SBS 2009. SBS composed of four subtests which are Turkish, Science, mathematics and social sciences. In this study the science subtest of the SBS was used. The science subtest consist of 20 items. However, the result of factor analysis showed that to make it unidimensional, 5 of the items were deleted and the analysis was done with 15 items.

### 2.3. Design of the Study

Methods for assessing goodness of fit were presented by Hambleton et al. (1991). Checking model assumptions and checking expected model features were two important goodness of fit investigations. In the first part of the analysis in which model assumptions held was investigated through analysis of unidimensionality and local independence. In the second part, degree to which desired model features were obtained was investigated through analysis of invariance of item parameter estimates and invariance of ability parameter estimates.

### 2.4. Assessment of Goodness of Model-Data Fit

Item response models offer a number of advantages for test score interpretations and reporting of test results. However, the advantages will be obtained in practice only when there is a close match between the model selected for use and the test data. This can be examined through two step processes: checking the model assumptions and model features.

#### 2.4.1. Checking Model Assumptions

There are two main assumptions which are unidimensionality and local item dependence.

*Unidimensionality:* To check the unidimensionality assumption factor analysis was conducted. Eigenvalues and obtained scree plot were investigated in order to determine whether there was a dominant first factor. According to Hambleton, Swaminathan, and Rogers (1991) a dominant first factor is needed to satisfy unidimensionality assumption. In other words, there should be a large difference between the first eigenvalue and second eigenvalue. Moreover, a significant drop in the contribution of the factors between the first and second factors can be seen as an evidence for unidimensionality. To do the factor analysis to the binary science items STATISTICA computer program was used to get the tetra choric correlation matrices.

*Local Item Independence:* According to Hambleton Swaminathan, and Rogers (1991) when unidimensionality assumption is met the local independence assumption is also satisfied. Therefore, the clues for the unidimensionality was used also for the local item independence.

### 2.4.2. Checking Model Features

*Invariance of Item Statistics:* Invariance of item statistics can be defined as item statistics are obtained that do not depend on the sample of examinees used in the calibration of test items. To investigate the degree to which the property of invariance held for the item difficulty and item discrimination parameter estimates, the difference is that extreme ability groups (e.g. random groups, high vs. low ability groups) were formed and item parameter estimates in the two samples were compared.

*Invariance of Ability Estimates:* Invariance of ability statistics can be defined as examinee ability estimates are obtained on the same ability scale and can be compared even though examinees may have taken different sets of test items from the pool of test items measuring the ability of interest (Hambleton & Swaminathan, 1985). To investigate the degree to which the property of invariance held for the ability parameter “ $\theta$ ” estimates, by administering examinees two or more samples of test items that vary widely by means of some parameters (e.g. difficult vs. easy, even vs. odd items).

To do the IRT analysis to check the invariance of item and ability statistics BILOG computer program was used.

## 3. RESULTS

### 3.1. Checking Model Assumptions

To test the unidimensionality assumption of IRT, factor analysis was conducted with 20 science items. The results showed that the test did not meet the assumption of unidimensionality. Therefore, five items were deleted and the final results were satisfactory. Both the initial and the final factor analysis results are at Table 1.

Table 1. Total Variance Explained

Component	Initial Eigenvalues			Final Eigenvalues		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	7.31857	36.59285	36.59285	6.728082	44.85388	44.85388
2	1.55727	7.78633	44.37918			

As stated before, local item independence is met with the satisfaction of unidimensionality (Hambleton, Swaminathan, & Rogers, 1991). Therefore, no extra analysis were done to check local item independence assumption.

### 3.2. Checking Expected Model Features

Invariance can be thought as both item and ability levels. If a test is scaled with IRT, then it can be used many times to different examinees without any change in item parameters and examinees' ability can be measured although by taking different items. To examine the invariance of item and ability statistics, all the items were scaled by means of three item response models which are 1-, 2-, and 3-PL models. The summary parameters are in Table 2.

Table 2. The summary of Item Parameters Scale Values

Model	Parameter	Mean	Sd	Min.	Max.
1PL	b	0.141	0.524	-0.757	1.069
2PL	a	1.396	0.379	0.777	1.883
	b	0.184	0.605	-0.658	1.505
3PL	a	2.547	0.783	1.481	3.972
	b	0.514	0.510	-0.403	1.412
	c	0.173	0.035	0.118	0.234

*Invariance of Item Statistics:* To investigate the degree to which the property of invariance held for item parameters under each model, correlation analysis was conducted on samples (random group and high-low ability group). The results are in Table 3.

Table 3. The Correlation Coefficients of Item Parameters from Different Ability Groups

Model	Parameter	Groups	
		Random groups	High-Low Ability
1PLM	b	0.991	-
2PLM	a	0.934	-0.322
	b	0.988	0.178
3PLM	a	0.788	-
	b	0.986	-
	c	0.705	-

Before the interpretation of the results of invariance of item statistics, it can be seen from the Table 3 that there is no values for the high-low ability group for 1- and 3-PL models. Since b parameter for 1PLM and a,b and c parameters for the 3-PLM for low ability group could not estimate through the analysis done by BILOG, their correlations with the high ability group could not also estimated. There is another point can be seen from the Table 3 that the estimated correlations for the 2-PLM for high-low ability groups were very low. Therefore, only the results of random groups were used for the evidence of invariance of item statistics.

All results obtained from random sample group for the item difficulty parameter “b” showed very strong correlation coefficients (the lowest 0.986 and the highest 0.991). These strong correlation coefficients are excellent indicators of invariance.

Compared to other IRT models, correlations under 1- and 2-PLM were quite strong; therefore invariance property was best achieved under 1- and 2-PLM. Moreover, among the three models, the lowest coefficients were obtained under 3PL model but it is still very high. Invariance of discrimination parameter “a” was also investigated on random group samples. Correlations under 2-PLM was much stronger compared to 3-PLM. In addition, correlations obtained for invariance property of discrimination parameter were weak compared to correlations obtained for item difficulty parameter. Moreover, as the variability in sample increased the correlation coefficients obtained for invariance property of both item difficulty and item discrimination parameters decreased. Compared to 3-PLM, 2-PLM provided well fit when invariance property of discrimination parameter is considered.

*Invariance of Ability Parameter Estimates:* To investigate the degree to which the property of invariance held for the ability parameter estimated under each model person statistics obtained on samples (difficult-easy and odd-

even samples) was correlated. For all the IRT models the correlations of ability estimates on odd-even sample was high enough for 1- and 2PL models (see Table 4). However, for 3PLM, the coefficient was weak compared to other two IRT models. For all the IRT models the correlations of ability estimates on difficult-easy sample was not very high but it is enough to hold the invariance property.

Table 4. The Correlation Coefficients of Ability Parameters from Different Item Groups

Model	Items	
	Od-Even	Difficult-Easy
1PL	0.715*	0.621*
2PL	0.731*	0.625*
3PL	0.629*	0.649*

\*Correlation is significant at the 0.05 level (2-tailed).

### 3.3. Best Model Fit to Data

To determine which model best fit to the data, the maximum likelihood method was used to get -2Log Likelihood values. These values are in Table 5.

Table 5. -2 Log Likelihood Values for the 1-, 2-, and 3-PLM

Model	-2 Log Likelihood Values
1PLM	34182,0708
2PLM	33874,0544
3PLM	33460,4634

The differences of the values given at Table 5 was important to decide the model appropriate to the data. Therefore the differences between the -2 Log Likelihood values and the decisions were taken and given at Table 6.

Table 6. The Results of Model Differences

Model Differences	Result
$(1PLM - 2PLM) = (33874,0544 - 34182,0708) = 308,0164 > 24,99579$	2PLM is better than 1PLM for model-data fit.
$(2PLM - 3PLM) = (34182,0708 - 33460,4634) = 413,591 > 24,99579$	3PLM is better than 2PLM for model-data fit.

As a result, we can conclude that, for the model investigated, 3 PLM is best fit.

## 4. DISCUSSION AND CONCLUSION

The purpose of this study was to investigate which IRT model would provide the best fit to the items from SBS 2009 exam science subtest through various goodness of fit analysis. By means of goodness of fit analysis, both the IRT model assumptions and expected model features were investigated.

Investigations of IRT model assumptions indicated that after deleting five items, the unidimensionality assumption was met. As a result of this situation, it was assumed that the local item dependence assumption was also met.

The invariance of ability and item statistics obtained by each IRT model was also tested. The calculated correlations under each IRT model for ability and item parameters are strong enough. Therefore, it can be stated as the invariance property of ability and item parameters was held.

The analysis presented that 3-PLM provides the most appropriate fit to science subtest data. In other words the 3PLM provides the best item and ability parameter invariance which can be get after the model-data-fit is satisfied.

Finally, the deleted items may reduce the content validity of the subtest. Therefore, validity of the test should also be investigated and if necessary the analysis should be done via the multidimensional models.

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# An investigation of the relationship between performance in the problem-solving laboratory applications and views about nature of science of pre-service science teachers

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## Abstract

Teacher education programs have met with limited success in improving teachers' understanding of the nature of science (NOS). Research suggests that such efforts could be enhanced by addressing NOS in pre-service teachers' science courses (Hanuscin, Akerson, & Phillipson-Mower, 2006).). In the extent of the study it has been aimed to search, a) students' views about nature of science, b) the effect of problem solving applications in the science laboratory on 40 pre-service science teachers' knowledge and their perceptions about nature of science. In the study, Evaluation Form of Problem Solving Skills (EFPSS), Evaluation Form of Student Reports (EFSR), The Beliefs about Science and School Science Questionnaire (BASSSQ) and Views of Nature of Science Questionnaire (VNOS-C) have been used as data collection tools. The knowledge of the students about the Nature of Science was determined by evaluating the answers of the students to BASSSQ subsequent to the problem-solving implementations within the context of science laboratory.

Keywords: Nature of Science, Problem solving, Science laboratory applications

## 1. INTRODUCTION

One of the main reasons why students receive science education is to bring them to a literacy level in science. Scientific literacy is defined as to know the nature of science, to understand how knowledge is obtained, to comprehend that knowledge depends on known facts, which change as the new proofs are collected, to know the basic concepts, theories and hypothesis in science and to perceive the difference between scientific proofs and personal opinions (Ayas, Çepni, Johnson & Turgut, 1997).

There are different definitions for problem solving in many literatures. Gagne (1970) differentiated problem solving as the highest level of learning from the problem solving skill as the unavoidable life skill. According to Wheatley (1984), problem solving is what you do when you don't know what to do. Gagne (1977) expressed problem solving as a thinking process, where students discover the composition of previously learnt principles to solve a problem. Ashmore, Frazer and Cassey (1979) defined problem solving as the result of the implementation of certain knowledge and principles to understand a problem. Perez and Torregróse (1983) considered problem solving as a scientific research task. Mayer (1997) perceived problem solving as a synonym of thinking. Heppner

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(1982) used problem solving as a synonym for coping with problems. According to Cardellini (2006), problem solving is more than integrating numbers into well-known formulas. It is related to creativity, comprehensive thinking and formal knowledge (Temel, 2009).

### *1.1. Problem solving approach in the laboratory*

According to Chiappetta and Koballa (2002), various approaches have been developed in recent years to increase the productivity of laboratories along with turning them into environments where meaningful learning occurs. One of these approaches is the problem solving approach in the laboratory. By using this approach, chemistry curriculum has been revised to allow for more purposeful utilization of laboratories (Wilson, 1987). Laboratories are ideal and productive environments to implement technical concepts into the real life contents (Gallet, 1998). However, traditional chemistry experiments are carried out in a way that does not require much thinking or preparation. Students participate in laboratory activities in the same way as following the instructions of a recipe (Neeland, 1999). With the aim of correcting this mistake, certain chemistry educators reached to better conditions by using the problem solving approach in the laboratories (Wilson, 1987).

### *1.2. The Nature of Science*

The nature of science has become the basic component of chemistry education programs in certain countries such as the USA (AAAS, 1990; 1993; NRC, 1996) and the UK (DFE, 1995, Millar & Osborne, 1998). Various researchers emphasize that the nature of science is closely related to the science education. Understanding the nature of science and overcoming both social and scientific events is the basic purpose of the science education (Tao, 2003; Sadler, 2004; Bora, 2005). The nature of science and the nature of scientific knowledge construct the two dimensions of the scientific literacy (Meichtry, 1999). A scientifically literate person is defined as an individual who can make conscious decisions using scientific knowledge, concepts, laws and processes in terms of science and technology (Abd-El-Khalick, Bell & Lederman, 1997).

Showalter (1974) made use of the terminology as uncertain, general, repetitive, probable, humanistic, single, holistic, historical and experimental in defining the nature of scientific knowledge. Having scanned the literature on the scientific knowledge, Rubba and Anderson (1978) united these nine factors under a 6-factor model called the nature of science model. These factors are: moral (scientific knowledge cannot be judged as good or bad), creative (scientific knowledge is partly a product of an individual's creativity), developmental (scientific knowledge is not the absolute truth), simple (scientific knowledge is not complex), testable (scientific knowledge could be tested through experiments) and united (specific sciences could contribute to the relevant laws, theories and concept webs).

### *1.3. The purpose of the study*

This study aims to determine i) the problem solving performances of science teachers participating in the problem solving applications in the chemistry lab; and ii) its relationship with their opinions on the nature of

science along with their beliefs about the nature of science and science teaching as variables. Therefore, answers to the following sub problems were sought for:

- How are the performances of student teachers affected following the problem solving applications at the chemistry lab?
- Are the opinions of student teachers on the nature of science and their beliefs about science teaching significant variables to interpret their performances at the problem solving applications at the chemistry lab?

## 2. METHOD

### 2.1. Sampling

The study was participated by 40 student teachers studying in their 3rd year at the Science Teaching Department during the spring semester of the 2012-2013 academic year. Single group posttest model was made use of for the study.

### 2.2. Data collection tools

#### 2.2.1. Evaluation Form of Problem Solving Skills (EFPSS)

EFPSS is a form, where student teachers are assessed individually (Lynch, Wolcott and Huber, 2000). The problem solving skills of student teachers are evaluated according to the measures in the form (differentiating the nature of the problem and the relevant knowledge, organizing an open-ended problem, reorganizing an open-ended problem). All skills in the form were scored between 0 and 4 according to the quality of the skill. The set up and content validity of the form were obtained through taking expert opinion. For the reliability of the form both researchers filled this form for each student teacher and the consistency between the two scores was looked at. The Pearson Correlation analysis concluded that the consistency between the scores of the two researchers was .89 (Temel, 2009).

#### 2.2.2. Evaluation Form of Student Reports (EFSR)

EFSR ([chem.ntci.on.ca/sch4u/InquiryRubric.pdf](http://chem.ntci.on.ca/sch4u/InquiryRubric.pdf)) is a form that is adapted by the researchers to evaluate the reports prepared by the groups as their products following their laboratory studies. The assessment measures in the form (purpose, materials and procedure, hypotheses, discussion) were scored from 1 to 4. For the reliability of the form, both researchers filled in this form according to the experiment reports of the groups and the consistency between the researchers' scores was evaluated. The Pearson Correlation analysis concluded that the consistency between the two researchers was .87 (Temel, 2009).

### 2.2.3. Nature of science and science teaching beliefs scale (BASSSQ)

To determine the beliefs of students about the nature of science and science teaching in the study, the survey developed by Chen et.al (1998) was used. BASSSQ is a two dimensional 5-point Likert-type scale developed to evaluate the opinions of students about science and the nature of science at school (Macaroğlu, Taşar & Çataloğlu, 1998). The first section of the survey called the “Opinion of the Teacher about Science” consists of two sub dimensions. The first scale is the scientific inquiry process and consists of 10 questions. The second scale is about the absoluteness of the scientific knowledge and it consists of 10 questions also. The scoring of the responses to the survey questions is as follows: strongly agree =5, agree=4, neutral=3, disagree=2 and strongly disagree =1. The scoring was reversed for the negative statements (strongly agree =1, agree=2, neutral=3, disagree=4 and strongly disagree =5). The internal consistency of the survey was found to be 0.51 for the first section and 0.81 for the second section (Aldridge, Taylor & Chen, 1997).

### 2.2.4. Opinion survey on the nature of science (VNOS-C)

To determine the opinions of student teachers about the nature of science, the “Opinion Survey on the Nature of Science” developed by Lederman et.al (2002) was administered. The responses of the participating students were evaluated after both applications and their general opinion profile was created. The survey consisted of three versions (VNOS-A, VNOS-B and VNOS-C). This study made use of the final version of the survey. During the development process the VNOS-B form was modified by Abd-El-Khalick (1998) and extended with the addition of new items. A commission of experts provided the content and range validity was obtained (Lederman, Abd-El-Khalick, Bell & Schwartz, 2002).

## 2.3. Teaching Process

Problem Solving Applications at the Chemistry Lab (PSACL) started with the pre test administration of BASSSQ and VNOS-C. Before the administration, students were informed by the researchers about the importance of scientific process skills and science teaching through scientific research along with their importance at the laboratory practices. These skills are important elements of the mental development and set the basis of the laboratory practices (Ayas, Çepni, Johnson & Turgut, 1997).

Problem solving applications at the chemistry lab consisting of 5 steps was realized within 6 weeks with the participation of 40 science teachers (YÖK World Bank, 1997). After the pre test application, student teachers were asked for their opinions on what problem solving means, the importance of problem solving process and how it is realized through a small discussion. Next, they were informed about the problem solving applications at the chemistry laboratory, the steps of these applications, and how to proceed according to these steps to introduce the application to the student teachers during the first week of the study. Student teacher groups were asked to form groups of four and five. The initial phase of the application (the problem case) was also proceeded in this week. Each group was given a problem case. For ensuring meaningful problem solving, problem cases were chosen among daily life events. Student teachers were informed they would determine their problems by the second week. A total of 10 problem cases were presented to all student groups. The second week when the

second phase starts (identification of the problem), groups simplify their problems and differentiate events to analyze from the events that do not require analysis. They divided the problems into steps or sub problems and expressed their problems in a clear language. The researchers controlled the problems determined by the groups. The third phase of the application in the third week (establishing hypothesis) involved the determination of all technical and theoretical questions they needed to solve their problems. Later, all groups shared responsibilities among their members and started to seek potential solutions to their problems. With this aim, groups made use of the library and various resources to collect information about their pre-problems. After the data collection week, the solutions suggested by the groups were collected and one among them was selected for each group to be tried. The researchers checked these solution ways. Groups established their hypothesis for solving their problems and presented the solution way of their choice in the form of an experiment suggestion. The fourth step was (trying the solution way) the experiments done by the students at the chemistry lab under the supervision of the researchers. During the experiment phase, the groups doing their experiments generalized the results they obtained and expressed them in their own words. In the fifth and final phase of the study (repeating), the groups, who failed to obtain results according to the hypothesis they established, revised their solution steps and the whole process was repeated starting from the step that the failure occurred. During PSACL, researchers evaluated each participant according to their performances in the phases (differentiating the nature of the problem and the relevant knowledge, organizing an open-ended problem, reorganizing an open-ended problem) using EFPSS and scoring all skills in the form with points changing between 0 and 4. After PSACL, BASSSQ and VNOS-C were administered as the post tests. Additionally, the groups in this week submitted their reports on their targets, observations, data analysis, hypothesis, work plans, and their conclusions. In evaluating the individual reports of all group members EFSR was utilized and the evaluation measures in the form (purpose, materials and procedures, hypothesis, conclusions, discussion) were scored from 1 to 4. The all scores which obtained from EFPSS and EFSR were included out of 100 score for evaluation of students' performances.

### 3. FINDINGS

#### 3. 1. Nature of science and science teaching belief scale (BASSSQ)

The pre and post test results of the BASSSQ, which is a Likert-type scale, were compared according to the paired sample (t) test and the results are displayed on Table 1.

Table 1. Dependent paired sample t-test results regarding BASSSQ-teachers' opinions on science section ( $p < .05$ )

	N	X	S	t	p
Pretest	40	3.2088	,3368		
Posttest	40	3.4150	,2919	-4,771	.000

“Nature of Science and Science Teaching Belief Scale” pre and posttest results indicated a significant difference favoring the posttest ( $p < .05$ ). As a result of the problem solving application, students’ beliefs about the nature of science improved in a statistically significant direction.

### 3.2. Survey of opinions on the nature of science (VNOS-C)

To determine students’ opinions on the nature of science the VNOS-C was administered as the pre and posttest and the results are displayed on Table 2 in frequencies and percentages. The responses of the students to the “Survey of Opinions on the Nature of Science” were classified as “good”, “medium” and “weak” as indicated in the resources (Milwood and Sandoval, 2004; Thye and Kwen, 2003) and the evaluations were made accordingly.

Table 2. Percentage frequencies of student responses to VNOS-C

Items	GOOD		MEDIUM		WEAK		FALSE		BLANK	
	pre test	post test	pre test	post test	pre test	post test	pre test	post test	pre test	post test
1	10	30	30	48	60	22	-	-	-	-
2	0	45	40	30	60	25	-	-	-	-
3	20	48	45	40	30	12	5	-	-	-
4	19	63	30	28	53	9	-	-	-	-
5	10	53	33	30	40	17	14	-	3	-
6	0	35	24	30	58	23	8	-	10	12
7	14	49	25	20	48	28	5	-	8	5
8	0	43	25	28	65	21	-	-	10	8
9	0	52	68	35	25	10	7	-	-	3
10	8	58	35	28	48	8	10	-	-	6

Students responded to the first question of the survey as “what is science according to you? How does science (or a scientific discipline such as physics, biology or etc.) differ from the other inquiry disciplines (such as religion and philosophy)?” which is displayed on Figure 1. 60% of the students responded at the “weak” category in the pretest, while the percentage of the “weak” category dropped down to 22% at the posttest.

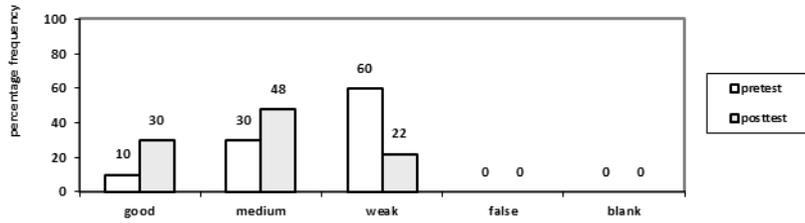


Figure 1. Distribution of students' responses to the 1<sup>st</sup> question

The second question on the survey, as “What is an experiment?”, was responded by the students as displayed in Figure 2. While none of the students responded at the “good” category in the pretest to this question, the percentage of responses at the “good” category increased up to 45% at the posttest. Similarly, 60% of the students responded to the same question at the “weak” category, while this percentage dropped down to 25% at the posttest.

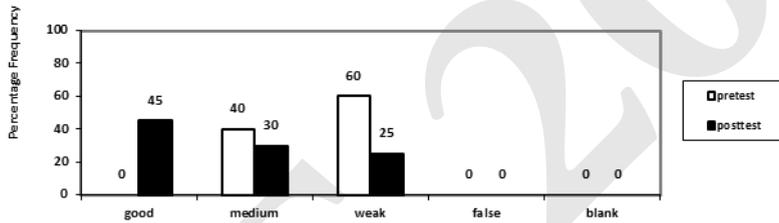


Figure 2. Distribution of students' responses to the 2<sup>nd</sup> question

The fifth question on the survey, which was “Is there any difference between the scientific theory and scientific law? Please explain using examples”, was responded by the students as Figure 3 displays. While 20% of the students responded at the “weak” category in the pretest to this question, the percentage of responses at the “weak” category decreased down to 6% at the posttest.

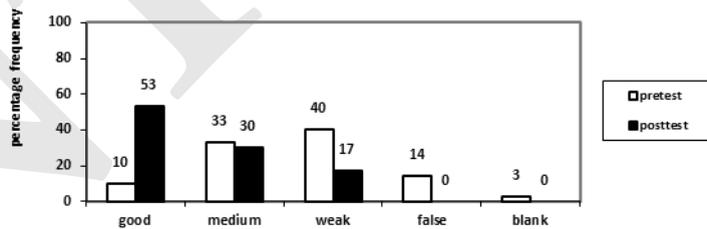


Figure 3. Distribution of students' responses to the 5<sup>th</sup> question

Students responded to the eighth question of the survey, as “It is believed that the dinosaurs became extinct 65 million years ago. Two of the hypothesis established by the scientist on the reason for extinction received great support. The first one was introduced by a group of scientists. According to that, the crash of a meteor to the

earth, which resulted in a series of events including the extinction of dinosaurs? The second one suggests that the reason for extinction was the volcanic explosions. Although the same data were used by all two groups of researchers to develop their hypothesis, how could there be different conclusions?”. As Figure 4 displays, none of the students responded at the “good” category in the pretest, while the percentage of the “good” category increased up to 43% at the posttest. The same question was responded by 65% of the students at the “weak” category while this percentage dropped down to 21% at the posttest.

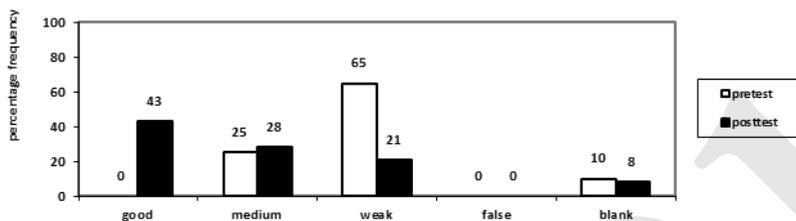


Figure 4. Distribution of students' responses to the 8<sup>th</sup> question

The ninth question on the survey, which was “Some people claim that scientists are affected by the social and cultural values. This means that science reflects the intellectual norms, philosophical hypothesis, social and political values. Others claim that science is universal. This means that science goes beyond the national and cultural borders; and therefore is not affected by the cultural norms, social, political and philosophical values”, was responded by the students as Figure 5 displays. While none of the students responded at the “good” category in the pretest to this question, the percentage of responses at the “good” category increased up to 52% at the posttest. The same question was responded falsely by the 7% of the students in the pretest, while there were no false answers at the posttest.

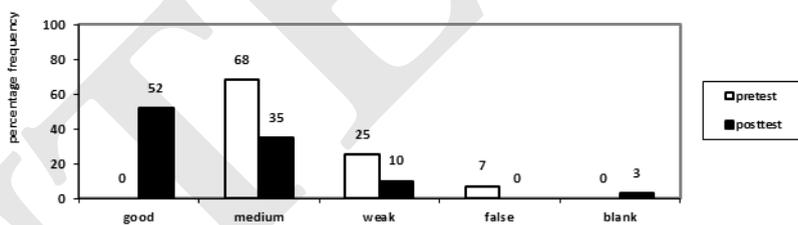


Figure 5. Distribution of students' responses to the 9<sup>th</sup> question

#### 4. CONCLUSION AND DISCUSSION

Following the problem solving application at the chemistry lab, student teachers' knowledge levels about the nature of science increased statistically. Data analysis concluded that these applications could extend student teachers' knowledge about the nature of science. Similarly, Küçük (2006) used direct reflective observation technique in his study, which increased knowledge levels of students about the nature of science. The results of

our study are in line with the findings of studies by Akerson and Volrich (2006). Akerson and Volrich (2006) focused on the nature of science in their study, where a student teacher made applications aiming to improve his/her peers' opinions on the nature of science in the training class. Class observations made by the student teacher were used as the data collection tools. The interviews of the student teacher with his/her peers at the beginning and end of the application showed that there were positive improvements in the opinions of student teachers regarding the nature of science.

The statistical analysis of the responses of the student teachers to the nature of science and science teaching belief scale indicated that the aforementioned applications lead to a significant increase in the knowledge levels of student teachers on the nature of science. The results of our study are in line with the findings of studies by Morgil, Temel, Güngör Seyhan and Ural Alşan (2009). The responses of the students to the survey of opinions on the nature of science proved that students were insufficient at questions 1., 2., 5., 8., and 9. These negative results are similar to various studies in the literature. For instance, Murcia and Schibeci (1999) researched the concepts 73 student teachers knew about the nature of science. The results showed that they did not comply with the modern opinions. Responses of student teachers in general displayed that they had an insufficient and lacking approach towards the scientific method. Moreover, the responses showed that students had a weak level of understanding about the scientific theories. The study concluded also that students were not conscious about the nature of science and the studies of the scientists. Abd-El-Khalick and Akerson (2004) analyzed and evaluated the effects of a direct and reflective educational approach on improving student homeroom teachers' opinions on the nature of science. Student teachers were administered the VNOS-B survey and they were made individual interviews. The changes in the students' opinions at the beginning and end of the teaching process were analyzed. The results indicated that the student teachers did not have much information on the nature of science. Similar to the studies abroad on the nature of science, there were studies in Turkey on the same topic (Gürses, Doğar, & Yalçın, 2005; Bora, 2005; Tufan, 2007). The results of the study and other studies in the same field showed that student teachers lacked sufficient knowledge about the nature of science. This result indicates that the education student teachers receive before university on science cause these insufficiencies, which could not be compensated during the university education. Therefore, determination of student teachers' opinions on the nature of science is very important along with planning learning activities, which would compensate students' misconceptions. According to the research (Brickhouse, 1992; Moore & Foy, 1997; Neathery, 1997; 1998), when teachers implement the nature of science accurately and ensure that they develop positive attitudes towards science, their achievement in science classes increase (Mugaloğlu, 2006). Our study concluded that elements regarding the nature of science, which were found to be insufficient in students according to VNOS-C, could improve as a result of the applications made. Data obtained from the posttest are supportive of this suggestion. Similarly, in the study by Schwartz, Lederman, and Crawford (2004), perceptions of student teachers about the nature of science were tried to be improved at the training classes for middle school student teachers of science. Opinions of trainees on the nature of science were evaluated through the VNOS-C survey. As a result, important improvements in the opinions of various student teachers on the nature of science were observed. The results of BASSSQ, which was implemented to assess the beliefs of student teachers about the nature of science, proved that the applications used in the study improved student teachers' beliefs. Macaroğlu, Taşar and Çataloğlu (1998) administered the BASSSQ survey to determine student teachers' beliefs about the nature of science. The quantitative results of the study showed that student teachers believed scientific knowledge was objective and could change in time. The results obtained in our study and the other studies mentioned before have proven that the opinions on the nature of science could be improved with the help of various educational applications. Laboratories enable students to see the uses of their theoretical knowledge in practice and make generalizations in the light of the evidence they obtain.

The study concluded that aforementioned relationship was statistically significant. The regression analysis results showed that the attitudes of student teachers of science towards teaching science were significant indicators of their opinions on the nature of science.

## 5. SUGGESTIONS

Among the targets of the science education program implement in the recent years include enabling students to learn about doing scientific research while learning science and about methods of acquiring scientific knowledge while doing scientific research (Bağcı Kılıç, 2003) along with becoming scientifically literate and understanding the nature of science. For students to develop their scientific process skills and succeed in learning science, appropriate curriculum and well-trained teachers are required. When teachers receive an education that would provide them with a modern scientific approach and enable them to overcome their misconceptions about the nature of science, they could act according to the nature of science in programs to implement in their classroom as well as the teaching strategies they choose (Bora, 2005). For experiments and project-based lab applications to be integrated into science classes, the experiences of the teachers are quite important and should be taken into consideration. Therefore cooperation with more experienced teachers to implement in-service and pre-service professional development programs would be essential. Teachers should be provided with working environment, where they could work in small groups through programs and educations to introduce this approach. They should be observed in terms of how they would implement their experiences or attainments in their classrooms and the results should be evaluated with their participation. If teachers have modern approaches towards the nature of science, they could ensure that students understand scientific concepts accurately. In-service trainings should be designed to present required knowledge on the nature of science. Implementations on developing students' knowledge and beliefs about the nature of science should be utilized at all levels of education, not only at the university level. Misconceptions of students emerge at the initial phases of education. Therefore, effective science education should be implemented starting from the initial level of primary school education. For students to interpret the learnt knowledge and transfer them into their daily lives, they should be acknowledged about the nature of science as well as the importance of scientific knowledge. Therefore, more activities should be included in the curriculum to allow for increasing beliefs and knowledge about the nature of science.

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4<sup>th</sup> International Conference on New Horizons in Education

# An investigation on the compulsory Arabic preparatory program in the faculties of theology in turkey

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## Abstract

Faculties of Theology in Turkey are institutions of higher religious education. These faculties linked to the Ministry of Education before 1980 and after 1980 to the Council of Higher Education are 4-year higher education colleges. There was a "Compulsory Arabic Preparatory Program" during the one academic year in the faculties' schedule. A number of regulations have been made about these faculties' schedule in the different time periods by the authorities. In this context, it had been implemented "Compulsory Arabic Preparatory Program" in all of the faculties' syllabus form 1982 to 1997. This program had been removed in the period between 1998-2010. In some faculties, there was "English Preparatory Course" as an elective or compulsory program between 2005 and 2010 academic year. Today, Compulsory Arabic Preparatory Program is brought into force from the beginning of the academic year 2009-2010, again. This program is carried out almost all of the theology faculties which have ongoing training in Turkey. Looking at short history of faculties of theology in turkey, it can be seen that it has been made a set of arrangements on these faculties by authorities. As far as we could observe, these arrangements showed that there is not an institutionalization and traditionalism in the higher religious education in Turkey as yet.

Key Words: Language Education; Compulsory Arabic Preparatory Program; Faculty of Theology; Turkey

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## 1. Introduction

Faculties of Theology in Turkey are institutions of higher religious education. Students who graduated from these faculties mainly are employed as a religious education teacher in the Ministry of National Education (MEB) and religious officials in the Presidency of Religious Affairs (DİB). They provide qualified religious services to citizens within the law.

Faculties of Theology in Turkey that linked to the Ministry of Education before 1980 and after 1980 to the Council of Higher Education are 4-year higher education colleges. There was a "Compulsory Arabic Preparatory Program" during the one academic year in the faculties' syllabus. It is made a number of regulations about these faculties' syllabus in the different time periods by the authorities. In this context, it had been implemented "Compulsory Arabic Preparatory Program" in all of the faculties form 1982 to 1997. This program had been removed in the period between 1998-2010. In some faculties, there was "English Preparatory Course" as an elective program (e.g. in Ankara University, Faculty of Theology) or compulsory program (e.g. in OMU Faculty of Theology) between 2005 and 2009 academic year. Today, Compulsory Arabic Preparatory Program is brought

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into force from the beginning of the academic year 2009-2010, again. This program is carried out all of the theology faculties which have been ongoing training in Turkey.

In this paper, it will be focus on the adventure of faculties of theology in Turkey and “Compulsory Arabic Preparatory Education” in their schedule. Doing this, it will be try to investigate Arabic language teaching (teaching methods and techniques, used materials, etc.) with reference to the sample Compulsory Arabic Preparatory Program in the Faculty of Theology, Hitit University.

## 2. A Brief History of the Faculty of Theology in Turkey

The first higher religious education institution in Turkey is the Faculty of Theology in Istanbul University (*Darulfunun-i Sultani*) that is established in 1924. The aim of establishment of this faculty was that “to train higher religious experts”. This faculty was closed in 1933 and then, 16 years later, Ankara University Faculty of Theology was opened in 1949. Opening reasons of this faculty were that to satisfy a need of religious education teachers in the primary and secondary schools and religious officials in the mosques. In the later years, “High Islamic Institutes” were opened depending on the Ministry of National Education such as, Istanbul High Islamic Institute in 1959, Konya High Islamic Institute in 1962, Kayseri High Islamic Institute in 1965, Izmir High Islamic Institute in 1966, Erzurum High Islamic Institute in 1969 (This institute was an active as a Faculty of Islamic Sciences, Ataturk University during the 1971-1982 years), Bursa High Islamic Institute in 1975, Samsun High Islamic Institute in 1976, Yozgat High Islamic Institute in 1979 (This institute is closed in 1982). Students who graduated from these Islamic Institutes were employed as a teacher in the Ministry of National Education and religious officials in the Presidency of Religious Affairs (Ayhan 2004).

In 1982, with the decree is issued, High Islamic Institutes depending on the Ministry of National Education are linked to The Higher Education Council/Universities. Thus, the number of faculty of theology has eight in 1982 (in Ankara, Marmara, Ataturk, Selçuk, Erciyes, Dokuz Eylül, Uludağ, Ondokuzmayıs Universities) (Aydın, 2000). In later years, the numbers of these faculties have twenty-three (in Sanliurfa in 1987, Sakarya in 1993, Rize in 1993, Malatya in 1993, Diyarbakır in 1993, Isparta in 1993, Van in 1993, Çorum in 1994, Elazığ in 1994, Adana in 1994, Sivas in 1994, Canakkale in 1995, Istanbul/Istanbul University in 1996, Kahramanmaras in 1997, Eskisehir in 1997) (Aydın, 2000).

In 1998, it has been made a set of arrangements on faculties of theology by the Higher Education Council. In this context, with the decision of the Higher Education Council held on July 11, 1997, it has been regulated on the theology degree program. From the academic year 1998-1999, there are two different programs in the faculties of theology; religious culture and moral knowledge education degree program and theology degree program. Religious culture and moral knowledge education degree program was opened in some faculties such as in Ankara, Marmara, Uludag, Dokuz Eylül, Selcuk, Ondokuzmayıs, Erciyes, Cukurova, Ataturk and Dicle universities. With this new arrangement, Compulsory Arabic Preparatory Class and courses of pedagogical formation were removed from the faculties’ syllabus (Kaya, 2003).

With the decision of general meeting of the Higher Education Council held on May 26, 2006, it was made an arrangement on the Program of Religious Culture and Moral Knowledge. With this decision, the Program of Religious Culture and Moral Knowledge in the faculties of theology in Ankara, Ataturk, Cukurova, Dokuz Eylül, Istanbul, Marmara, Ondokuzmayıs, Selcuk and Uludag Universities were decided to transfer to faculties of education affiliated to universities as a “Department of Religious Culture and Moral Knowledge”. Also, the Program of Religious Culture and Moral Knowledge in Dicle University Faculty of Theology was closed. Thus, students who graduated from faculty of education are employed as a religious education teacher and from faculty of theology are religious officials (Kaya, 2003)

With the decision of general meeting of the Higher Education Council held on May 10, 2012, Department of Religious Culture and Moral Knowledge reattached to Faculty of Theology/Islamic Sciences from Faculty of Education in the same university.

In recent years, the number of this type of faculties has been significantly increasing which are depending on State Universities and Private/Foundation Universities. As far as we have detected, there is more than one faculty in Istanbul, Ankara and Izmir, and also, information about these faculties in Turkish universities in the following table.

Table 1: Faculties of Theology in Turkey

Abant İzzet Baysal University/ Bolu	Faculty of Theology	Mardin Artuklu University/Mardin	Faculty of Theology
Akdeniz University/Antalya	Faculty of Theology	Marmara University/Istanbul	Faculty of Theology
Amasya University/Amasya	Faculty of Theology	Mugla Sıtkı Kocman University/Mugla	Faculty of Theology
Ankara University/Ankara	Faculty of Theology	Mus Alparslan University/Mus	Faculty of Theology
Artvin Coruh University/Artvin	Faculty of Theology	Namık Kemal University/Tekirdag	Faculty of Theology
Ataturk University/Erzurum	Faculty of Theology	Necmeddin Erbakan University/Konya	Faculty of Theology
Balıkesir University/Balıkesir	Faculty of Theology	NevşehirUniversity/Nevşehir	Faculty of Theology
Bayburt University/Bayburt	Faculty of Theology	Onsekiz Mart University/Canakkale	Faculty of Theology
Bingöl University/Bingöl	Faculty of Theology	Ondokuz Mayıs University/Samsun	Faculty of Theology
Bozok University/Yozgat	Faculty of Theology	Ordu University/Ordu	Faculty of Theology
Burdur University/Burdur	Faculty of Theology	Osmangazi University/Eskisehir	Faculty of Theology
Bulent Ecevit University/Zonguldak	Faculty of Theology	Osmaniye Korkut Ata Uni./Osmaniye	Faculty of Theology
Celal Bayar University/Manisa	Faculty of Theology	Pamukkale University/Denizli	Faculty of Theology
Cumhuriyet University/Sivas	Faculty of Theology	Recep Tayyip Erdogan University/Rize	Faculty of Theology
Cukurova University/Adana	Faculty of Theology	Sakarya University/Sakarya	Faculty of Theology
Dicle University/Diyarbakır	Faculty of Theology	Siirt University/Siirt	Faculty of Theology
Dokuz Eylül University/Izmir	Faculty of Theology	Süleyman Demirel University/Isparta	Faculty of Theology
Dumlupınar University/Kütahya	Faculty of Theology	Sutcu Imam University/Kahramanmaraş	Faculty of Theology
Erciyes University/Kayseri	Faculty of Theology	Sırnak University/Sırnak	Faculty of Theology
Erzincan University/Erzincan	Faculty of Theology	Trakya University/Edirne	Faculty of Theology
Fatih University/Istanbul	Faculty of Theology	Uludağ University/Bursa	Faculty of Theology
Fırat University/Elazığ	Faculty of Theology	Yalova University/Yalova	Faculty of Theology

Gazi Osman Pasa University/Tokat	Faculty of Theology	Yüzüncü Yıl University/Van	Faculty of Theology
Gaziantep University/Gaziantep	Faculty of Theology	Istanbul 29 Mayıs University/Istanbul	F. of Islam and Rel. Sci.
Gumushane University/Gumushane	Faculty of Theology	Adıyaman University/Adıyaman	Faculty of Islamic Scie.
Hakkari University/Hakkari	Faculty of Theology	Afyon Kocatepe University/Afyon	Faculty of Islamic Scie.
Harran University/Sanlıurfa	Faculty of Theology	Ağrı İbrahim Çeçen University/Ağrı	Faculty of Islamic Scie.
Hitit University/Corum	Faculty of Theology	Aksaray University/Aksaray	Faculty of Islamic Scie.
Iğdır University/Iğdır	Faculty of Theology	Bartın University/Bartın	Faculty of Islamic Scie.
Inonu University/Malatya	Faculty of Theology	Bitlis Eren University/Bitlis	Faculty of Islamic Scie.
Istanbul University/Istanbul	Faculty of Theology	Fatih Sultan Mehmet Vakıf Uni./Istanbul	Faculty of Islamic Scie.
Kafkas University/Kars	Faculty of Theology	Giresun University/Giresun	Faculty of Islamic Scie.
KarabukUniversity/Karabuk	Faculty of Theology	Istanbul Sabahattin Zaim Uni./Istanbul	Faculty of Islamic Scie.
Karadeniz Tek. University/Trabzon	Faculty of Theology	Istanbul Şehir University/Istanbul	Faculty of Islamic Scie.
Kastamonu University/Kastamonu	Faculty of Theology	Izmir Katip Celebi University/Izmir	Faculty of Islamic Scie.
Kırklareli University/Kırklareli	Faculty of Theology	Karamanoğlu Mehmetbey Uni./Karaman	Faculty of Islamic Scie.
Kilis 7 AralıkUniversity/Kilis	Faculty of Theology	Yıldırım Beyazıt University/Ankara	Faculty of Islamic Scie.
Kocaeli University/Kocaeli	Faculty of Theology	Usak University/Usak	Faculty of Islamic Scie.

From 1949 to the present day, it has been made a set of arrangements on the faculties of theology in Turkey. Among these arrangements, there are various regulations about syllabus and period of study of bachelor's degree. One of them, “English Preparatory Class” took place as a compulsory program in the Faculty of Theology Ondokuzmayıs University, Samsun. It was implemented “Compulsory English Preparatory” program in this faculty’s syllabus between 2005 and 2009 academic years. We have done a longitudinal research on it. We have interviewed with first students in this program, two times at the beginning and the end of the 2005-2006 academic year and once at the end of the 2009-2010 academic year. In these interviews implemented in different times have been investigated that their thinking and attitude changes about the program and contributions of this program on their vocational and academic skills. In the first interview, it is reached that most of students choose this faculty did not have any information about compulsory English preparatory class. For this reason, they regretted to register for this faculty, and wanted to take away this English preparatory class (Çoştu, 2007). In the second interview, it has reached these findings that targeted aims about the opining program couldn’t have been completely achieved and the program failed partly (Çoştu, 2011).

### 3. An Investigation on Arabic Teaching: The Sample Compulsory Arabic Preparatory Program in the Faculty of Theology, Hitit University

Faculty of Theology at Hitit University opened in 1994 depending on Gazi University, Ankara, and then with the establishment of Hitit University in Çorum in 2006, it is connected to the that university. It has been also carried out curriculum and program content changes at this faculty. In this context, the Compulsory Arabic Preparatory Program had been implemented in this faculty's curriculum between 1994 and 1998 and removed in 1998 until 2010 and taken part of its curriculum since 2010-2011 academic years. The purpose of this program s defined as follows: "The aims of teaching Arabic are that to teach student the basic rules of Arabic, to develop Arabic vocabulary, to understand reading Arabic texts and listening Arabic conversations, to provide expressing verbally and writing in Arabic" (Education and Examination Guidelines of the Compulsory Arabic Preparatory Program, 2010: article 6)

As of the 2012-2013 academic years, there are 145 students in daytime education and 154 students in evening education and 299 students in total. Arabic teaching has been carried out by two Arabic origin instructors and ten non-native speaker lecturers in faculty staff. Arabic courses are 28 hours per week. These courses are seen following table.

Table 2: Course and Its hours per week in Compulsory Arabic Preparatory Program

Courses	Hours Per Week
Arabic Morphology (Sarf)	4
Arabic Syntax (Nahiv)	6
Arabic Writing	2
Arabic Reading	8
Arabic Speaking	6
Arabic Understanding	2
<b>Total</b>	<b>28</b>

(Source: Student Office of the Faculty, 2013)

According to Arabic instructors specified that the contents of Arabic courses in that program are as follows:

*Arabic Morphology (Sarf)*: This lesson includes the rules of Arabic language such as word derivation and verb inflection in Arabic.

*Arabic Syntax (Nahiv)*: This lesson also includes the rules of Arabic language like Arabic Morphology. As distinct from Morphology, it has Arabic syntax and syntactic analysis of Arabic sentences, etc.

*Arabic Writing*: This lesson includes translation methods and techniques of oral and written from Turkish to Arabic.

*Arabic Reading:* In this lesson, it is taught that translation techniques from Arabic to Turkish and grammar practices.

*Arabic Speaking:* This is practical Arabic speaking lesson. This lesson carried out by two Arabic origin instructors.

*Arabic Understanding:* In this lesson, students listen to Arabic mass media productions such as movies, cartoons, documentaries, and so on according to their language levels.

Table3: Weekly Schedule for Class A (2012-2013 Academic Years)

	1.Course 8:30- 9:15	2.Course 9:25- 10:10	3.Course 10:20- 11:05	4.Course 11:15- 12:00	Lunch Break 12:00- 13:20	5.Course 13:20- 14:05	6.Course 14:15- 15:00
<b>Monday</b>	Arabic Morphology (a) <sup>x</sup>		Arabic Syntax (b) <sup>x</sup>		---	Arabic Speaking(c) <sup>x</sup>	
<b>Tuesday</b>	Arabic Syntax (b) <sup>x</sup>		Arabic Speaking(d) <sup>x</sup>		---	Arabic Writing (e) <sup>x</sup>	
<b>Wednesday</b>	Arabic Reading(f) <sup>x</sup>		Arabic Reading(g) <sup>x</sup>		---	Arabic Reading(h) <sup>x</sup>	
<b>Thursday</b>	Arabic Morphology (a) <sup>x</sup>		Arabic Reading(h) <sup>x</sup>		---	Arabic Syntax (b) <sup>x</sup>	
<b>Friday</b>	---		Arabic Speaking(i) <sup>x</sup>		---	Arabic Understanding(i) <sup>x</sup>	

<sup>x</sup> Each different letter indicates to a different course instructor.

(Source: Student Office of the Faculty, 2013)

It is known that it is aimed to develop the four basic skills in foreign language education. These skills are reading, listening, speaking and writing. It is trained to student the rules of Arabic language in the courses of morphology and syntax and skills of writing, reading, speaking and understanding are in the other courses. Looking at the weekly hours of these courses, it is seen that focused on Arabic grammar and insufficient skills of writing and listening. Also, according to reports of students, in these courses teach predominantly translation techniques and methods more than speaking and writing skills.

During the Preparatory class, there are 784 hours of training in Arabic. According to my interviews of Arabic instructors in faculty, they specified used course material and language teaching methods and techniques as follows:

“In each Arabic course, it has been used different course materials such as Arabic grammar books, audio-visual materials, etc.”

“In these lessons, it has been followed an active learning and *student-centered teaching methods such as small group discussion, interactive lecture demonstrations, concept mapping, etc.*”

Looking at language learning infrastructure systems of faculty, it appears to be insufficient. There is a computer laboratory in the faculty. But, this laboratory is not used for language training. In addition to this, there are computer, projection equipments and a few smart boards in the classrooms. Within the framework of these facilities, it has tried to teach Arabic language in the faculty.

In the measurement and evaluation of language skills of students who are in preparation classes, some measuring techniques are made such as four midterm exams, four quizzes and two projects. In the end of the year, there is also a proficiency test. This test has two parts. In the one part of it, students are tested in Arabic morphology, syntax, writing and reading. Other part of it includes speaking test which is done by Arabic origin instructors. Calculation of final grade bases on 70% of written test exam result and 30 % of the oral exam. Student's overall grade bases on 40% of the exams point average within the year and 60 % of the proficiency test. In the calculation of the student's passing grade is required to obtain at least sixty score over a hundred points. Students who have below this score is considered unsuccessful, but they continue their bachelor's degree providing to pass proficiency test until end of the degree program. (Education and Examination Guidelines of the Compulsory Arabic Preparatory Program, 2010: article 14).

There are two hours compulsory Arabic lessons (Arabic Language and Literature I and II) in fall and spring semesters in the second class of bachelor's degree within the Undergraduate syllabus -with Arabic preparation course. During the four-year bachelor's degree program, there are a total of four hours of compulsory Arabic lessons. In the first year of bachelor's degree, there are not any Arabic lessons in the syllabus. The third and fourth years of bachelor's degree, there are only elective Arabic lessons such as, "Contemporary Arabic Text I and II", "Language of Arabic Media", "Poetry in Arabic Literature", "Prose in Arabic Literature", "Arabic Literature and Rhetorics I and II" in the syllabus (Student Office of the Faculty, 2013).

With reference to above information, it is seen that it has not been sufficiently supplement Arabic language skills obtained in the preparatory class during the four-year bachelor's degree. As far as we could observe, this issue causes a significant problem in terms of language teaching. In that language learning bases on the continuity and repetition, this should have a negative impact on the students' language skills. This issue has been indicated by both students and Arabic instructors in my interviews with them. Besides, Arabic instructors in the faculty specified that it is necessary reorganization of faculty syllabus to continuity of Arabic language skills.

#### **4. Conclusion**

Looking at short history of faculties of theology in turkey, it can be seen that it has been made a set of arrangements on these faculties by the Ministry of National Education prior to 1980, the Council of Higher Education after 1980. As far as we could observe, these arrangements as showed above, there is not an institutionalization and traditionalism in the higher religious education in Turkey as yet. It is no doubt that, students studying in these faculties are most affected by this situation. It is so important that modern and contemporary policy of the higher religious education is determined by authorities.

To achieve the intended purposes of compulsory Arabic preparatory program in the Faculties of Theology in Turkey, we can make the following suggestions with reference to our investigations on the Compulsory Arabic Preparatory Program in the Faculty of Theology, Hitit University:

1. Arabic Preparatory education is professionalized in the faculties of theology. In this direction, it should be getting support from private and public language training organizations.
2. It should be organized a one-week orientation program included both about faculty and aims and goals of compulsory Arabic preparatory program to newcomer students.
3. It should be considered that language skills as reading, writing, listening, speaking during the foreign language training and regulated equally these skills in the preparatory program.
4. It should be reinforced sufficiently knowledge of Arabic grammar obtained in the preparatory class during the bachelor's degree (4 years). In this context, at least four credit compulsory Arabic courses should be included each term of four-year bachelor's degree.
5. It should be established computer-assisted language laboratories in the faculties.

6. It should be provided exchange of students within the under the special agreements or Mevlana Exchange Program, etc. In this regard, successful students should be sent to Arabic countries short or long term.

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# An unaddressed issue in art education: Review of a children's art book

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## Abstract

All oral and written works, which are prepared in accordance with their own developmental characteristics of childhood's phases from early childhood phase to the end of the period of adolescence; fairy tales, stories, novels, memories, biographical works, travel writings, poems, books explaining science and nature events, children art books etc., all of these works are referred as children's literature. In this sense, children's literature has a kind of wide range, has research and study area specific to these kinds. Art books for children, which are among the classification of instructive and informative books are a kind of children's literature, which is increasing rapidly in number, but discussed little in a scientific sense. However, it is of importance and necessity to determine the necessary characteristics of children's art books to be included, to develop the contextual and formal criteria about the review of these books and to produce an example of scientific review in accordance with these criteria in the context of preparing a scientific ground for new children's art books and benefitting in an efficient way from these books. Based on this importance and necessity, in this study, a children's art book about visual arts is reviewed in the contextual and formal aspects in the light of pre-developed scientific criteria.

Keywords: Children's Art Books; Book Review; Art Education

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## 1. Introduction

The first encountered term in research about children's books is "children's literature". In fact, both "child" and "literature" are difficult words to define and to compromise since both of them consistently include transformations and differences from culture to culture, from period to period. And the concept of children literature that is a combination of both is perceived differently in every culture and every period. But, if it is needed to make a general definition without getting into too deep, "children literature is all of verbal and written works for the imagination, emotions and thoughts of people in childhood (Oğuzkan, 2001:3)". According to this, a great deal of works from fairy tales to stories, novels, folk epics, biographical works, travel writings, poems, books explaining science and natural events are included in the definition of children literature.

Lukens (2007) makes a classification related to children's literature by indicating that the classification of products of children's literature having such a wide range under certain species would be useful for the organization of ideas in this area. According to this classification, children art books are included under the title of "information books" as the books address the real issues in order to inform the readers with the books such as biography, history, travel, science and technology books. In this kind, which we can translate as "bilgilendirici kitaplar", a classification was made again by Russell (2009: 277), this kind of book is divided into four categories in itself: history & culture, science & nature, human growth & development and art & leisure.

Actually, the combination of art & leisure books in this classification is the indication that art is perceived as leisure activity for most people. Unfortunately, in our country, art is still perceived as a luxury or a hobby for most people. In fact, this situation is also applies to foreign countries. As a matter of fact that according to Russell (2009), when school budgets are narrowed, art programs are firstly affected. However, art is an indispensable part of children's education. Art books increase the interest to art and taste taken from it by reinforcing the experiences related to art. "Just as taste, aesthetic appreciation also develops at an early age depending on the cultural circumstances experienced by the child. Books, especially literary quality books are the most crucial elements, which should not be prevented from being seen for the development of creativity and aesthetic sense of a child. Child develops both his/her creativity by means of these books, which inform, entertain and provide them having a good time and aesthetic sense by means of language and various opportunities of language used in these books" (Demirel, 2010: 40).

According to Şirin (1998), children's books in the context of art education are the first step in the physical sense and children begin to recognize art elements like color harmony, composition, line and develop an aesthetic judgment through these books. Shortly, children's meeting with the eligible art books prepared for them from their early ages, affects their relationship with art and supports them to become an individual with high artistic taste in the following years.

Although in our country the number of children's books increases in recent years, it is seemed inadequate in terms of quantity when it is compared to fields in children's literature, such as children's novels, stories. Additionally, when the related literature field was scanned, a research on art books, which examines the existent art books in certain criteria, has not been met.

However, as well as children's books are very different from books written for adults both in terms of content and formal aspects, they must have very different characteristics for each age group targeting (Erdal, 2007). In this sense, each field in the assessment of children's books should carry out extensive research by developing its own criteria. This situation becomes even more important, especially when it comes to a different discipline like art. In our country, lack of a research based on certain criteria examining the art books of children makes this situation more vulnerable. In this study, on the basis of shortage and necessity in the field, the children's book named "Keşfedin Sanat", which is published by Türkiye İş Bank Cultural Publications, written by Rosie Dickens, is a continuation of the series of children's books, like "Keşfedin Gezeganimiz", "Keşfedin Matematik", "Keşfedin Deniz" written by different authors was examined as part of formal and contextual criteria.

## 2. The Review of Children’s Art Book Named “Keşfedin Sanat”

In the study of children's book review named "Keşfedin Sanat", the main criteria topics and criteria questions formed in advance (Bolat Aydoğan, 2013) were based on. These contextual and formal criteria grounded on are formed on the basis of the data obtained as a result of literature review covering theses, books, articles and papers prepared for the review of children's book in different fields. With the adaptation of these data to visual arts' field, the criteria questions that would guide the review were prepared. The review is primarily divided into two categories as contextual and formal. Each category was also addressed separately according to main criteria titles pre-determined in itself. Each of the main title, related sub-title and criteria questions were presented in this study with the help of tables and figures.

### 2.1. The review of book named “Keşfedin Sanat” in formal aspects

In this research, in order to review of children’s art books in formal aspects, criteria grouped under three main titles were utilized. The main titles related to formal criteria are shown in Figure 1.

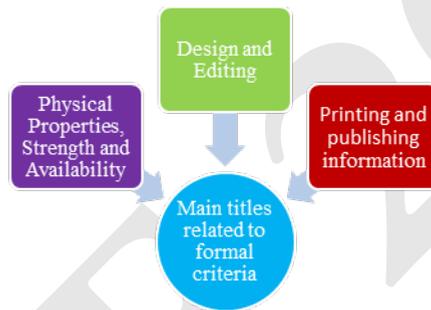


Figure 1. Main titles related to formal criteria (Bolat Aydoğan, 2013)

In table 1, criteria questions, which were developed prior to the study of book review, related to the review of children's art books in formal aspects are included. These criteria questions were developed in accordance with children’s art books considering the recommendations and criteria in Aşlıoğlu (2011), Demircan (2006), Güleç & Geçgel (2006), Güzel & Adıbelli (2011), İlhan (2000), Kaya (2007), Kaya (2011), Kıbrıs (2010), Koyuncu & Kaptan (2005), Nas (2004), Oğuzkan (2001), Özer (2007), Özgider (2010), Russell (2009), Sarı (2006), Seven (2010), Sever (2012), Tosunoğlu & Kayadibi (2007), Zengin & Zengin (2009).

**Table 1. The formal criteria related to the review of children's art book (Bolat Aydođan, 2013)**

Main Titles of Formal Criteria and Criteria Questions

Criteria Main Title	Sub-title and Criteria Questions
<i>Printing and publishing information</i>	- Book title and cover picture (front/inside cover),
	- Name of the author/ illustrator/ translator (front/inside cover/ the spine of a book),
	- Background of author/ translator (back cover),
	- Name of publishing house, place/year of publication, number of prints (front/inside cover),
	- Information of target age group,
	- Is the information about permissions related to book included?
<i>Physical Properties, Strength and Availability</i>	- size of the book,
	- form of the book
	- weight of the book
	- binding type
	- type of cover, robustness of cover
	- Are the properties of paper (opacity/ brightness, quality, type) suitable for the target age group?

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Page Design

- Text/ visual rate
- Row spacing
- Gaps in the top-bottom and right-left of page
- The placement of text and images into the page
- Is the page numbering appropriate for design guidelines/ target age group?

Book Organizing*Design and Organizing*

- Table of contents, glossary, index, footnotes, etc. supporting sections,
- The museums where the books are included and copyright permission information
- Number of pages appropriate for target age group
- Is there an appropriate ranking of book layout like blank page before the front cover, blank pages, inside cover, inside pages, back cover?

Visual Design

- Are the quality of book printing and clarity of images enough?
  - Is the design of book cover appropriate for book content and attractive?
  - Is the support of page with visual images (photos, tables, diagrams, illustrations etc.) provided?
  - Are aesthetic quality and attractiveness of visualizations included in the book sufficient and appropriate?
  - Are letter size and character appropriate for target age group and the principles of design?
- 

*2.1.1. Printing and publishing information*

The book named “Keşfedin Sanat” (ISBN: 9786053600220) published by Türkiye İş Bank Cultural Publications in 2011 is the Turkish translation of “Lift The Flap Art” (2010) written by Rosie Dickins (this information is located at the spine of the book and behind of front cover). The illustrator of the book, which is translated into Turkish by Sevgi Atlıhan in the editorship of Nevin Avan Özdemir, is Georgian Overwater and designer is Nicola Butler.

Rosie Dickins is the author of most of children's art books -existent in small quantity- in Türkiye. Except this book, the books named İlk Resim Kitabım (Tübitak Publications), Ünlü Resimler (Sıfıraltı Publications), İlk Sanat Kitabım (Doğan Egmont) on the market at the moment with the books named Benim Sanat Kitabım (İş Bank Cultural Publications) and Sanat Hazinesi (İş Bank Cultural Publications), which are not on the market anymore, are also Turkish translations of author's books published in abroad. The information about the background of author or the information related to these books or other books of the author is not included. In the same way, exclusion of the information related to the other works of illustrator and publishing house, inclusion of the names of illustrator and publishing house only on the front cover and at the behind of back cover, indication of printing year and place of book at the behind of back cover show that there are some deficiencies about transformation of printing and publishing information.

At the same time, indication of target age group on the front cover, inclusion of publishing house information on all of the covers, indication that the book has passed all health checks and indication of paint and paper used in accordance with standards specified in EU can be regarded as positive features.



Figure 2. Front cover, spine and back cover of the book “Keşfedin Sanat”

### 2.1.2. Physical Properties, Strength and Availability:

The rectangular book approximately 22 x 28,5 cm in size has paperback and 6 cardboard sheets inside (12 pages in total). Due to a lightweight material, the book weighting approximately 600 gr is appropriate for target age group with its shape, size and weight. The binding of the book having carton robust covers is in adhesive form. Although sewing as more binding is generally recommended in order to make robust, this type of binding seems to be appropriate due to that this age group is not too small and inner pages are also made of thick cardboard.

The book has many colorful images and it is seemed that the quality, opacity of cardboard used for pages are appropriate for the printing of these in a good way, there is no brightness on pages, colors are pressed bright and without scattering. Additionally, selecting the carton in appropriate thickness shows that the book is well designed in terms of the strength and availability in order not to be torn of the openable windows designed on pages by a child after a while.



Figure 3. The top and side view of the book ‘Keşfedin Sanat’

### 2.1.3. Design and organizing:

In children’s art books, page layout is one of the top issues necessary to be considered about design and organizing. “Page layout is related to the subjects like the placement of text and images on page and arrangements of gaps on top-bottom, heads of paragraph and between lines (transferred from Özçivelek by Güleç & Geçgel, 2006: 168).

Moreover, text/visual rate is an issue to be dealt with in the page layout. Text and image rate, which should be included in the children's books, varies according to target age group. For example, while 75% text and 25% image are recommended for 3rd grade students, image rate can decrease beginning from the 4th grade and it is

stated that there is no need to image unless it has a descriptive text quality for 7th and 8th grades (Kıbrıs, 2010: 40). Furthermore, children's art books intended for visual arts have very higher visual percentage than text. Thus, the criteria that visual rate should be at least 50% is the rate necessary to say for these books. In this sense, this book prepared for 9-15 age supports the criteria owing to including more than 50% visuals. The important point here is the placement and accordance of text and visuals.

In this 12 page book, a crowded page layout (Figure 4) was formed by bringing together 28 visuals, a lot of illustrations and texts, which are belonging to art works. While mobility provided with drawings, visualizations and illustrations including vivid colors make the book attractive, it also creates a visual density. So, book has a more crowded page layout according to other art books. Despite this, texts do not stay behind the visuals since the lowest font size is 10 (Times New Roman). On behalf of efficient use of page, gaps at the top-bottom and right-left of page were not left too much. This situation, like on 10th page, caused overlap of page number with visual and omission of page number. Line spacing, which is another issue in page layout, has neither too wide nor cramped structure in accordance with font sizes.

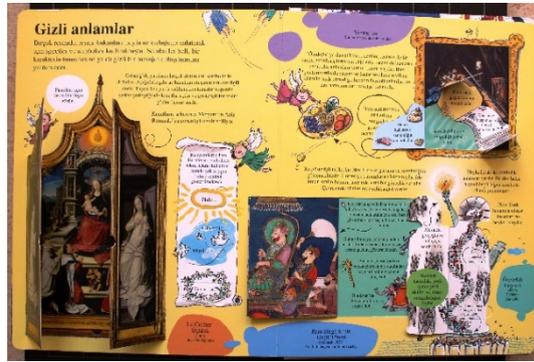


Figure 4. An example related to page layout of the book 'Keşfedin Sanat' (Page 10 and 11)

Although it is recommended to put in an order as blank page after the front page, then inside cover, book pages, blank page and back cover at the end in a book layout, it is seemed that this arrangement is not included in the book named "Keşfedin Sanat" and the content of the book begins immediately from behind the back cover. Back cover comes after 6 cardboard sheets (12 pages in total) and back cover's other side looking into inside part is still used as the book page.

In this sense, the children's art book named "Keşfedin Sanat", which has a different book layout, has also "table of contents" and "glossary" (they are used as words of art in this book) parts that most of informative child's books should have. Besides contents and glossary parts, index, footnotes/ end note, time tape, which Russell (2009) also recommended for informative books, are not included in this book. In addition to these, the information related to museum, gallery, art library, archive etc, where the permission was taken for the visuals of artworks, is located under the title of "Thanks" (on the other side of back cover). The page number of book is such a relatively small number as 12 due to the cardboard sheets. The books having many page numbers are not recommended due to being tiring, large and heavy in size for children's age. Due to the fact that this book has few pages, it does not cause such a problem.

Visual design of children's book is as an important issue to be dealt with as the issues addressed in the book. Especially, art works and illustrations related to visual arts selected for child's books are sometimes more important than the text itself. The visuals included in the child's book, primarily cover are an important part of the relation of children with the book. Therefore, children's developmental characteristics should be considered whether they are designed by an illustrator for the book or they are the works of famous artists got involved in art books.

According to Sever (2006), who indicated that pictures in books should be appropriate for appreciation and perception level of children, the pictures responding to needs of children to recognize and learn new things, caressing the child's appreciation with an artistic language also provide significant contribution to the emotion and thought training of children. "So, it should be considered that the pictures in children's books should be drawn very well to reveal child's creativity, especially its interest and ability" (Demirel, 2010: 69).

The artworks in the book named "Keşfedin Sanat" have an attractive quality that can take child's curiosity with attractive forms or vivid colors in visual meaning by being in harmony with the subject explained or with the compositions, which are appropriate for target age group and not complicated. The illustrations and lines (Figure 5) done by illustrator also make the book entertaining and provide to draw attentions to the details in order to make the artworks and described topic informative and to increase the attention.



Figure 5. A detail from 5th page of the book 'Keşfedin Sanat' Figure 6. An example for openable windows in book

The most different side of the book "Keşfedin Sanat" from other children's art books is that it includes windows (Figure 6), which can be opened and viewed from the bottom in its visual design. While these windows, which were designed to take the attention to details in art works, give additional information and strengthen the attention of children to art, they also provide efficient use of the page area. Since the texts are located at the additional areas that are below the windows above visuals, both the page is not filled out with text so much and the attention is focused firstly on visuals, then texts. Except these windows, movable designs related to art works (Figure 7) are also included in this book. Moving item in art works can be expressed better via these designs.



Figure 7. Movable designs at the 6th and 7th pages of the book 'Keşfedin Sanat'

In this sense, the visual design of book is very successful in terms of supporting the text. Additionally, the book, which does not include insufficiency in terms of clarity and print quality of visuals, has very successful studies in the context of aesthetic quality and attractiveness. For the design of front cover, brightness inside the

book is also reflected to the cover by including both bright colorful and entertaining pictures and visuals of four art works in the book. Similarly, the crowded layouts on the inner pages are also on the front cover. This can also lead to design problems, which cause texts to overlap with visuals (like the overlap of dog illustration with the name of publishing house).

One of the criteria to be considered in visual design is that the appropriateness of font size and character used for text for target age group and design principles. The most important criteria for the determination of font size is children's hand-eye coordination and legibility. In this sense, 2.6 mm height approximately (14 points) and 4.5 mm line spacing for first grades, 2 mm, height and 4 mm. line spacing for second and third grades and 1.8 mm height and 3.6 mm line spacing for fourth grades are conveniently accepted (transferred from Akyol by Seven, 2010: 106). Times New Roman, which is simple, easy for eyes, in this sense, balances the vitality of visual design was selected as the font character of the book "Keşfedin Sanat". The main title on page was written with larger than 40 points, explanation paragraph under the title was written 14-16 points, main text paragraphs were written with 12-13 points, book name was written with 12-13 points, artist name and explanatory small notes were written with 10 points. Since the smallest font size is 10, font character and size is suitable in the context of compliance with target age group.

## 2.2. The review of book named "Keşfedin Sanat" in contextual aspects

Many issues, like topics addressed in a child's book, expression form of these topics, word and sentence structures from these expressions, content of selected artworks, appropriateness of these artworks and text, artistic achievements obtained, determine the quality of the content of the book. So, the review of children's art books in contextual aspects requires the evaluation from different perspectives. In this study, the book "Keşfedin Sanat" was reviewed in contextual aspect under 3 main topics (Figure 8) as part of the pre-determined criteria.

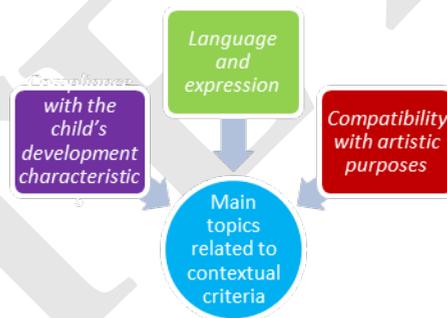


Figure 8. Main topics related to contextual criteria (Bolat Aydoğan, 2013)

### 2.2.1. Compatibility with artistic purposes:

Some criteria questions (Bolat Aydođan, 2013) were developed before the study in order to review the content of children's art books in terms of objectives. There has been a general review of many children's art books obtained while these criteria questions were created. The criteria questions related to compatibility with artistic purposes of children's art book were developed on the basis of the purposes of art education expressed in Grtuna (2007), Kırıřođlu (2009), Peřkersoy & Yıldırım (2009) and general information about children's art books obtained as a result of these assessments. At this part of review, the book named "Keřfedin Sanat" was assessed in terms of compatibility with artistic purposes on the basis of the questions on the following Figure 9.

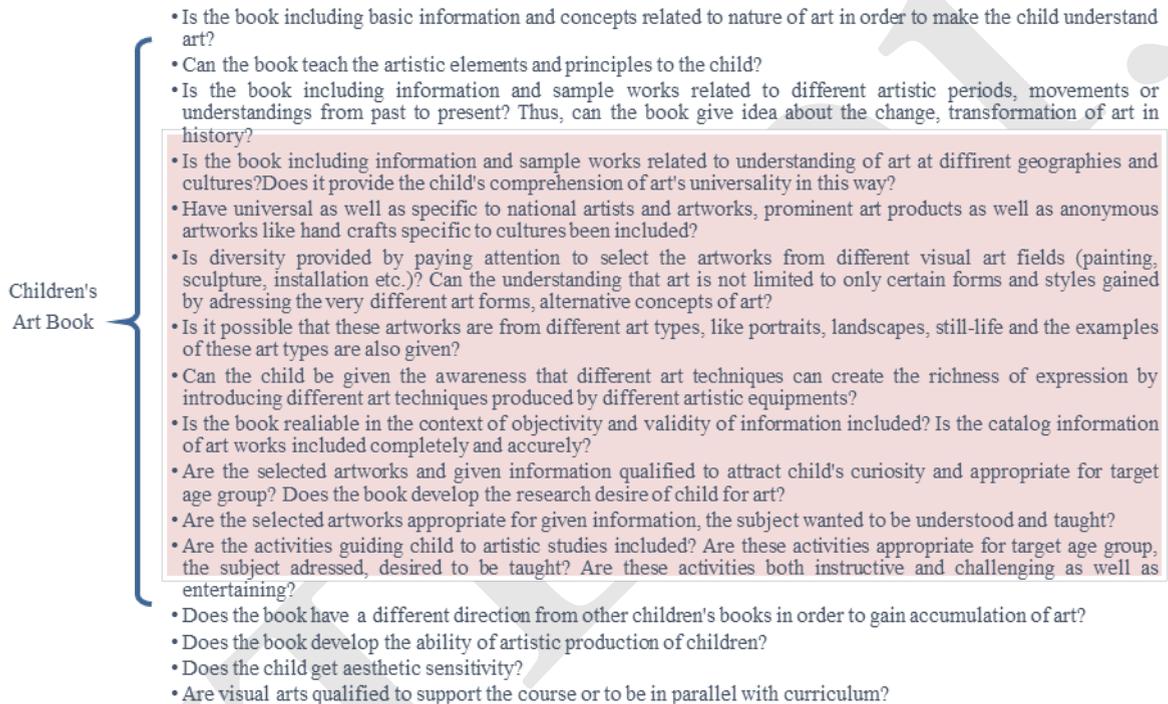


Figure 9. The criteria questions related to compatibility of artistic purposes of content of children's art book (Bolat Aydođan, 2013)

The content of "Keřfedin Sanat" constitutes of 7 main titles. It is emphasized that art is not only related to produce something, art is related to ideas; thus it is tried to be made a general perspective about the nature of art by giving examples related that art works can be in very different styles and sizes under the title "Discovering art". In the part with the title "Artwork", different art techniques and works produced with these techniques were introduced by indicating that art is not simple, it requires ability and work. In the part named "Colorful ideas", basic terms and concepts related to color were tried to be explained by focusing on "color" as one of the artistic element and giving examples about different usage of color in art. In "Moving compositions", the examples related to which methods artists tried to catch the movement in artworks were given, thus the information about basic art elements, "motion" and "line" was given. In the similar way, one of the artistic elements, "light" element, addressed in the part named "Bright lights" over different examples. In the part named "Secret meanings", it is emphasized that there may be some hidden meanings, which cannot be seen in art works, through

giving examples from the meanings of signs and symbols in some art works. In the following part “Art detectives”, examples were given about how the cues in art works were discovered with science and technology. In conclusion, there is a small art dictionary under the title “Art words”.

Except the terms in this dictionary, while this book also includes some art concepts and terms in the explanation, like art, artist, artwork, painting, painter, sculpture, sculptor, 3-D relief, oil painting, table, brush strokes, pattern, drawing, design, printing, wood printing, color pigments, paint additives, color wheel, hot/cold colors, symbols in art, the terms, installation, collage, contrast (complementary) colors, puantilism (pointillism), triple, naturemorte, vanitas are defined separately. Basic art elements, like color, light, movement are also explained.

Making an oil painting table, making a wooden printing and making bronze sculpture are explained by the help of illustrations as artistic techniques in the book. In the light of these data, we can say that this book includes basic information and concepts about the nature of art to make the child understand the art, gives information about some artistic elements and principles even if not all, provides the opportunity to recognize the expression richness created by different art techniques. When we list these to make an assessment related to artworks and artists in the book, we can have a table like the following:

Table 2. List of artworks and artists in the book

No	Name of artwork	Name of artist	Date	Technique/type
1	Bicycle Wheel	Marcel Duchamp	1913	Ready made
2	Snail	Henri Matisse	1953	Collage
3	Mona Lisa	Leonardo da Vinci	1504-14	Painting
4	Little Dancer of 14 Years	Edgar Degas	1880-81	Sculpture
5	Winter Garden	Jean Dubuffet	1968-70	Installation
6	Irises	Vincent van Gogh	1889	Painting
7	Red Fuji	Katsushika Hokusai	1830	Printing picture
8	The Thinker	Auguste Rodin	1881	Sculpture
9	Boats in the Harbour, Collioure	Andre Derain	1905	Painting
10	Sea	Howard Hodgkin	2002-03	Painting
11	Summer	Howard Hodgkin	1997	Painting
12	Marilyn	Andy Warhol	1967	Printing picture
13	Beautiful White Froth Orange Peel Pink Frill Red Blood Painting	Damien Hirst	2008	Painting
14	Dynamism of a Cyclist	Umberto Boccioni	1913	Painting
15	Stringed Figure (Curlew)	Barbara Hepworth	1956	Modern Sculpture
16	Cataract 3	Bridget Riley	1967	Painting
17	Haystacks, Morning Effect	Claude Monet	1891	Painting
18	Haystacks, Sunset	Claude Monet	1891	Painting
19	Haystacks, Snow Effect	Claude Monet	1891	Painting
20	The Orrery	Joseph Wright	1766	Painting
21	Electric Prisms	Sonia Delaunay	1913	Painting
22	Sunday Afternoon on the Island of La Grande Jatte	Georges Seurat	1884-86	Painting
23	Le Cellier Altarpiece	Jean Bellegambe	1508	Altarpiece
24	Procession of Ram Singh II of Kota	An Indian Artist (anonymous)	1850	Painting
25	Statue of Liberty	Frederic Bartholdi	1886	Sculpture
26	Vanitas	Simon Renard de Saint-Andre	1600 c.	Painting
27	Madonna of the Pinks	Raffaello Santi	1506-07	Painting
28	Patch of Grass	Vincent van Gogh	1887	Painting

As seen on Table 2, in the book, there are 28 artworks belong to 24 different artists. Short information about the art works of Pablo Picasso, Yves Klein, Anish Kapoor is included although the visuals of their works are not included. In this sense, 24 men artists and 3 women artists (Barbara Hepworth, Bridget Riley and Sonia Delaunay) are mentioned in the book. Additionally, when we look at the geography and culture where artists and their works come from, only 2 of the books (Red Fuji and Procession of Ram Singh II of Kota) are not from Western art, all of the other 26 works are from the Western Art. Therefore, a Western centered concept of art comes to prominence, literally universality cannot be provided.

The artworks included in the book have the dates between 16th century and 21st century. Book includes artistic studies from a wide historical period from 16th century to present-day which would be understood more clearly on Figure 10 showing the distribution of artworks by dates. But it is seemed that the artworks belong to 19th and 20th century are the most common.

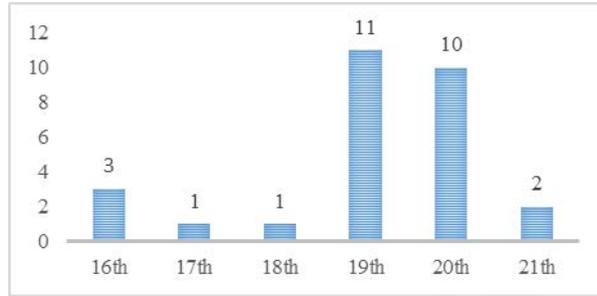


Figure 10. Distribution of works in the book by date

In this book, which includes art works from Renaissance a period that Western-based art was born in real terms; art separated from craft and gained fully an autonomous identity to present-day, plan is not based on a chronologic order, there is no linear advancing narration on the historical change of art since it is constructed under specific titles thematically. But, a richness that could suggest to child about the transformations in art as part of including examples of concepts of art from different periods was provided. An example of installation art like "Winter Garden" by Jean Dubuffet and "Bicycle Wheel" by Marcel Duchamp (Figure 11), which are considered as alternative approaches in art except traditional concepts of art, like painting and sculpture, are also quite good choices to show that art is not limited to certain forms and styles. Furthermore, the existence of a very wide range of topics of artworks from portrait to landscape, from abstract works to religious paintings provides good opportunities on the behalf of making child recognise different types of art.

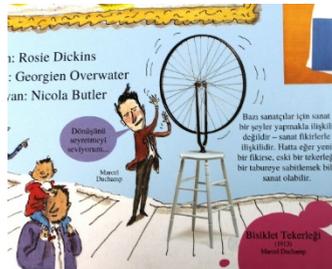


Figure 11. 'Bicycle Wheel' of Marcel Duchamp included in the book

Meanwhile, absence of catalogue information about the size of works, lack of crafts specific to variety of cultures, absence of information about the lives of artists and of works of art from pre-16th century, lack of national arts and absence of activities, which give guidance children for artistic studies constitute the limitations of the book.

Besides knowledge in children's book, including activities provides important contributions on the behalf of developing artistic production by encouraging children to make artistic production. In this sense, absence of activities is the most remarkable one among the limitations of this book. Nevertheless, it can be said that the book named "Keşfedin Sanat" is qualified to support the visual art courses in schools as part of being reliable, the validity, objectivity of the information included; being appropriate for target age group and to take attention of child's curiosity with the support of selected work and given information, illustrations as well. In particular, this kind of books providing interactive learning, having an entertaining visual design, keeping the interest alive reinforce the interest of children in art with a non-boring narrative and fiction.

### 2.2.2. Language and expression:

Language and expression of author determines the quality of book as well as the subjects, works included in a children's art book. In this sense, there are some language and expression characteristics that a qualified children's art book needs to have. Most of this characteristics are general features that all types of children's literature should have. In this review study, four main title was determined in order to introduce the criteria related to language and expression in children's art books. These titles and criteria questions related to these title are on the following Table 3. These criteria questions were developed by taking the recommendations and criteria on Demircan (2006), Güleç & Geçgel (2006), Güzel & Adıbelli (2011), Kıbrıs (2010), Lukens (2007), Nas (2004), Oğuzkan (2001), Özgider (2010), Russell (2009), Seven (2010), Sever (2012), Tosunoğlu & Kayadibi (2007), Yalçın & Aytaş (2011), Zengin & Zengin (2009).

Table 3. The criteria questions related to the review of children's art book in terms of language and expression (Bolat Aydoğan, 2013)

Main titles related to the review of language and expression and the criteria questions	
Main Title	Criteria questions
<i>Style and Language</i>	- Were the topics addressed in a simple uncomplicated plan? Was a path from simple to complex, from concrete to abstract, from whole to piece followed in expression?
	- Are the messages and information that the book wants to give clear and understandable in such a way that to avoid from confusion and paradox?
	- Is the expression qualified for keeping the interest alive, entertaining and fascinating?
	- Is a familiar language close to the spoken language used in the book?
<i>Paragraph, sentence structure and suitability of word</i>	- Are the main thought/theme wanted the child to comprehend given by making them feel instead of giving advise/lesson?
	- Is the title of book appropriate for the content and attractive?
	- Are the words used appropriate for vocabulary of target age group? Or Does it enrich their vocabulary?
	- Is the use of adjective, preposition and conjunction, metaphor sayings which would make the children's understanding difficult avoided?
	- Are the old and difficult to pronounce words avoided?
	- Are the paragraph length and number appropriate for target age group?
	- Is the sentence structure appropriate for target age group?

<i>Technical and foreign words, translation</i>	<ul style="list-style-type: none"> <li>- Have unnecessary use of technical words and terms been paid attention unless it is required?</li> <li>Has the explanation been done in the necessary cases?</li> <li>- Have Turkish equivalents been used with them or Turkish explanations been given instead of foreign words?</li> <li>- Have suitable writing of foreign words been watched out?</li> <li>- Have Turkish pronunciation of foreign words/names been also written?</li> </ul>
<i>Compliance with grammar rules</i>	<ul style="list-style-type: none"> <li>- Have the spelling rules been obeyed?</li> <li>- Has the necessary importance to punctuation rules been given?</li> </ul>

### 2.2.2.1. Style and Language

When we looked at the plan of "Keşfedin Sanat", first of all, art was addressed in a general manner, then different artworks, art techniques were introduced, later than artistic elements constituting the artworks were introduced in more detail and finally abstract meanings in art were discussed.

As can be seen, a path was followed from whole to piece, from concrete to abstract in the book. Hence, seven main titles also previously mentioned were determined and "what is art?", "how are artworks produced?", "how and why is the color used?", "By which methods is effect of moving obtained?", "how do artists use light in their works?", "what is the meaning of symbols and signs in art?", "how does science help to discover art?" questions tried to be answered in a plain language via different artworks and conceptions of art. While it was underlined that art had different narration opportunities throughout the book, given information were presented with simple and short expressions and via limiting to specific examples without giving details. Especially, with the speech bubbles added to illustrations (Figure 12), plain and boring expression was prevented and an entertaining and humorous style was achieved.



Figure 12. A detail from 5th page of the book

Moreover, the book, in which visuals are more than text, has an expression referring to an understanding mostly by the review of the visuals instead of presenting the information directly. These explanations have already been usually directed towards visuals surrounded with arrowed lines on the page, thus the information is provided not only just reading but also from the visuals in the book. Thus, both visual and verbal intelligence of child are operated together. This provides the given information to be more understandable and permanent. In addition to these, questions were also directed in the expression (not too many) for the development of child's thinking skills and to make the child more active. Shortly, when we evaluate the book in terms of style and language, we can say that it is a child book, which informs about art with short descriptions via a simple, clear, understandable language, with attractive expressions, without detailed expressions and by focusing the main subject, it also entertains and creates a sense of curiosity.

#### *2.2.2.2. Paragraph, sentence structure and suitability of word*

When the pages of "Keşfedin Sanat" were reviewed, it is seen that more visuals were included as 3-4 paragraphs text structure has been usually found. These paragraphs that don't exceed 4 sentences have a density and a sentence structure, which doesn't make target age group bother with a crowded expression and confuse them. When sentence structures are reviewed, simple and short sentences free from unnecessary words in which one judgment, one verb and one subject for each sentence were mostly adopted were used, like recommendation of Kibris (2011), Yalçın & Aytaş (2011) and Demirel (2010). In addition to these, combined sentences were also included in accordance with 9-15 age group on the condition that not to exaggerate. In a sentence, adjectives, prepositions and conjunctions, which children have difficulty to use are not also included. Absence of old Turkish words difficult to pronounce still increases the clarity of the book. It is also seen that metaphorical or slang sayings that are difficult to understand were not included. When the words in this book were reviewed, it should be taken into consideration that most of these words are used in daily life by children in target age group or included among the words learnt via the education at school, besides some words, phrases, like dramatic, transience of life can be strange for the child. In addition to these, since words are used far out of their real meanings in the descriptions, like "smooth transitions" on the 5th page, although this creates difficulty in understanding at first, it is considered that these description can be understood and they can enrich children's artistic expression language by being jointed in time as the expression is supported by visuals.

#### *2.2.2.3. Technical and foreign words, translation*

Since informative books have the purpose of informing on a specific subject, they must use the specific terms particular to that field if needed. From this point of view, the criteria "the necessity of avoidance from the use of term" valid for other types of children's literature is not possible for this kind of books. Child's art books must include art terms suitable for the level of target age group and when it is needed. In fact, this situation carries a positive meaning for the development of child's vocabulary and expression language related to art as well. But, the important point that should be noted here is the existence of explanations of terms or comprehension of the meaning of term by simple explanations. In this sense, the terms, installation, collage, contrast colors, pointillism, triple, naturemorte (still-life), vanitas were used and they were also defined. Terms were tried to be explained without using identical terms, by relating to visuals and depending on the narration in the text. In narration, terms were often tried to be explained without using identical terms, by relating to visuals and depending on the narration in the text. For instance, on page 5, the effects of warm and cool colors were mentioned without using warm color, cool color terms: "This picture is full of blue and bluish gray. Closed colors were used in a

consistent manner. These smooth transitions create a quiet, peaceful effect... Blues and grays are usually used to describe coolness, water and shadow... Orange and yellow remind of sunlight and hotness” (Dickins, 2010:5).

As descriptions are not made in this manner within the book, terms that can be difficult to understand for the child, like 3-dimensional relief, shape and mass composition, pigment, neon lamps, infrared cameras, x-rays are also available. Additionally, Turkish equivalents of defined foreign words, like installation, pointillism, still-life, were given next to them. However, it is seen that full Turkish meanings are not preferred instead of foreign originated words, like contrast, style and effect. Moreover, it is seen that absence of foreign words belong to a different languages, which are not translated into Turkish, except artist names, in the book is a positive feature. But, it is seen that although writing Turkish way of reading of artist names can be beneficial to children to provide easiness on pronunciation, it is not done.

#### 2.2.2.4. Compliance with grammar rules:

It is seen that in the book grammar and spelling rules were obeyed.

#### 2.2.3. Compliance with the child's development characteristics:

The most important feature of each child's book is to be "according to the child" whatever the purpose, subject, kind it has. "Growth and development period, psychology, word and concept knowledge, perception level of the child should be understood when "according to the child" is said” (Şirin, 2007: 44, 45). In this sense, to be able to be appropriate for the cognitive, personal, social and moral development of children, the themes, information text and visuals included in the book, shortly content of the book must have some criteria. In this study, the content of the children's art book named "Keşfedin Sanat" was done under 3 main topics in the context of the compliance with the child's development characteristics. These are; compliance with the child's personal development, compliance with the child's social development, compliance with the child's cognitive development.

Ahead of the review, criteria questions related to 3 main titles were developed in accordance with the art field and children's art books considering the criteria and recommendations in Demircan (2006), Demirel (2010), Güleç & Geçgel (2006), Kıbrıs (2010), Nas (2004), Oğuzkan (2001), Özer (2007), Seven (2010), Sever (2012), Tosunoğlu & Kayadibi (2007), Yalçın & Aytas (2011), Zengin & Zengin (2009). These criteria questions are included in Figure 13, Figure 15 and Figure 16.

##### 2.2.3.1. Compliance with the child's personal development

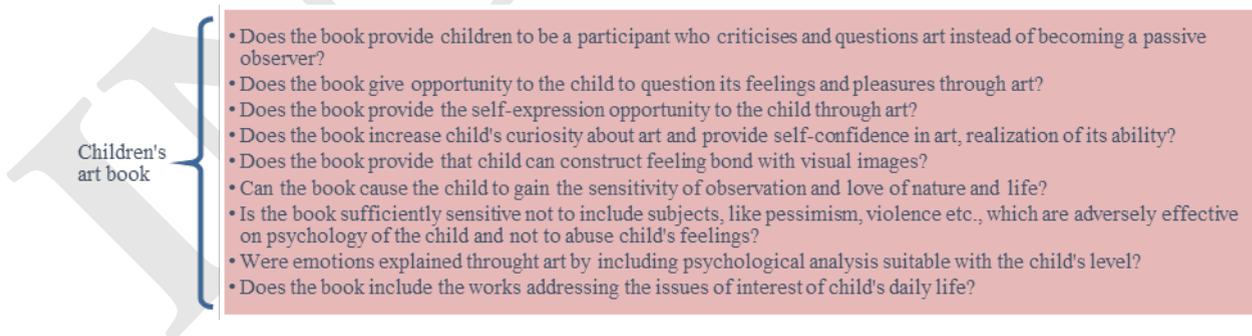


Figure 13. Criteria questions of children's art book related to Compliance with the child's personal development (Bolat Aydoğan, 2013)

On the first page of the book, with the words “Artwork can be in many different styles and size- on eye-pleasing paintings, on sculptures made of garbage. Things that everyone likes and dislikes are different.” (Dickins, 2011:1), in fact, the idea that children are free on their interpretations related to art is given. Additionally, with openable windows, movable pieces included in book design, it is provided to make the children seize by feeling of an exploration of art instead of directly reading the information; their participation is carried out not only by reading or watching, but also in an interactive manner. They are also encouraged to look at carefully with the questions asked about details on the pictures and make interpretations (Figure 14). In this way, it is provided that the curiosity of child about art increases and child would be more active. But, one of the most important points felt inadequate in this book is the absence of the activity, which provides the child to externalize its emotions through art, to realize its abilities of art and to have self-confidence. As it is based on the compliance with topics about art, the concern about the relation with the child's life is appeared to be a subordinate in the selection of work.

Anyway, while narrations related to only art included in the explanations of works, the subjects and feelings in the works were not referred, so an opportunity, which provides to establish feeling bond, question feelings and pleasures of child about these has not been created.

Special opportunities were not also provided about the love and observation of nature, life of child through art. Additionally, it is seen that works, which can cause the child to feel negative and can abuse its feelings were not selected, insomuch as they provide bright colorful artworks and a humorous, entertaining content with illustration including metaphor. In the same way, any narrations including negativity, like pessimism or feeling abuse were also not found in the content of text.



Figure 14. A detail from the 9th page of the book 'Keşfedin Sanat'

### 2.2.3.2. Compliance with the child's social development

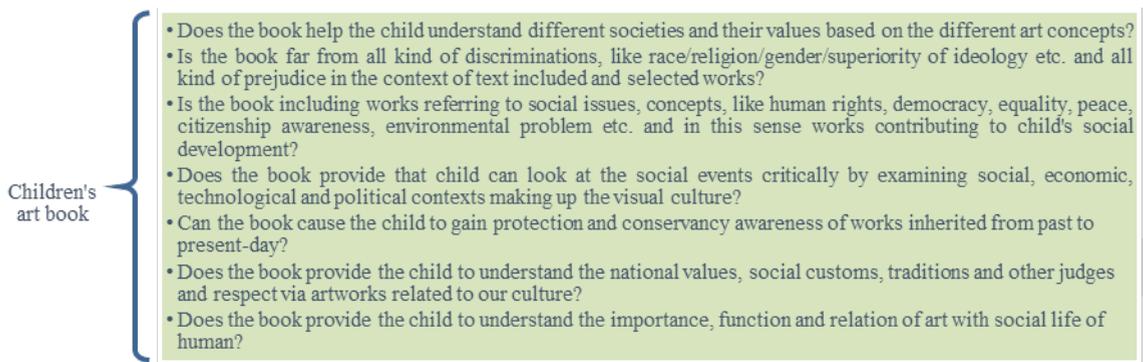


Figure 15. Criteria questions of children's art book related to Compliance with the child's social development (Bolat Aydoğan, 2013)

In the book “Keşfedini Sanat”, as stated previously, the vast majority of these artworks are among the Western Art and including 28 artworks of 24 different artists. In this sense, a full actualization of a gain to recognize the different societies and their values with only these examples of Western culture and a narration focused on artistic knowledge transfer seems impossible. Besides, despite being indirect, small hints related to religious belief in the Flemish culture in 16th century, life style of French society in 17th century, Indian culture and Social values in America are presented via symbols included in artworks under the title of “Secret Meanings”. In this way, again, despite being indirect, relation between social life and art, function of art in social life are taken attention. But, artworks addressed or referred social issues, like environmental problems, peace, equality, democracy, human rights etc., except “Statue of Liberty” on page 11, were not met in the book. Additionally, artworks and narration constituting the visual culture; examining the social, economic, technological, political contexts which will provide the child to evaluate the social issues critically are not faced clearly. But, explanations about how prepared paint tubes affect the artists' work (page 2) and easiness of printing technique (page 3) emphasize slightly that art is affected from economic and technological structure.

One of the contributions of children's art books to social development should be to provide the child to respect cultural and artistic values. There is no direct expression about this in the book “Keşfedini Sanat”, with the expression on page 2, the importance of artworks are implicated.

*“Art is not an easy thing. It requires both ability and a lot of work. Many paintings and sculptures are done with difficult techniques requiring proficiency. It can sometimes take months or years to finish an artwork.”* (Dickins, 2011: 2).

Although existence of all the criteria in an informative child's book is not expected, some criteria must be met. Being away from discriminations such as “each kind of prejudice, superiority of race/religion/gender/ideology” is also one of the criteria about the social development of the child. In the book "Keşfedini Sanat", taking part of mostly male artists, selecting Western Art centered narration is connected that the author is more expert of Western Art subject and mostly artworks of men are dense in the history of art. In this sense, it is believed that there is no discrimination in the book content in particular. Moreover, not to be met any explanation about this kind of discrimination in verbal narration confirms this.

### 2.2.3.3. Compliance with the child's cognitive development

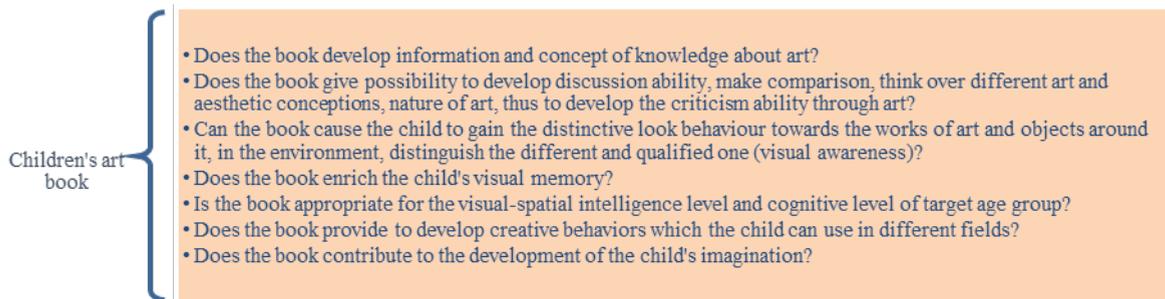


Figure 16. Criteria questions of children's art book related to Compliance with the child's cognitive development (Bolat Aydođan, 2013)

The book named "Keşfedin Sanat" is qualified for contributing to the development of concept knowledge positively by providing the child to meet with a lot of information and concept about art since it is included among the classification of the informative child's books specific to a certain field. Moreover, since many examples from very different artworks were given under a specific title, an opportunity is provided the child to compare different art concepts, and so to make criticism through art. Drawing attention about the details in artworks via narration and supportive visuals benefits on behalf of developing the visual awareness of the child. The book having a dense visualization supports enrichment of the visual memory of the child and also containing of visual about a large number of artworks despite few page numbers.

Target group of the book is in a wide range, like 9-15 age, and it covers reality period (9-12 age) and logic period (12-14 age) in terms of artistic development. According to Grtuna (2007), in the reality period, the child has not fully learnt the perspective, light-shadow rules yet and has not had three dimensional creation ability. So, more deep information about these subjects may break children's courage. From the inside part of the book, it is seen that these subjects are not mentioned, only plain examples about the use of art in artworks are given. In addition, there are also compositions, which are not too complex, in the selected artworks. In this sense, it is seen that the content of the book is appropriate for cognitive, visual-spatial intelligence of the child on the basis of the bottom level of age. It is also thought that the book provides positive contributions for the development of imagination of child and increase in creativity considering richness of the visual design of the book, having many different creative artworks.

### 3. Conclusion

When a general evaluation about the review of the book named "Keşfedin Sanat" is done, it can be mentioned that it is a child's book, which informs about the art with attractive, short narrations, a plain language, at the same time entertains and creates sense of curiosity without confusing details. "Art" is presented as a field, which includes interesting details needed to be discovered in accordance with the word "keşfedin (discovery)" of the book's name "Keşfedin Sanat". In this sense, as well as the name of the book, the book itself also makes sensation.

One of the other features which makes the book "Keşfedin Sanat" interesting is its visual design. Movable designs about windows and artworks containing information at its back provide an interactive learning environment while they make the book appealing for children. Illustrations of the book both make the book

attractive and entertaining and strengthen the narration by supporting the texts with visuals and humor included. In short, the visual design of the book increases the gains to be obtained from the book in terms of reinforcing the child's interest in art.

One of the highlights of this book can cause to gain the understanding that art is not only limited to specific forms and styles by presenting examples from different periods about different art techniques and types, traditional and alternative concepts of art regarding to artistic achievements. These gains are limited at an extent since the most of the artworks in the book are from Western Art and it doesn't provide the opportunity to recognize the art of more different cultures. One of the issues that should be addressed in the limitations of the book is exclusion of artistic activities. Although there is no an absolute rule in the form that there should be activity in each children's art book, the existence of directive to artistic studies, creative and entertaining activities in the book is beneficial in terms of both artistic achievement and development of child. It should not also be forgotten that the purpose of the children's art books is not only limited to artistic achievements, it should also support the development of the child.

In this sense, it is quite important to support the child's development not to limit the text with artistic expressions, to prefer the examples, which refers to social issues in the selection of artworks, gives opportunity to express their feelings, provides the child to recognize the life itself. It is thought that a children's art book, which meets most of the criteria is sufficient in its quality as it is not expected to include all the criteria based on this review. In this sense, it is concluded that "Keşfedin Sanat" is a qualified children's art book and can be recommended for families and art educators.

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4<sup>th</sup> International Conference on New Horizons in Education

# Applied research - the best bridge between school and industry through post graduate research centre

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## Abstract

Paper talks about the history of the oldest technical university in Slovakia, its development and current state of the education provided. The paper describes forms of cooperation of the Faculty of Mechanical Engineering (FME) with industries. In addition to the history and current state of provision in the field of engineering education, the core of the contribution is dedicated to new forms of the cooperation technical training and common applied research.

Keywords: applied Research, new education methods, Post Graduate Research Centre

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## 1. INTRODUCTION

Global changes during the past two decades have changed views on the role of education, skills development and training in economic and social development. Education, training and preparing of young researchers can be considered as a public good and an investment, having being as important as any physical investment. Training system reforms are being implemented in many countries. I can present the best achievements in the field preparing our students, graduates and postgraduates for practice. In order to improve the employability of its graduates, the Faculty of Mechanical Engineering of the Slovak University of Technology in Bratislava (FME STU) is trying to develop a new teaching paradigm for its project/internship course units in various fields.

This paper is devoted to the description of the development and implementation of methods of advanced interdisciplinary vocational education and applied research of students, graduates and postgraduates of different areas of industry and requalification's courses for employers. This project aims to support FME STU graduates in this field through establishing the creation the Post Graduate Research Centre.

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## **2. FACULTY OF THE MECHANICAL ENGINEERING THE SLOVAK UNIVERSITY OF TECHNOLOGY IN BRATISLAVA (FME STU)**

### **2.1. History of FME STU**

The history of the higher technical education in Slovakia has started in the year 1762 by the foundation of the Academy of Mining and Forestry in Banská Štiavnica. The establishment of the Academy was important moment in the history of higher technical education, as it was the first educational institution in Slovakia providing technical education at the university level. The Academy of Mining and Forestry has maintained its high level of standard for more than 150 years of its existence and has founded the tradition of excellence of higher technical education in Slovakia.

More than two decades of struggles preceded the establishment and enactment of the first University in Slovakia. The Technical University of M. R. Štefánik was founded in Košice and authorised by the Act No. 170/1937 Coll. of the Czechoslovak National Council, on June 25, 1937.

Autonomous mechanical engineering studies at the Slovak Technical University date back to 1940. On the basis of a decree promulgated by the Government, in that year a new division of Mechanical Engineering was opened within the Department of Mechanical and Electrical Engineering.

By the Higher Education Act was in 1950 the Department of Mechanical and Electrical Engineering renamed the Faculty of Mechanical and Electrical Engineering. In 1951 this Faculty was split into two independent faculties: Faculty of Mechanical Engineering and Faculty of Electrical Engineering.

In 1940 the division of Mechanical and Electrical Engineering had a section of Mechanical Engineering, a section of Electrical Engineering and a section of Aviation Engineering. In 1948 the foundation stone of a new building was laid in today's Námestie slobody 17, Fig.1. The building was completed in 1963. The majority of today's Faculty of Mechanical Engineering moved there. Later the Faculty acquired other premises in Pionierska Street and Vazovova Street.

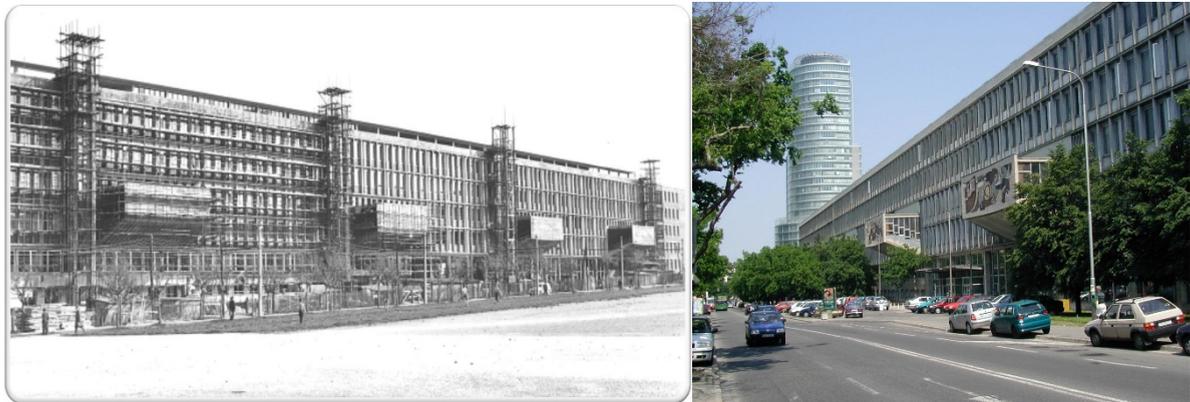
The first lectures in mechanical engineering for about 100 students begun in the academic year 1940/41 in provisional premises in Mýtna Street. The thousandth graduate obtained his diploma in 1957, the five thousandth graduated in 1973 and in 1983 the ten thousandth mechanical engineer completed his studies.

The Faculty of Mechanical Engineering had in 1951 eight departments and three study branches (mechanization and transport, power engineering and technology). In 1985 the number of departments increased to seventeen and within three streams (production engineering, economics and engineering design) to eleven study branches.

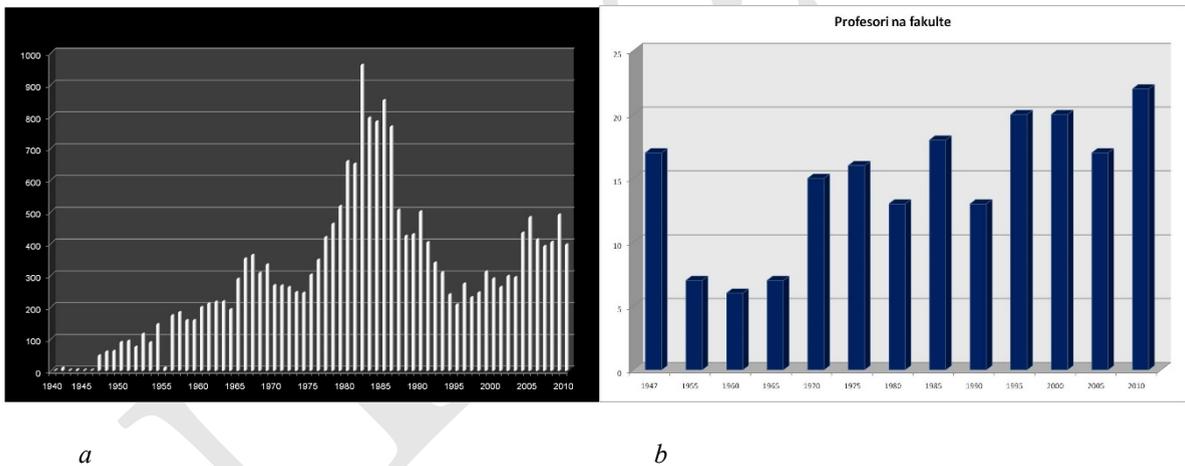
### **2.2 Contemporary FME STU**

#### **Study programs**

FME STU just has approximately 2500 students which study for three study degrees. Today the Faculty of Mechanical Engineering is accredited to provide study in six 3-year bachelor programs, thirteen 2-year full time and 3-year part time master graduate programs, and eleven 3-year full time or 5-year part time doctoral studies covered with the pedagogical staff of more than 148 lecturers from eight different institutes, inclusive 23 professors and 46 associate professors, Fig.2.



*Fig. 1 Main Building of the FME the Slovak University of Technology in Bratislava*  
*a) under the construction* *b) currently*



*Fig. 2 Development of the number of students (a) and professors (b) at the FME STU*

The studies are provided by eight Institutes and by two Faculties Centres.

- Institute of Automation, Measurement and Applied Informatics
- Institute of Applied Mechanics and Mechatronics
- Institute of Technologies and Materials
- Institute of Transport Technology and Engineering Design
- Institute of Process and Fluid Engineering
- Institute of Manufacturing Systems, Environmental Technology and Quality Management
- Institute of Thermal Power Engineering

- Institute of Mathematic and Physics
- and
- Centre of Innovations
  - Centre of Languages and Sports

The total number of graduates of all degrees has reached by the end of 2012 the number of nearly 23 000. Out of the number, there are approximately 10 % of international students. The medium of instruction is generally the Slovak language, the selected Bachelor programs are offered also in English language.

The Bachelor studies finish with a final state examination consisting of defending of the final project and oral examination in two selected subjects.

Holders of FME STU bachelor degree or persons having finished equivalent study programs recognized by the Faculty authority within another institution of higher education may apply for one of MSc study programs.

The MSc studies finish with final state examination consisting of defending the diploma project and oral examination in three selected subjects corresponding to the study program and the diploma project.

Students possessing the second degree can have access to the doctoral study (PhD), obtainable upon completion of a dissertation based on original research work.

### ***2.3 Research activity of FME STU***

The research carried out at the Faculty of Mechanical Engineering is oriented on nowadays energy and environmental challenges.

- biomass engineering treatment by briquetting and pelleting process,
- quality management and metrology,
- safety, reliability and residual durability of pressure equipments like nuclear reactors, chemical reactors transit gas line, storage reservoirs of hydrocarbon gas and oil,
- Finite Element Analysis, elasticity and strength of material, thermal stress
- multicriterial dynamic analysis and optimization of mechanical and mechatronical systems using computer simulations in the area of automotive, aircraft, rail, and production industry
- optimization of the robots and manipulators
- prediction of durability of mechanical systems

### ***2.4 International project***

Science is involved in a series of national, European and global projects. For all point out the transatlantic project Atlantis. Advanced Studies in Mechanics of Micro- and Nano-systems

Within this four-year project (2009 through 2013) was developed a mutually complementary international educational program in the area of engineering analysis of micro- and nano-mechanical systems. The primary objective of the project was to develop an exciting interdisciplinary training program in an area rich in opportunities for innovation that will inspire students to work collaboratively on technological innovation using the resources available in the EU and the USA. The proposed program will engage undergraduate students and first-level graduate students (Bc.) in a cohort-based international training and research experience where each student will spend at least one semester in a host institution taking courses and participating in sponsored research activities at the host institution. The specific objectives of the project are to provide:

- (1) Joint theoretical and experimental training in the area of non-linear mechanics of micro- and nano-systems
- (2) Development of a model for international collaboration based on joint research projects leveraging off the respective strengths of the participating organizations.
- (3) Increased awareness of the global aspects of the engineering profession through enrichment of the social capital of the participants.

- (4) Engagement of students from ethnically diverse regions of the United States (Arizona and New Mexico) and the European Union (Slovakia and Hungary) in a unique international collaborative program leading to their improved social and economic integration and opportunities for technological innovation.

### 3 COLLABORATION WITH INDUSTRY

The complex and rapidly changing business environment requires a new approach to this new reality, and demands methods of complex and interdisciplinary education and training. This education and training should include knowledge of both engineering and information technology (hard skills) enterprise planning, management, psychology and communication and control (soft skills) together with the ability to select appropriate technologies and technical's solutions. Knowledge and skills are becoming outdated much quicker and must be replaced continuously. The existence of internet and intranet infrastructures within organisations provides an unprecedented opportunity to enhance on-going training activities by incorporating multiple forms of media in their delivery.

Our Faculty has very good collaboration with industries. It is especially automotive industries, energy and the environment. In Slovakia act 3 big cars manufacturers (Volkswagen, PSA Peugeot Citroen, KIA). We have two major nuclear power plants. In 2012, we have produced 929,500 vehicles and with number of 177 cars produced per capita we reached the leading position in the world. Slovakia is also an agrarian country with an area of forest and fields of more than 90% of the total area. At the same time the country keeps hold of largest reservoir of drinking water in Europe.

Our graduates are very successful in average starting salary amount and percentage of unemployment rate after graduation. The average starting salary of € 1,169 ranks FME STU at the 4<sup>th</sup> place among 146 of Slovak faculties and the unemployment rate of 1,88% at the 3<sup>rd</sup> place at the same time. Best that our faculty were only 3 faculties of Informatics and the highest starting salary for graduates is in Slovakia € 1,420. At the first five places in the ranking are three faculties of STU. With the unemployment rate is 1,88 our faculty even 3 place.

The cooperation with practice can be broadly divided into two basic areas of:

- 1 - Applied technical education - specified according to customer's requirements,
- 2 - applied research - conducted according to the requirements of practice.

#### ***3.1 Present education project collaboration with industry***

##### *Centre of Quality*

Faculty of Mechanical Engineering and AUDI Ingolstadt has collaborated on a project of establishment of the Measurement Centre for Automotive Parts and Centre of Quality. Production of off-road AUDI vehicles was starting in VW plant, Bratislava in Sept. 2005.



*Fig. 3 View of the Centre of Quality*

#### Centre of Education for PSA Citroën

Faculty of Mechanical Engineering and company PSA Peugeot-Citroën have in 2004 created a project of professional education centre, within which the FME STU became the sole university body responsible for technical education in PSA Trnava (investment of PSA into Faculty app. 2.5 million €). The equipment belongs to our Faculty and is at disposal for education of our students.



*Fig. 4 Centre of Education for PSA Citroën*

#### Consultation Centre for Engineering Industry - SKC

SKC is Joint Workplace of Faculty of Mechanical Engineering STU Bratislava and SOVA Digital, Inc. Bratislava. SKC has mission to meet the broadest range of customer needs in the area of CAE including modelling, analysis and optimization of mechanical and mechatronics systems, industrial production processes and product lifecycle management.



Fig. 5. Consultation Centre for Engineering Industry - SKC

#### Authorized Training Centre for MSC.ADAMS - ATC

ATC is chartered to provide students and customers with training, consultations and collaboration in research and development of products using the MSC.ADAMS tools. ATC has mission to meet the broadest range of customer needs in the area of Mechanical System Simulation technology (MSS) including modelling, analysis, optimization and robustness of mechanical and mechatronic systems.

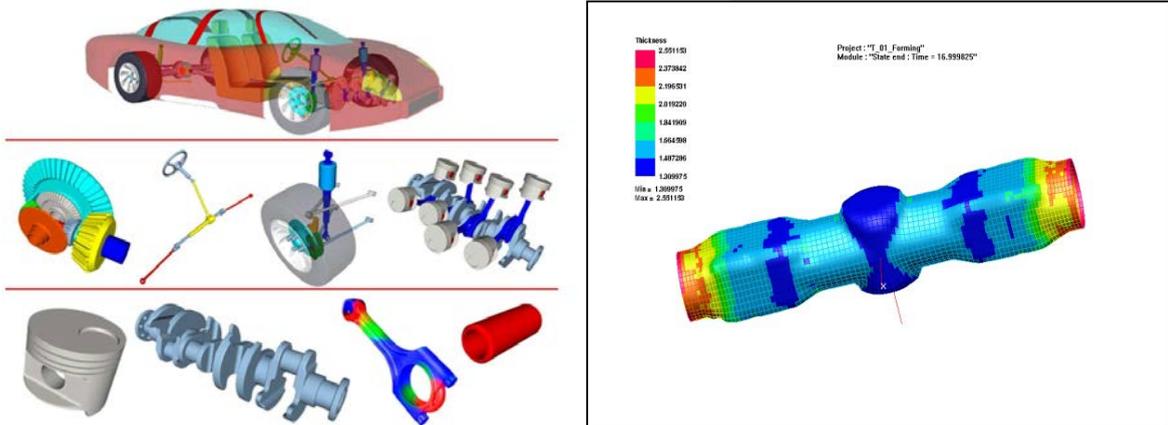


Fig. 6. Authorized Training Centre for MSC ADAMS

### 3.2 Postgradual research centre- PRC

Engineering education has been changing during decades for several reasons. Science and technology is developing and changing so fast that it becomes important to learn and learn again. It has become more difficult to motivate students. Today, engineers usually work in interdisciplinary teams, so they need good communication skills. All big companies are operating internationally, so engineers also need to get international competences.

In order to improve the employability of our graduates, postgraduates and employers, FME STU has introduced a new collaboration paradigm for its project/internship course units in various fields.

Slovakia still feels a lack of technically educated people. Enterprises necessarily need lots of well technology skilled professionals. The optimal solution for businesses is to get young graduates of technical schools who are ready to periods of theoretical but also with 2-3 years experience to be immediately applicable members of the investigator teams in enterprises. The young professionals of this profile are short on job market.

Therefore, we prepared a project of Postgraduate Research center (PRC), see Fig 7. The basic objective of the project is to focus the attention of clever young students and to motivate them for scientific work. Students and graduates will be headed by experienced supervisors and addressed to specific projects commissioned by particular companies. Supervision is a very important part of PRC. Supervisors should not only be technical supervisors, they should also help to develop the skills for team work and problem solution.

Benefits provided by the project are:

- Graduate can obtain a job in a company, which he had already cooperated with,
- Graduate obtains capability to solve the problem of a project,
- Graduate gets an expertise required by a specific company.

In a survey within this project, 150 companies were addressed to answer a questionnaire composed by FME STU. We have received 54 responses. Companies in these questionnaires have shown interest in 385 young technicians, technologists, and engineers. It has justified our effort to start the project at the beginning of September this year.

## CONCLUSION

It is not only my personal conviction that the students should be instructed through a project teamwork. Students, researchers and graduates are different personalities and they need an individual approach and different skills. Professors, supervisors are different too, with different methods of teaching and different research styles. Companies need people with different skills got by different project problem solution. Teaching and learning is food for the brain and is like other food. You cannot say that e.g. vegetables is the best thing for your health and only eat vegetables. Nutrition should be a good mixture of good ingredients. In the same way, learning and applied research should be a good mixture of good ingredients. We can not instruct our students on a totally traditional and voluntary base, we have to mix the best educational ingredients in favour of the needs of corresponding industries.

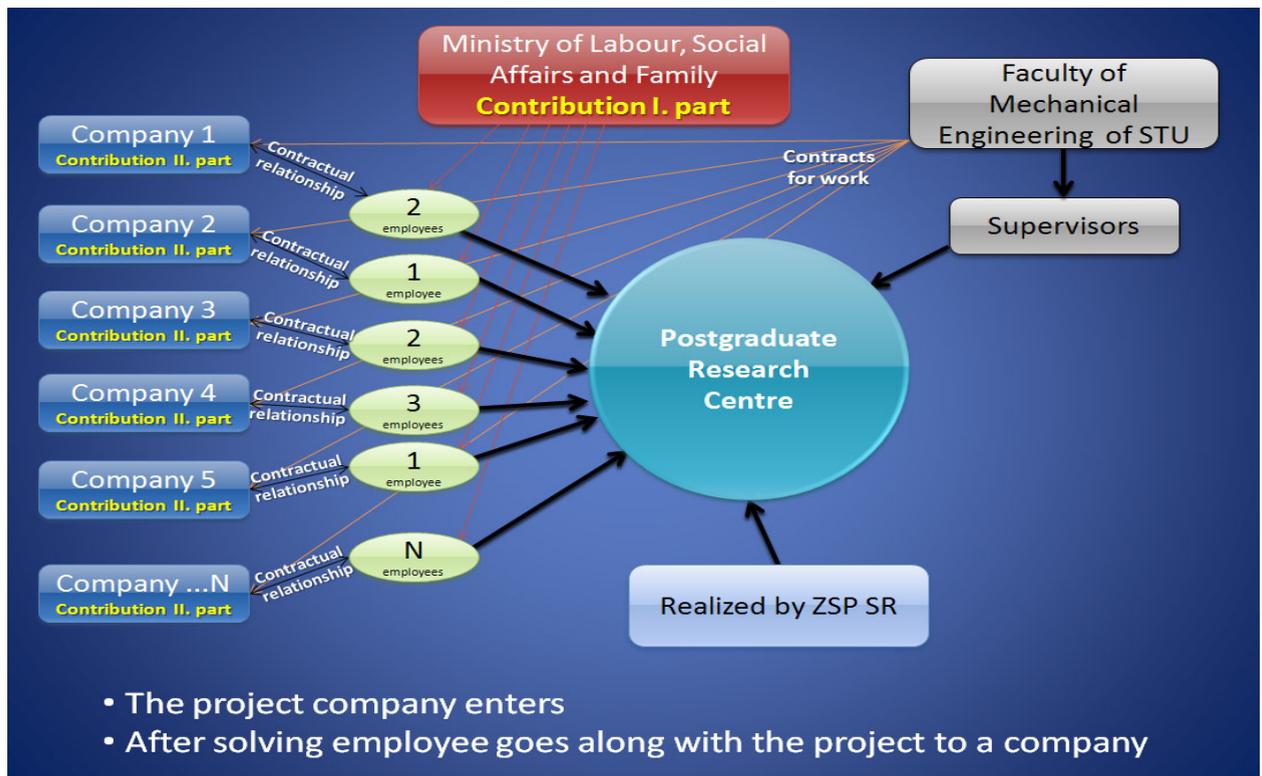


Fig. 7 Postgradual research centre- PRC

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INTE 2013

4<sup>th</sup> International Conference on New Horizons in Education

# Approaches to teachers' performance assessment for enhancing quality of education at universities

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## Abstract

Each university tries to assess the work of the university teachers equitably. Through obtaining information about the teachers, the employer can desirably direct professional growth of the teachers and properly use their working and creative potential. The assessment of the working performance of the University of Zilina teachers is realized through scored assessment of their performance in the pedagogical and scientific-research activities. The assessment of the working performance is done by the head of department for the period of one year. Survey of the activities and outputs of each teacher given in the form, adjusted almost each year and approved by the rector, serves as a base for the performance assessment. In the last time this approach to performance assessment meets with teachers' dissatisfaction. The aim of this paper is to describe the current situation in assessment of the working performance of the University of Zilina teachers, based on a research to analyse limitations of the actual approach and defined criterions of the performance assessment and to propose new approach to the teachers' assessment. We propose the new approach to the performance assessment on the basis of the 360 Degree Feedback System application that can also serve as an impulse for innovation of the actual teachers' performance assessment. Applying the 360 Degree Feedback System can provide more objective assessment and strengthen the feeling of more equitable assessment that have great impact on teachers' motivation and quality of education at all universities.

*Keywords:* quality, education, assessment, working performance, university

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## 1. Introduction

In modern organizations as well as in universities, the job performance assessment is considered to be an important aspect of enhancing their activities. Based on the assessment of the real working potential the university has at disposal and required working potential in term of accepted aims, the knowledge, skills, attitudes, value orientation, creativity, motivation, cooperation and other characteristics of each teacher can be developed. Except teachers' development, their assessment can have positive impact on the whole personal management system what should be reflected in the increasing effectiveness of the university (Kachaňáková, Nachtmannová & Joniaková, 2011).

At present ensuring the quality of university education is repeatedly occurring topic of professional and laic community not only in Slovakia but in the whole world. In the USA the quality of universities is evaluated according to the achieved results, e.g. the Top American Research Universities (TARU) evaluation model use indicators that gauge areas such as the quality of research, faculties and undergraduates, esteem of a university as reflected by the amount of research funding and donations received (Hall, 2010).

The European countries accept the European Association for Quality Assurance in Higher Education (ENQA), that in cooperation with the European University Association (EUA), the National Union of Students in Europe (ESIB), the European Association of Institutions in Higher Education has elaborated the file of standards and regulations for ensuring the quality in the European High Education Area. These standards and regulations are elaborated in so way to be usable for all the European universities and agencies regardless of their structure, function, size and national system.

According to ENQA ensuring the quality of pedagogical employees belongs to the group of the seven important factors participating in internal quality ensuring of the universities. Part 1.4 of these Standards that is dealing with quality assurance of teaching staff defines that universities should introduce ways to satisfy themselves that teachers involved with the teaching of students are qualified and competent to do so. They should be available to external reviewers and commented upon in reports (ENQA, 2009).

The work of the university teacher has a great impact on development of knowledge and cognition in each society. It is very demanding work that requires professional competences and continual enhancing professional knowledge, social competencies and also ability to develop them, ability in scientific research what is connected also with ability to transfer the science results to students in such a way to understand them and were inspiring for their future development (Kravčáková, Lukáčová & Búgelová, 2011).

## 2. The current state of the teachers' job performance assessment at the University of Zilina in Zilina

The University of Zilina in Zilina (UNIZA) is the only university located in the northwest region of the Slovak Republic. In terms of professional profile, the UNIZA is unique in Slovakia as it has this year a sixty years tradition of providing education in the fields of transport and communications. Furthermore, during the last period of development the UNIZA became an educational institution with a broad profile in many areas of science, technology, economics, management, and recently, educational and natural sciences. The UNIZA provides education at all three levels of higher education both in full-time and part-time forms (Bachelor's degree, Engineer/Master's degree and Doctoral degree). Teachers and research workers of the UNIZA actively participate in international educational and research projects.

The permanent precondition of successful UNIZA activities is sustaining and enhancing quality in all its academic and supporting activities. For quality assurance the UNIZA uses the internal quality assessment systems and external quality assessment carried out especially by independent (certified/accredited) organizations. One of the most important tools of the internal quality assessment is the regular complex job performance assessment of the university teachers realized yearly (see Table 1). The assessment is elaborated by direct superior following observation of the employee during the assessment period and survey of activities and

outputs in education, scientific – research and publication activities (see Table 2). The evaluator has an evaluating talk with each evaluated employee that should be realized in a form of discussion in collegial atmosphere. The aim of this assessment is to acquire information about achieved job performance for the purpose of creating the conditions of higher motivation and more effective work of the university teachers in the future. On the basis of this assessment the employee obtains information about his performance from the view of his direct superior. This information should be a base for his further working orientation, improving his work, elimination of the arisen faults and avoiding future faults (Blašková, 2003).

Concerning the quality of any subject and teacher, the students have also opportunity to express their opinion through the inquiry that is a part of the academic information and educational system of the UNIZA. They can express their opinion also at the end of each finished course within respective semester. The results are evaluated by the teacher giving the lessons and head of departments and faculties. Then they are submitted to the Scientific Boards of the faculties within the annual assessment of the achieved faculty level in educational activities and within analysis of the study results of the students.

Table 1. Form of the university teacher job performance assessment (UNIZA, 2003)

Assessment criteria	Assessment
1. The extent of using knowledge and experience in practice	1 2 3 4
2. Concern for own professional growth and personable development	1 2 3 4
3. Performance of the tasks in education and in the field of science and research	1 2 3 4
4. Production of study materials and their professional level	1 2 3 4
5. Ability of quick adaptation to changed conditions	1 2 3 4
6. Independence and initiative in performance of the work tasks	1 2 3 4
7. The level of scientific – research and publication activity	1 2 3 4
8. Applying new forms and methods in education	1 2 3 4
9. Active participation in international events and participation in their preparing	1 2 3 4
10. Personable elements in relation to work and performance of the tasks (Reliability, consequentiality, work in team, efficiency, work discipline and, etc.)	1 2 3 4
<b>Sum</b>	

The complex university teachers' job performance assessment applies this scaled score of assessment (UNIZA, 2003):

- 1 - Deeply below standard level of evaluated activity.
- 2 - Employee is doing his work only in a routine way, he is not interested in change and only accept the directions passively, his activity is poor.
- 3 - Active employee, he is looking for new forms and methods of working innovatively. The evaluator is fully satisfied with his work.
- 4 - Excellent high above standard work. The excellent results are supposition for further functional growth of the employee.

The background for the complex assessment of the university teachers' job performance assessment is the survey of activities and outputs of the pedagogical employees of the UNIZA that is yearly updated and approved by the rector, see Table 2.

The result of the complex teacher job performance assessment, see table 1, is categorization of the teachers into assessment levels according to their achieved score. The teacher's evaluator should propose the tasks and aims for the future development of the teacher.

The University of Zilina has been proving its intention of continual education quality improvement by many activities. One of them is implementation of the project entitled „Development of Quality Culture at the University of Zilina on the Base of the European Standards for Higher Education“. The specific objectives of the project include development of the permanent quality improvement strategy at the UNIZA covering the system of work with information within and also outside the University and verification of the functionality and effectiveness of the internal education quality assurance system. This project implemented within the Operational Programme Education in years 2011-2013 is supported by financing from the European Social Fund and state budget

Table 2. Shorten survey of activities and outputs in education, scientific-research and publication activity.

Description of activity		Coefficient	Scaled Score
<b>Scientific-research and publication activity</b>	Home projects		<b>50-100</b>
	Foreign projects		<b>50-200</b>
	Publishing at home conferences (AED, AEF, AFB, AFD, BED...)		<b>10-25</b>
	Publishing at conferences in abroad (AEC, AEE, AFA, AFC, BEC...)		<b>30-200</b>
	Publishing in home magazines (ADC, ADD, ADE, ADF...)		<b>10-50</b>
	Publishing in foreign magazines (ADC, ADD, ADE, ADF...)		<b>200-300</b>
	Foreign book publications (AAA, ABA, ABC...)		<b>80/AP</b>
	Home book publications (AAB, ABB, ABD...)		<b>50/AP</b>
	Artistic work		<b>40-150</b>
	Citations		<b>1-10</b>
Inventions, patents, awarded prizes		<b>50-200</b>	
<b>Education</b>	Textbooks - number of author pages (AP)		<b>35-50/AP</b>
	Scripts - number of author pages (AP)		<b>20-30/AP</b>
	Final works		<b>30-50</b>
	Education		<b>26/1h</b>
<b>Other activities</b>	Organizational and professional activity at faculty and department, editorial board of magazines ....		<b>10-250</b>

### 3. Dissatisfaction of the teachers with job performance assessment at the University of Zilina

In the last time this approach to job performance assessment at the University of Zilina meets with dissatisfaction of the teachers. Following the discussions with the teachers of the University of Zilina the weaknesses of the current complex job performance assessment can be described as follows:

- current approach to assessment is very subjective according to the teachers,
- specified criterions are very general, immeasurable, unclear,
- exact specification of criterions and assigning the weights are missing,
- the effects of results on evaluated teachers are doubted,
- exact specification of the subject competent to evaluate the job performance is missing,
- the form cannot be used as a base for comparison of individual performances,
- the regular course of the assessment process is not ensured in some cases,
- the assessment form of the complex job performance assessment is not in exact connection with the survey of the teacher's activities and outputs that results in higher subjectivity,
- imprecise conclusions from interpretation of the achieved score,
- defining work standard that would not be changed in respective year but would reflect scope of employment resulting from the labour contract is missing.

Based on the discussions with the University of Zilina teachers, the weaknesses of the current survey of activities and outputs in education, scientific-research and publication activity were also indicated as follows:

- defined survey of activities and outputs is very complicated, blind and unfairly evaluated,
- criterions are in large extent adjusted in favour of head employees,
- assessment justness in useful and especially effective form is doubted,
- precise and clear criterions for filling the survey are missing,
- assessment according to functional levels or working positions is missing, i.e.. PhD., assoc. prof., prof.,
- the levels of teachers acceptable performance are not defined,
- some teachers understand the specified survey of activities and outputs as misleading that demotivates employees and gives rise to bad relations among employees,
- changes in assessment form in each year without informing the employees about these changes in advance,
- in some departments the filled in forms are not checked,
- dissatisfaction with some specific criterions, e.g. small score for book publications, for elaboration of home and foreign project proposals, for guidance of students in elaboration of their bachelor and diploma works, too highlighted person of responsible investigator.

### 4. Proposal of job performance assessment at the University of Zilina

As a new approach to job performance assessment at the University of Zilina we propose to apply the method of 360 Degree (360 Degree Feedback System), that will be an impulse for innovation of current job performance assessment of the teachers.

The assessment of teachers according to the 360 Degree Feedback System can provide teachers with more objective assessment and reinforce the awareness of more fair assessment that has great impact on their motivation and quality of education at the universities.

The 360 Degree Feedback System is a method of job performance assessment that is oriented on description of working behaviour (Šuler, 2009). It is relatively objective method that is able to recognize the level of abilities and skills of evaluated person and reinforce the awareness of more fair assessment. It enables more effective

personal development of employee in relation to organization needs. It provides opportunity to obtain job performance assessment from people around, i.e. chief, colleagues, subordinates or external customers. The 360 Degree Feedback System supports providing transparent feedback; individual development plans and encourages self-confidence as development base. (Vefas, 2011)

Principles of work with 360 Degree Feedback System are as follows (Vedralová, 2013):

- method is based on job performance assessment through defined the most important criterions of job performance,
- multi-degree scales enable to differentiate evaluator statement,
- elaboration is made by independent source,
- all information are confidential and also the evaluators are anonymous,
- interpretation of obtained results is possible also through external couch,
- evaluated person prepares plan of personal development.

360 Degree Feedback System is suitable also for application of university teacher's assessment for comparison of his own performance with opinions of other colleagues and chief. Their opinions enable to identify his strengths and improve his weaknesses.

#### **Application of 360 Degree Feedback System on teacher's job performance assessment:**

##### **a) Selection of evaluators**

In the first step it is important to select proper evaluators who have the best knowledge about job performance of evaluated teacher.

Management of the faculty should specify the number of evaluators. Direct superior should be responsible for the assessment process. Team of evaluators can involve, e.g.:

- evaluated university teacher,
- direct superior,
- e.g. four colleagues (fellow workers),
- students (indirectly).

The evaluated teacher can select colleagues as team of co-operators who are able to express their opinion to his job performance. Application of this method enables also to use teacher's assessment elaborated by students but only indirectly, i.e. in the form of questionnaire at the end of finished semester. Form of evaluating questionnaire, filled in by students, is based on criterions that exclusively concern the educational process between teacher and student. If the teacher's assessment process involves also students, we say about 360 Degree Feedback (see Figure 1). If the students are not involved in assessment it is application only 270 Degree Feedback.

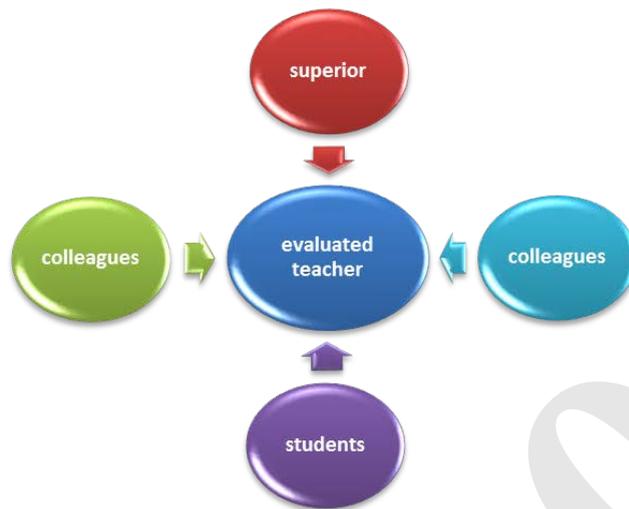


Fig. 1. Structure of teacher job performance assessment (elaborated by authors)

#### b) Assessment of teacher's job performance

All evaluators including teacher fill in the same job performance assessment form anonymously where the level of teacher's job performance from the view of key criterions of scientific-pedagogical activities is evaluated.

The job performance criterions in the assessment form are formulated in so way to define really measurable criterions of scientific-pedagogical activities, see Table 3. Each criterion has its measure. We propose five categories of scale, from unsatisfactory results to excellent assessment, see table 4. We propose to use double number of points for these assessment criterions:

- Quality of passing on knowledge to students.
- Development of students' skills and competences.
- Quality and contribution of scientific-research activity for development of department and faculty.
- Quality and contribution of publication activity for development of department and faculty.
- Involvement and initialization of new activities.

The advantage of the 360 Degree Feedback System is that the evaluators are willing to respond truly if they know that their responses are anonymous, will be used for further development and only very small number of people (usually evaluated teacher and his direct superior) will work with obtained information.

Table 3. Proposal of the university teacher assessment criterions (elaborated according to Blašková et al. 2013)

Assessment Card for 360 Degree Feedback System - Job Performance Assessment Form						
Department						
Name of employee						
Work position						
Category of employee						
Evaluated period						
No	Criterion	Assessment				
		1	2	3	4	5
1.	Quality of passing on knowledge to students	1	2	3	4	5
2.	Concern for own professional growth and personable development	1	2	3	4	5
3.	Development of students skills and competences	1	2	3	4	5
4.	Development of study materials and their professional level	1	2	3	4	5
5.	Applying new forms and methods in education	1	2	3	4	5
6.	Quality and contribution of scientific-research work for development of department and faculty	1	2	3	4	5
7.	Quality and contribution of publication activity for development of department and faculty	1	2	3	4	5
8.	Independence in performance of tasks and defined aims	1	2	3	4	5
9.	Involvement and initialization of new activities.	1	2	3	4	5
10.	Reliability and consequentiality in work	1	2	3	4	5
11.	Creativity, invention and flexibility in work	1	2	3	4	5

12.	Cooperation with colleagues from other departments	1	2	3	4	5
13.	Observance of work discipline	1	2	3	4	5
14.	Motivating effect on students and colleagues	1	2	3	4	5
15.	Responsibility and work effort	1	2	3	4	5
Sum						

Table 4. Assessment scale – form of qualitative job performance assessment of employees

Poi nts	Level characterization
1	<b>Unsatisfactory assessment.</b> Unsatisfactory level. It is possible to indicate essential disagreement with all items of key criterions given in job performance form. It is possible to formulate development from basis and immediately.
2	<b>Satisfactory assessment.</b> Substandard limiting level. It is possible to indicate essential disagreement with some of items of key criterions given in job performance form. Systematic development aimed to eliminate weaknesses should be formulated for given criterion.
3	<b>Good assessment.</b> Satisfactory minimal level. It corresponds with formulated criterion with certain stipulation. Key improvements can be formulated. Development can be oriented on enforcement of strengths and weaknesses weakening.
4	<b>Very good assessment.</b> Optimal level. It exactly corresponds with formulated assessment criterion. No stipulation only partial improvements can be formulated for given criterion. „Qualitative jump „cannot be formulated. Development can be oriented on enforcement of strengths.
5	<b>Excellent assessment.</b> Excellent level, ideal state. Defined criterions are at exemplary level and no improvements can be defined.

### c) Elaboration of the evaluator output report

After data collection their assessment including output report will be made. All results will be evaluated anonymously and always in connection with assessment conclusions of other evaluators, i.e. teacher's job performance assessment is compared with his assessment and assessment of his direct superior, his colleagues and also students' assessment. Based on this comparison, the level of evaluated teacher is assigned. Scale of the job performance assessment can remain the same as it is at present.

Table 5. Scale of job performance assessment (elaborated according to Šimák, 2012)

Achieved score %	Verbal assessment	Assessment
90% and more	Excellent level of job performance.	Excellent highly above-standard performance without a need of further improvement for respective conditions and circumstances. Excellent results are precondition of further progress in job position.
75% - 89%	Job performance is above standard level.	Active employee who well knows the work. He innovatively looks for new forms and methods of work. He has many good ideas. His activities and properties are above standard level. Evaluator is fully satisfied with his work.
50% - 74%	Job performance is on standard level.	Employee works standardly, he is not concerned to change and only accept the tasks passively, his activities are on low level.
49% and less	Job performance is under standard level.  (unsatisfactory)	Deeply under-standard level of evaluated activity, realized work, behaviour or required property. Employee has great limitations that have negative effect on results of his work.

#### d) Informing about outputs and plan of personal development

Elaborated results from application of the 360 Degree Feedback System should be presented individually between evaluated person and his direct superior and elaborated in output report. The output report should include teacher's performance, his strengths and development needs in the form of tasks for further period, i.e. the individual plan of teacher's development should be made. This plan of personal development should contribute to improvement of performance in that fields that were within assessment identified as problems.

Evaluated teacher has so at disposal his detailed and objective job performance assessment with specific weaknesses and strengths. It is important the teacher was able to accept these results and use them for his motivation and increasing the quality of education at the universities.

#### e) Regular assessment and monitoring

Application of the 360 Degree Feedback System should be realized once a year. Monitoring of evaluated teacher can be realized by his direct superior during a whole year and by students at the end of each semester. After repeated annual teacher's assessment by 360 Degree Feedback System it is needed to assess the effectiveness of the teacher's personal development plan and set new development aims for further period.

### 5. Conclusion

One of the basic requirements of the job performance assessment is achieving the highest correctness and objectivity as possible. Assessment conclusions should be always absolutely sustainable and reliable, i.e. un-

deformed by prejudice and other evaluating mistakes. It is important to say that many mistakes, occurring in assessment, are unintentional and the evaluators are not aware of them (similarly to barriers of effective communication). Some mistakes arise from slouch or lack of concentration of the evaluators, the others are carried out purposely with clear intention to disserve evaluated person. But it is necessary to fight against them and not to allow them to devastate the assessment system (Blašková, 2003).

Contributions of the 360 Degree Feedback System application for the teacher's job performance assessment are as follows:

- More objective and complete judgement of work performance and potential of teachers,
- Setting individual plan of personal development for each teacher, i.e. it enables more effective personal development of employee in relation to university needs.
- Improving credibility of performance assessment.
- Increasing motivation and effectiveness of teacher's job performance.
- Feedback from colleagues contributes to strengthening personal development.
- Strengthening relations between teachers and possibility of improving team work.
- Improving social culture at the university owing to teachers' participation in evaluating process of their colleagues,
- Enhancing education quality at the university.

We believe that if the management of the University of Zilina decides to apply the 360 Degree Feedback System for the teachers' assessment it will certainly bring more satisfaction among the teachers, from the view of more fair assessment that will reflect in increasing motivation and quality of the education at the university. Satisfied teachers with quality job performance are the most important aspect of the university progress.

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# Art in the eyes of six-year-old children. Children's semantic hypallages regarding paintings of great masters

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## Abstract

The present article will present six-year-olds' statements about paintings by Salvador Dali, Marc Chagall, Pablo Picasso and Zdzisław Beksiński. The statements will constitute a foundation for the analysis embedded in semiotic perspective. Communication through image is an original dialogue ground between a child and an adult researcher. Semantic hypallages of meanings given by six-year-olds in the reception process of a painting show worlds full of meanings. The statement about a painting becomes a child's self-communication about its perception of the world, colloquial theories about reality and ideas inspired by a particular painting.

Keywords: children's voice, semiotic methodology of the meaning of art, art as communication, polysemy of art, colloquial theories of children

## 1. Introduction to the subject

The study of meanings given to art of great masters by early learners rarely appears in Polish research studies. Authors usually ignore this issue, probably because art in early education is treated marginally. Various cultural messages addressed to children rarely belong to high art. If there are already some examples of paintings, they are usually realistic and refer to the nearest environment (e.g. landscapes by Wyspiański or Leon Wyczółkowski in the manual "Słońce na stole"). If a child has any contact with abstract or surreal art, it happens only at home. Although a young recipient's contact with this important cultural artifact is significant in educating and training young learners, it is too often forgotten. Education through art, so far described by many psychologists and educators (Herbert Read, Irena Wojnar, Wiesława Limont, Kamilla Nielek-Zawadzka, Hanna Krauze-Sikorska and others), is still among theoretical postulates in the modern world so much saturated with various visual

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messages. Certainly one of the reasons for unsatisfactory state of art education is the current notion that art is too difficult to be received by small children.

The present article is an attempt to call this view into question. It will present six-year-olds' statements about paintings by Salvador Dali, Marc Chagall, Pablo Picasso and Zdzisław Beksiński. The statements will constitute a foundation for the analysis embedded in semiotic perspective. Communication through image is an original dialogue ground between a child and an adult researcher. Semantic hypallages of meanings given by six-year-olds in the reception process of a painting show worlds full of meanings. The statement about a painting becomes a child's self-communication (Lotman, 2008) about its perception of the world, colloquial theories about reality and ideas inspired by a particular painting.

## 2. Research methodology

The use of children's language in the presented language study invites to adopting a semiotic perspective. It should be noted though that this prospect is not homogeneous since within it there are various conceptions concerning relations between different types of signs. The confrontation of word and image applied here shows a number of problems. Sign analysis leads to questions about systems to which the signs can be attributed. Ambiguous semiotic status of plastic arts that do not use spoken or written language, makes it difficult to treat speech as a direct reflection of reading a work of art. S. Wyśłouch, reflecting on kinship of arts, asks questions referring to the plastic arts code system: "Are those primary languages, which is commonly believed, or perhaps secondary languages, built on some "original language" or innate genetic code?" (Wyśłouch, 1994). The "original language" trail leads to baby (primary) impressions in the reception of paintings. The language of image, as the one referring more to intuition than intellect, is perhaps closer to a child's perception than an adult's perception. The problem of mutual relations of iconic and language signs opens up a whole series of problems in the field of research methodology. What emerges then is the question about common structural elements of such different messages. Various codes of those texts may have common connotations since sense, motives and meanings are read regardless of the used code. Therefore in this type of research it is important to extract semantic fields and make their classification with special regard to the references to a range of children's knowledge about reality, including cultural reality.

The proposed research methodology uses intersemiotic translation which in the case of child as a recipient seems to be particularly justified. This justification can be seen in children's particular perception of reality (including cultural transfers) which is syncretic and holistic. It is also seen in child-specific communication situation. Child as the recipient of cultural texts moves in polyphonic space of codes. One should

pay attention to the fact that this polysensory of reception results not only from the existence of an agent, but also from the intersemiotic nature of messages addressed at children.

At this moment it is right to recall Götz Wienold's text processing theory covering all processes from reception, through consolidation, giving further for the use of other texts, ending with converting into new texts in other media (Wienold, 1986). According to Wienold, text processing, in terms of includes a number of various activities, from reception of specific text in the act of presenting, commenting, to stimulations relatively independent of the original text (Wienold, 1986). This type of procedure takes place in a child's daily contact with various cultural messages when for example it has listened to a fairy tale read by an adult, then drew a picture story showing the plot and some words or sentences, after which in a few days the child used the situations from the fairy tale in the play. This intersemiotic translation is particularly close to a child, and, most of all, helps the individual "order" next cultural experience in to building his/her own cognitive structures. Moreover, translation into other codes allows a child to avoid the realization difficulties that result from low language or art skills. Wienold points out that the "transition" from one system (or code) to the second allows a more powerful reception for individual participants. The text in a way obtains a greater semantic load during reception. Narrative statements about paintings, even if they are not intersemiotic translations, certainly show a specific interpretation of meanings. A child is not yet a passive recipient of cultural heritage but an active creator, constructing its own original theories that enable it to organize experience.

So is the innate genetic code shown in children's statements about paintings, or is other cultural experience and knowledge about reality dominant? Barbara Boniecka's thesis is also justifiable. It says "that it is impossible to prove to what a child-sender, a person who still develops and is constantly influenced by adults, represents only itself or presents somebody else's thoughts and opinions" (Boniecka, 2010). Therefore, research on children's statements about paintings concern not only the problem of painting reception, but also make it possible to understand the children's world - their perception of reality, constructing knowledge about reality and using that knowledge for building their own theories of the world.

### **3. Semantic hypallages of meanings assigned by children to paintings of great masters**

Material for the study, collected in 2011 and 2012 includes interviews with 6-year-old children about selected paintings by Marc Chagall, Salvador Dali, Pablo Picasso and Zdzisław Beksiński. The purpose of choosing the paintings was not to create a single narrative story, hence the choice is random. What was important here was to make a child interested in the painting. Therefore the images chosen for analysis were colorful, expressive and encouraging a child to use its imagination. This type of message is more complex than verbal language and it encourages a child to look for various semantic references. Therefore, both the images and

children's statements form a kind of network of interwoven meanings that one can try to decipher in order to find out how children perceive and construct knowledge about the world.

Below are the paintings of great masters and early learners' verbal comments.

### **Salvador Dali, Three Sphinxes**

Oil painting on canvas shows three shapes resembling human skulls. In the foreground we can clearly distinguish the back of the head, however next portraits are the compositional references to a dominant theme. The next head is composed of two green shapes resembling two green trees growing on a yellow desert. In the distance there is a third head that emerges from white rocks.

Here's what six-year-old Piotrek says about the painting:

“er: .. I see two connected trees in the shape of a balloon with ...

a cord cut in half, and the second tree reminds me e ..

a tree trunk falling from the clouds

As if there was a storm here that broke the tree

and lifted it up to heaven, and so it fell down ... and so it fell down”

At first the boy draws attention to two interconnected trees. So he is trying to refer picture elements to real objects and phenomena that he already knows. He clearly describes the clouds, the tree trunk, and the phenomenon of the storm which could be the reason of the shape of the trees in the form presented in the painting. The child perceives that form as a balloon. The boy does not see the outline of the skull, but rather a ball which he associates with inflated balloon so the image is interpreted according to Piotrek's knowledge about the world. On the other hand one can see that the image evokes in him the desire to be creative and it stimulates him to try to explain the reasons for the present state of affairs. What he says about the tree that: “fell down ... and it fell down, it” may also result from watching catastrophic or science fiction movies. Remembering a different image on the basis of a given visual communication is a kind of intersemiotic message which is close to the child and helps it to "order" its visual experience.

In the child's statements there were also diminutives such as “string and balloon”, which may indicate an attempt to "tame" a difficult message, for example a painting by Salvador Dali. Translating visual language into verbalization brings the child closer to the image and encourages it to search for hidden meanings in it. In this way the child explores difficult and confusing elements by using diminutives and well-known linguistic

simplifications. In this way the child also explains a difficult, not yet acquired message to itself. The reason for that is that it has occasional contact with high art, both at home and school. Therefore the painting by Salvador Dali on one hand stimulates imagination, but on the other hand it forces to make intellectual effort in order to be able to replace one visual example with another, recalled by the child's own memory and experience.

### **Marc Chagall, Self-portrait with seven fingers**

The oil painting is in rich colors and refers to cubist solutions from the beginning of the twentieth century. It shows an artist painting a genre scene, probably in his studio. In one hand he holds a colorful palette, and in the other a brush that he puts to the painting which is placed on the easel. In the background of the studio there is a window with a view on the Eiffel Tower under which stand miniature size human figures. Here's what six-year-old Paweł says about the image:

“That one man ... is painting, and this man is all dyed ... probably in Paris, because I can see the Eiffel Tower here. And he is painting a picture of a horse and a man ... Brunhild ....

that he has a little wrung hand, it's a bit of a different position here. And that he has (one.. two .. three ...) he has seven fingers. Seven! No one has so many! Maybe it's a monster .... and here, look at his face, he looks as if he wanted to attack us right from the image .... and blow it up into pieces”

The boy is very excited about the interpretation of the image. At the beginning he notices a painter who got paint all over himself because “he' s all dyed”. Such an analysis once again suggests the problem of relating the child's visual message to a real situation[2]. In the past Paweł could have seen the man wearing a painted apron so he recalls that image from his memory.

Another interesting meaning is a small detail that he notices in the background of the image. This is the view from the window of the studio in the Eiffel Tower. The boy immediately recognized Paris in the painted scene, which means that he knows the city from his own experience (e.g. a trip abroad with parents), or from popular science books and movies. The six-year-old's knowledge about the characteristic monument of Paris can also be the result of global access to information which is transmitted not only by adults but also advertisements and the Internet.

Identification of the painted figure with a monster is also interesting:

“And that he has (one.. two .. three ...) it has seven fingers. Seven! No one has so many! Maybe it's a monster .... and here, look at his face, he looks as if he wanted to attack us right from the image .... and blow it up into pieces”

This statement can be attributed to the hypallage of cartoon or computer games fiction, in which evil is always depicted as an ugly, strange character, a monster (Łaciak, 2005). Someone who has seven fingers is different from "normal", thus identified with socially excluded, worse, deprived of rights that the "normal" have. As a result, the "different" is shown differently by multiple media through a visual code that belongs to popular culture. It is not too aesthetic and created by adults (Ejsmont and Kosmalska, 2005) who, when creating a valid model of the world, air prejudice and stereotypes, not necessarily consciously.

It is noticeable that the boy sees some features in the "other" such as negative facial expressions, anger and aggression:

“as if he wanted to attack us right from the image .... and blow it up into pieces”

The boy tries to describe the "different" in order to understand it better, and recall his experience. However, what is worrying is that it is not a positive image. The child builds a narrative story based on the world of computer games and television films. Many researchers, both in Poland and in the West have spoken their mind about deviant influence of television, especially scenes of horror, cruelty and violence (Rulko, 2004) It is a problem that (according to what Jolanta and George Rulko have written) children treat “aggression code as "natural" in the interpretation of reality” (Rulko, 2004). As a result it causes anti-social behaviors, adaptation problems, impaired relationships and communication with others, and lack of the sense of security (Rulko, 2004). In the reception of the painting the child refers to the semantic field concerning aggression, thus it perceives unclear presentations as threats.

### **Pablo Picasso, Child with a Dove**

An oil painting shows the figure of a child holding a dove. In the foreground, on the left side of the image there is also a colorful ball. It is difficult to determine the figure's sex but the dress it is wearing suggests that it is a little girl. Further off a recipient can see an outline of a simple division of space with a green lawn and blue, a little dirty sky.

Six-year-old Alicja, who describes the picture, focuses mainly on the bird which is held by the figure. Here's what she says:

“The girl is holding a bird and farther there is a colourful ball ...

hmmm and maybe it' s a pet dog Galfi”

Interesting in what she says is that she sees the whole picture but eventually goes back to the theme that seems the most important to her. After some time she sees in the bird another animal, the dog Galfi. It is difficult to say whether Galfi is the real dog or a name borrowed from Alicja' s favourite fairytale or computer game. Nevertheless it is sure that the girl enters the world of fantasy in order to tame elements of the image that seem strange or unclear to her .It is an interesting kind of co-creating the image by a small viewer. It helps to understand a difficult visual message and awakens the child' s creativity.

### **Zdzislaw Beksiński, Untitled**

The painting depicts a woman sitting on a horse. However, this is not a woman alive, but rather a symbol of death. The foreground depicts a decaying horse that stands on the edge of the forest. The figure on the horse has her hair in the wind and it is impossible to see her face. Everything is kept in dark tone and rather murky mood.

Here's what six-year-old Patrycja says about the image:

“poor horse ... er.. it died, didn' t it? A lion probably ate it, lions eat zebras and horses ... but why is it in the field? It is so dark there ... or maybe it' s been dug out of the ground like mammoths and dinosaurs , and now it' s going to look for his family”

The girl turns out to be very mature for her age, for at the first moment she notices that the horse painted by the artist is not alive. However, she does not describe the horse, but rather tries to find out the reason why it' s dead. She answers her own questions as follows: “lion probably ate it, lions eat zebras and horses”. It seems that the child has the basic knowledge about nature. However, it is not a school established knowledge but the reality image constructed from the meanings transmitted by the network of messages such as media, conversations with parents or playing with peers. As Dorota Klus-Stańska writes: “A child continually attempts to understand reality (...) The originally given meanings influence understanding of the previously unknown objects and situations, constituting a kind of interpretive filter. At first they are hypothetical and open to modification but the more confirmed they become the more solidified they are, and start to constitute a specific, personal "theoretical" model of the world” (Klus-Stańska, 2004).

The next sentence which the girl says is another attempt to conduct a monologue with herself:

“or maybe it' s been dug out of the ground like mammoths and dinosaurs, and now it' s going to look for his family”

All the time Patrycja is trying to understand a difficult message. She does not know why the painted horse is dead, she cannot refer its presence in the image to reality, so she enters the world of imagination. By inventing the story she develops her creativity. It is a specific intersemiotic translation in which an image is explained by another one, for example the one derived from popular culture: the media, illustrations in children's books, cartoons, etc., is trying to enter the image's emotional load is another interesting image reception. The girl asks a rhetorical question " ... but why is it in the field? It is so dark there".

This time the child cannot find any answer. However, it is enough to reflect on the mood prevailing in the image to see that it becomes an intriguing beginning of constructing further narration. She begins to imagine a story in which the main character is the horse looking for its family. Entering the world of imagination allows the girl to transfer the meanings from reality to fiction. The change of moodiness is also interesting here. Through fiction the girl can change the stylistics from sadness and somber mood to the one full of hope. Finding its family, the horse is somehow "saved" and thus brought back to life.

Another worth remarking issue which becomes evident in the semantic fields of meanings given to the painting by Patrycja is that she draws her attention not to the human figure but to the animal. It becomes a focal point of the image to which she tries to adjust other meanings constructed by herself. This tendency may result from a simple reason - love for horses or other animals, which is very characteristic of children at this stage of development.

#### **4. Summary of analysis**

The above analysis which is a preliminary pilotage for a larger range research, shows that six-year-olds show remarkable creativity when reading meanings in the works of great masters of painting. Although messages are difficult, a child reads single painting signs, giving them specific meanings that refer to hypallages to certain knowledge about the real and fictional world. Children's meanings refer to real situations and to images that they know from media or literature. It is noticeable that children's contact with a work of art stimulates their creativity, develops vocabulary and helps a child to construct knowledge. Children smoothly pass from reality to the world of imagination which facilitates explanation of unclear phenomena and symbols. In this way they recognize and interpret the world of adults, its meanings, symbols and rules of the game which are often difficult to understand.

The six-year-olds who took part in the research surprise with cognitive maturity and perception which are much more diverse than the ones learned in the course of education, based on schemes and stereotypes. The youngest age (here from 5 to 9 years of age) has in fact still quite short roots in the culture of adults. Therefore the metaphor of a child can be used as a culturally unpredictable entity - it reads the world taming some meanings and symbols from the "world of adults."

Although there is no division into "adult world" and "children's world", childhood is the time that precedes social presence (Jacyno and Szulżycka, 1999). A child's position is in fact dependent on adults who construct common world to which not everyone has the same access. It is difficult for a child to get to visual messages of contemporary art which make it possible to understand difficult but important problems such as death, suffer and passing. This specific reluctance to introduce a small observer to the "truth" is certainly caused by "a child's good". However, limiting children's formal education we forget that a child learns not only from us - adults. All contents, both good and bad get to the child through various messages from outside world (e.g. media). Those are messages not always addressed to the child. Computer games, movies full of violence and vulgarisms reach small viewers often without our knowledge. On the other hand, a child's access to high culture (such as paintings of the great masters of painting) is limited. Nevertheless, the ascertainment concerning contemporary children's cultural world can only be a starting point for educators in order to understand how certain messages influence a child's building knowledge about reality. The reception and influence of a variety of cultural messages, not only those coming from electronic messages or mass media, but also those belonging to high culture is worth researching in order to uncover the field of meanings constructed by a child recipient. Such studies open the way to projecting educational strategies, the purpose of which may be introducing a child to the world of art and indirectly, also to difficult issues which are important for understanding a human and the world.

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# Aspects of Teaching Economics for Students of Informatics

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## Abstract

The rapid and steady changes in a field of information and communication technologies have increased demand for high qualified specialists not only in a field of cybernetics and applied informatics, but also in related fields such as economy and management. This burning request of this specific area of the labour market has increased a need for a graduate who possesses interdisciplinary knowledge. This phenomenon considers the universities, as the providers of high qualitative education, as the key factor in this relation. This paper raises the question of a role of education in this process and discusses the approaches to the methodology of teaching economics for IT students outgoing from theoretical and also practical knowledge and experience.

Keywords: education of economy, informatics, teaching methods, university education

## 1. Introduction

A usage of information and communication technologies (ICT) in the consumer and industrial sectors have been significantly increased from the 20<sup>th</sup> century and still continually offers to society the promise of further benefits. Computers and mobiles became an essential element of our everyday professional and personal life and made it simpler in many ways. Despite of global recessions, economic activities resulted by new inventions and innovations are sharing ahead and the trade with information services (IS) generating positive results. It's trend has a rising potential requiring qualified staff, which makes Informatics one of the most enticing and exciting fields of study today. Education on study programs related to Informatics allows acquisition and the subsequent opportunity of carrying out interesting and well paid profession, which is very desirable among young people.

The growing importance to increase the ability to match education alternatives with career options generates necessity to provide even students of Informatics with opportunities to use economics to solve meaningful problems. Why they should be economically literate? Not to mention to all there are four basic reasons why graduated students of study programmes Informatics or even similar technical study programmes should study economics:

- On job position IT developer as an author or IT tester of numerous economic software they have to clearly understand the requirements of customers and to use economic terminology correctly in communication with them.
- On job position Senior Project Manager or Senior IT Specialist as a team leader are strongly required not only knowledge of computer science, but also basic economic and managerial skills to identify sources and

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plan effectively, also to manage, evaluate and control the economic and managerial side of single projects or orders.

- In case of running their own business they have to have various economic and business skills from how to put together a business plan and initial marketing plan through how to manage company and own trade activities and certainly how to optimise processes, costs, how to make price strategy to maximize your profit. Knowledge of „relations among costs, prices, level of sales and profit are very helpful in managing” (Ďurišová, 2011) and further business activities.
- No matter of professional orientation, economic education helps to equip everybody with useful tools for making decisions and to be ready to face more complex choices in further professional and also personal life.

My objective in this article is to analyse different expectations and requirements of students of study program Informatics and their further employers and how universities through teaching economic subjects can be useful in this relation. In order to reach this objective is necessary to realize literature review about teaching methods in Economics, to make a survey with touchable actors and to design new ways of solution.

## 2. Related work

Economical way of thinking about national and international issues includes problem-solving skills that emphasize analytical reasoning using techniques and methods of economics. Successful managers understand that a reasonably activity in processing economical information not only accelerate their use, but primarily improves the quality of decision-making. (Chodasová, 2012). Teaching economics therefore have to focus to increase understanding of economic behaviour and improve a student's ability to predict the consequences of changes in economic forces.

Unfortunately, surveys show that most of the graduates having learned little economics, even if they have taken an economics course (Walstad and Allgood, 1999; Gardner, 1991; Allgood, 2001). Education economists, such as Becker and Watts (2001), argue that one problem with teaching of economics is that they are still dominated by the simple lecture format. This “chalk and talk” education method with “math issues and graphs” make teaching and learning process difficult. According to the survey (Taylor 2002, Sloman, 1998; Forsythe, 2002; Volpe, 2002) were found that lecturers and seminars usually follow a content-driven lecture-tutorial approach, complemented by the use of textbooks and tutorial question sheets or by use of artificial model problems discussed by working examples. Usually results and answers are in essay form, each of them three or four pages in length. (Miller, 2002)

Another problem why students tend not to be attracted to course of economics that economics is a social science discipline that heavily utilizes statistical and mathematical models to analyse real-life problems (Hansen, 2001; Cohn, Cohn, Hult, Balch & Bradley, 1998) so requires very good knowledge of mathematics also statistics and forecasting.

On the other hand many education specialists think that the key to understanding economics is to understand human action, but the current curriculums of economic subject are so rigid and uniform (Lawson, 1989; Walstad and Saunders, 1998; Siegfried, 1998; Frank, 1998; Boskin, 1998; McConnell, 1998; Davis and Erekson, 1998).

Standard curriculum usually doesn't include new economical approaches and paradigms diverting from neo-classical approach, even though many economics agree that understanding the main issues as defined by neo-classical economics is necessary for students for their further economics education.

The education economists suggest that teachers should consider new and innovative teaching strategies. We can find some non-traditional and more interactive methods of teaching economics (e.g. Sloman and Mitchell,

2002; Taylor, 2002; Welsh and Saunders, 1998). Several of these new teaching innovations reflect current developments in economics as a (Sutcliffe, 2002; Holt and McDaniel, 1998; Williams and Walker, 1993; DeYoung, 1993; Volpe, 2002; Buckles, 1998; Noussair and Walker, 1998; Oxoby, 2001). Also exploitation of information -communication technology (ICT) in process of teaching and learning economics is notable (e.g. Hobbs and Judge, 1995; Brooksbank et al., 1998; Sosin, 1998; Chalmers and McCausland, 2002; O'Leary and Ramsden, 2002; Elliott, 2003).

After all, surveys were also found that the predominant mode of instruction in economics, as opposed to more progressive teaching techniques in other disciplines that more actively involve students (Merriam & Caffarella, 1999; Becker & Watts, 2001; Quddus & Bussing - Burks, 1997).

### 3. Method, data and partial findings

The insights reported in this paper are exclusively based on semi-structured interviews that focused on capturing students' and employer's perceptions of the teaching-learning environments of economic subjects. The questionnaires and further interviews had been taken between first-year students of Faculty of Informatics and Management whose had been attending courses Principles of Economic Theories and Principles of Microeconomics.

The sample of 320 students was selected in period 2008-2012 (average 80 students yearly) with average 95 % response rate (90% male, 10% female). It was an anonym paper survey which was further supplemented with face to face talking in groups or individually. Tab.1 shows basic findings from questionnaires.

Table 1. Basic findings from students' questionnaires

Number of students	320	%
Response rates		99
Admitted some basic economic knowledge from secondary school		72
General understanding of the meaning :		
- GDP		32
- Unemployment		49
- Inflation		82
Expectation about further job's condition:		
- High salary		100
- Benefits		96
Assumption about further job's requirements related with knowledge of economics (KoE):		
- IT developer or own business without KoE		72
- IT developer or own business with basic KoE		13
- Senior project manager with good KoE		6
- Own business with excellent KoE		9

### 3.1. Findings from student's questionnaires and further interviews

From the realized questionnaires was identified the interest of the students for high-paid job position and also that they have little economics, even if they have taken an economics course. Further interviews underscored, that they think that for their further professional activity it is enough to have only good software knowledge (the „encoding“ is usually their main interest sometimes even main relish). Only a few of them realized the necessity of good economic skills for better organization of their working activities and for finding the best problem's solution and communication with their clients. Most of them find out, that economics is a complicated subject, because for describing the reality of theoretical premises:

- uses many definitions and students have to memorize them
- uses to many quantitative methods and mathematics
- is completely different than information science

Some of them therefore expect such modern way of teaching and learning economics also due to the fact that various students from Informatics also want to be later an Erasmus student in abroad. By this way they want to have a possibility to move more rapidly, to adapt in this environment (on-line study, discussion during the evenings with other participants of the courses, etc.).

### 3.2. Findings about IT employer's expectations related with economic knowledge

Findings about employer's perceptions of the teaching-learning environments of economic subjects reflect the demand side of the labour market, where students of study –program Informatics would like to employ. According to the managerial view, the qualified human capital is a business resource or asset which forms part of the market value of the company (Kucharčíková, 2011). IT employer's expectations and requirements related to their employee's skills and knowledge usually is very high and complex.

Data about this item were collected by further ways:

- Analyses of IT job requirements on the web site [www.profesia.sk](http://www.profesia.sk), which is the leader in the Slovak internet job market
- Workshops made by representatives of potential IT employers
- Feedback to graduate students Faculty of Management and Informatics.

Table 2. Basic findings about IT employer's expectations

Expectations
General economic knowledge and understanding about
- Macroeconomic indicators
- Costs and Benefits
- Production possibilities
- Accounting and controlling
Economic knowledge for decision-making at managing project
- Team cooperation in major projects across entire company
- Team cooperation of fellows on projects
Customer focused knowledge in the context of projects
- Flexibility and willingness learn new skills
Presentation skills
- Strong oral and written communication skills
- Multimedia usage skills

Analysis of the data indicated a significant difference between student's and employer's view about qualification requirements. Firms require a considerable amount of conceptual economic thinking and their practice as it shows the present table 2. Economic literacy with "human potential, intellect, competence skills and experiences can achieve the increase in quality of appearances and the elements of IT firms. (Blašková, 2009)

#### 4. Findings

Findings of a survey confirm the requirement for transformation as well as teaching and learning methods as the graduates needed in the future may not be the same as what they have at present. By then, graduate with reasonable economic and entrepreneurship skills is essential and would become the key factor to the firm's productivity in the future. From the mentioned detections we can make partial conclusions and deduce that economic education for study program Informatics must demonstrate that their students attain the following outcomes:

- an ability to apply knowledge of economic thinking and economic terms knowledge of contemporary issues,
- an ability to design and conduct experiments, as well as to analyse and interpret economic data,
- an ability to identify, formulate, and solve problems,
- an ability to design a system, component, or process to meet desired the client needs,
- an ability to manage projects and multidisciplinary teams,
- an ability to identify, formulate, and solve problems,
- an ability to communicate effectively as well in working teams as with the client ,

- and understanding the broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context,
- an ability to use the techniques, skills, and modern informatics and economic tools necessary for their practice.

## 5. Discussion

Economic literacy means, that students are able to apply basic concepts years later in situations relevant to their professional and personal life. Economical education at universities should improve students' performance even they aren't supporters of economic theories and practice. Focus that, it is important to know the principles of economics because it helps to understand that only those who can safely harness not only the potential of information knowledge but also economic knowledge will be at a substantial advantage for future employment. It is important to give them the opportunity, if they are so-inclined, to take courses that will help them to acquire and develop entrepreneurial skills that will allow them to be more professional and even make serious money. The discussion indicates that university economic course for students of Informatics have to:

- clearly states the objectives of the economic course for Informatics and its relation for their further career,
- teach the course by making use of various activities and make use of also computers when it's needed,
- do a quality lesson presentation by giving practical examples that appropriate with the subject,
- explain complex and hard-to-understand economic concepts in a different way, use algorithm which is a frequently used way for student of Informatics how to understand logical interfaces,
- answer students' questions in the instructional process and bidding them to find problem solution either alone or to use teamwork,
- use new teaching methods and innovations in line with the objectives of the course.

### 5.1 Suggested teaching methods and innovations for university economic courses for students of Informatics

"Teaching innovations are defined as small changes in pedagogy that enable students to more quickly convert time to knowledge,, (Allgood, 2001). Some new teaching methods might increase the speed with which students begin to understand difficult economic concepts and also might have to effect of increasing student interest and motivation. Between suggested methods and techniques how to teach economy for students of Informatics we can involve:

- *Interactive lecturing* – a lecture format accompanied by visual aids, using of slide shows, demonstrations and role-playing , using techniques with effective response to questions. Interactive lectures are classes in which the teacher breaks the lecture at least once per class to have students participate in an activity that lets them work directly with the course material. It is important to develop a student's expectation that speaking in class is required.
- *Usage of algorithm blocks and schemas* - because they are a frequently used element in teaching informatics which means, that their usage in teaching economics might easier improve student understanding of economics course material and develop critical thinking skills. An emerging viewpoint in higher education emphasizes that a thorough understanding of today's real life problems requires interdisciplinary reflection. Interdisciplinary instruction entails the use and integration of methods and analytical frameworks from more than one academic discipline to examine a theme, issue, question or topic.

- Problem solution *by simulation and games or real life scenario*– allow to have some experience which is dealing with economic shifts and trends before student get out the university and can prepare a student how economic and issues can create in the frame of their real professional life.
- Small group *discussion* – this method not only engages students with economics content but can help to improve their oral communication skills. During the discussion participants are responsible for the quality of responses to posed questions. The most suggested forms of course discussion is a structured discussion described in detail by Salemi and Hansen (2005). This teaching method also gives for a teacher a very prompt and supportive feedback from students.
- Daily life *case studies* with using real statistic economic data and even media to enhance teaching and learning – easily accessed statistical data demonstrates the connection between course theory and real data. Use of media to teach economics in an innovative way might engage students, aid student retention of knowledge and can be a powerful learning experience.
- Creating a *course website* or *using a social network* - provide opportunities for easy and accurate communication outside of the course participants. Using computers and mobile technology to help teach economics is nowadays a basic tool in the economics instructor's toolkit. With new technology we use new tools to satisfy ancient needs and learn to use them with our limited cognitive capabilities. (Tokarčíková, 2011). Putting the syllabus, daily announcements and assignments online might improve active learning. References and links to related online courses and quizzes in different universities or links to games and economic simulations can make more productive the teaching process.

Certainly the discussion of this items must be concluded by opinion of students of related study –program.

## 6. Conclusion

The primary reason many student's entire university is to get a job with a desired set of characteristics. Even though they are students of study program Informatics, the understanding economics prepare them to be sounder and more active participation in the labour market and even in economy. This article defines the aspects why and how to teach subjects of Economics for students of study program Informatics. The possession of interdisciplinary knowledge is perceived differently by students and their further employers.

This phenomenon considers the universities, as the providers of high qualitative education, as the key factor in this relation. By analysing of student's and IT employer's expectations in present the existing problems might be solved with reform of teaching methods and techniques used in frame of university economics courses. Teaching innovation can increase the rate at which student converts time spent on the course into knowledge. The teaching innovations can make students more efficient learners. Practice ensures the link between theoretical knowledge and practical activities that provide students the opportunity to grow through experience and became more professional and educated. However, businesses need not only educated, but also creative, innovative, proactive and flexible employees. If employees do not meet these criteria, are in an era of globalization and high competition for business rather risk factor. (Klučka, 2011) No matter of professional orientation, economic education helps to equip everybody with useful tools for making decisions and to be ready to face more complex choices in further professional and also personal life.

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4<sup>th</sup> International Conference on New Horizons in Education

# Assessment of Contextual Dimensions in Early Childhood Education

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## Abstract

This research project focuses on the curricula developed in a day care centre and in a kindergarten attended by children under institutional care. The aim of this study has been to analyse the existing contextual dimensions, namely at the level of the educational offer, group climate, room for initiative, organisation and the adult style (in three dimensions: stimulation, autonomy and sensitivity), keeping in mind the perspective of the children involved in the study. Based on the assessment of their competences, needs and interests, several initiatives and courses of action were planned and implemented in order to meet the identified needs and the established objectives. The data indicate the need for investment in the dimensions of the adult style, namely, at the level of sensitivity, stimulation and promotion of the children's autonomy, especially in what concerns the day care context.

*Keywords:* children's emotional needs; institutional care; experiential approach; early childhood education.

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## 1. Introduction

Nowadays, there is a growing concern around the assessment and development of curricula in early childhood education settings. This research aims to acknowledge the role played by contextual dimensions existing in a day care centre and a in kindergarten, at the level of promotion of the emotional well being (EWB) and involvement (I) of children who attend these settings and live under institutional care (they've been separated from their families, because of neglect or abuse). Through direct observation and engagement, the skills, interests and needs of the children involved were assessed, thus establishing a foundation for the development of a set of initiatives intended to meet the needs that were identified.

In order to enable the development of practices that meet the needs and interests of children by focusing on their respective experiences, the analysis of contextual dimensions was based on the Self-Evaluation Instrument for Care Settings (SICS) (Laevers *et al*, 2005) and the Children Monitoring System (CMS) (Portugal & Laevers, 2010).

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## 2. SICS and CMS in the analysis of the emotional well being (EWB) and involvement (I) of the child

The maximisation of resources to promote quality in day care centre and in kindergarten entails the systematic assessment of the educational context in its different dimensions. With this in mind, one can identify the strengths and weaknesses of the context and outline intervention strategies that offer the children support that is aligned with their needs. Therefore, the use of SICS and CMS is highlighted as a resource for improving quality in early childhood education.

SICS provides a supporting framework for the introduction of fundamental changes in educational practices at the level of day care centre, and organises the action of the educator into three phases: (1) observation and evaluation of EWB and I of the children attending the setting, (2) reflective analysis of contextual dimensions that enhance the quality of the context - educational offer, group climate, room for initiative/promoting autonomy, organisation and adult style, and (3) improvement of the educational action, via the design of an intervention plan, with the respective assessment. The educator is encouraged to assess his/her own action from the perspective of the child, thus establishing the conditions for the respective social-emotional and cognitive development (Laevers *et al*, 2005).

The CMS assesses and monitors the quality of the kindergarten setting and structures the development of the educator's action through three phases: (1) observation, either global and individualised assessment of the group of children (Forms 1g and 1i), keeping in mind the global level of EWB, I and overall development, on a 5-level scale, (2) individualised group and context analysis and reflection (Forms 2g and 2i), (3) definition of objectives and initiatives - for the group/educational setting - as well as individualised initiatives (Forms 3g and 3i, respectively). CMS allows the educator to identify the children who are under emotional distress, using a continuous cycle of observation, assessment, reflection and action on EWB and I, in addition to using indicators pertaining to children's learning and development (Portugal & Laevers, 2010).

The results of the assessment of children's EWB and I levels supply the educator with *materials* that allow for the assessment of their own actions. EWB, perceived as a foundational dimension for development and learning - i.e., the EWB underlying emotional release processes is essential to enable the child to become involved in tasks that result in learning at a deep level (ibidem) - has to do with *a particular state of being*, feeling good or bad, happy or sad, being happy or sad (ibidem). A child who experiences it radiates vitality, tranquillity, relaxation, self-confidence and is prone to learn at a deep level. EWB can be assessed in a five levels ranging, from 1, the lowest level, where the signs that the child is at risk of developing emotional distress or is already under emotional distress are clear, to level 5, the highest, where it is clear that the child is released, at ease with herself and the surrounding world.

Involvement, taken into account as the result of the quality of the educator's action (ibidem), is also an essential dimension for the child's development and learning process, as it provides the adult with information concerning the effectiveness of their efforts in creating a stimulating and interesting environment, "showing the child the means to do better" (p.27). Involvement refers to the child's strong motivation to carry out an activity, her intense mental activity, interest, persistence, precision, high level of concentration, openness to stimuli, the intense flow of energy and full satisfaction, complexity and creativity, fascination and natural involvement in activities (ibidem). If the child is engaged in a task, he/she is focused, keeping his/her attention on the activity, showing signs of being mentally active, mobilising skills towards the completion of the activity; therefore, one witnesses learning, construction of knowledge and knowing. Involvement is shown through a continuum that can be structured into five levels, from level 1 - very low - corresponding to the absence of activity (no involvement); until level 5 - very high - according into intense and continued activity (high involvement).

### 3. The contextual dimensions in early childhood education

Throughout the analysis of EWB and I, the educator will be able to assess his/her practice, seeking an explanation for low scores (and also high scores) within five curricular components that, according to Portugal and Laevers (2010), are essential to achieve educational quality:

#### 3.1. Educational offer

To what extent is the educational context rich and appealing, providing a diversity of materials? To what extent is the offer important and relevant for the learning and development processes of the child who is experiencing it? The educator must try to enrich the surrounding environment/space in order to make it more appealing, rich and with the possibility to allow for exploration and experiencing various learning opportunities (through the construction of materials, the diversity of games, food preparation...). Therefore, it is important for the children to be able to find in the classroom situations where he/she can actively participate, involving materials and dynamics that meet their needs, namely intense stimuli and activities that entail the several developmental domains (ibidem). It is essential that the interior space is ample, airy, well lit, warm and calm in addition to allowing for the movement of both children and adults. The areas must be enriched with soft and comfortable materials, which can be used during the day so as to enable their independent use by children, without interference occurring throughout the several possibilities of the experience. It is also essential that the exterior space is organised in order to allow for the development of activities that do not interfere with one another, enabling the children to have access to a variety of surfaces and experiences.

#### 3.2. Group climate

The reflection on the group climate gives the adult the opportunity to focus on the relational dimensions existing in the context and on the way they approach the child and offer her/him positive stimuli. Is it relevant to help the children to interact with the group (to talk about conflicts, understanding both their feelings and the feelings of others), to provide them with opportunities for feeling at ease in the group and in the context? Is there a positive interaction occurring within the children? Does the relationship of the adults with the children entail pleasant interactions? It is important to understand the quality of the relationships taking place in the context (between the children and with the adults); to cooperate and collaborate with each other, aiming to build a sense of belonging to the group. In addition to what was mentioned above, it is important to assess if the adult establishes adequate physical contact, if they show respect and empathy towards the children; it is important to observe if the adults reflect on the quality of the relationships they create with the children, if they develop the ability to assess the interactions they are involved in, if they improve the quality of their interventions, in other words, if they carry out the subsequent analysis of the quality of the interpersonal relationships they are involved in and of their experiential dialogue competencies (ibidem).

#### 3.3. Room for initiative/autonomy

How much initiative and autonomy is the child allowed and encouraged to have in the context? The child is the author of her own development; she will know better than anyone else how to find situations that are at the threshold of their *proximal development*. With this in mind it is essential to make room for the child to decide what he/she wants to do, how he/she wants to do it and whom he/she wants to do it with; to listen to his/her opinion with regards to the range of activities offered and to the lessons planning process. It is also essential to observe the degree in which the children take on responsibilities, the way problems are solved and rules are explained. Free initiative provides the child with room to create his/her own developmental path, leading to

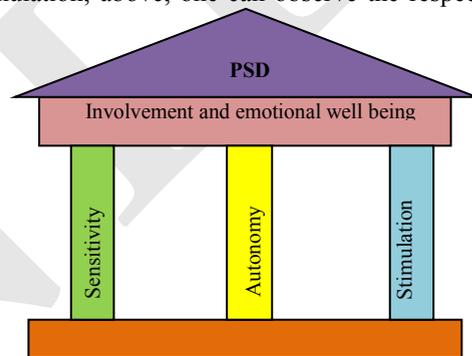
exploration and autonomy while enabling higher levels of involvement (ibidem). Initiative can be offered to the child in the act of freely playing/developing an activity. While playing, children engage and explore their potentialities (solve problems, make new discoveries, express themselves, use information and knowledge...), experiment, experience diverse learning situations and may also experiment freely, without fearing to make mistakes. Autonomy can be worked out by providing individual and shared experiences, opportunities in the discussion and resolution of conflicts, opportunities for individual expression (involving the child in debate, in storytelling activities, group conflicts...), making decisions and taking responsibility. The adults provide tools that are adapted to the age of the child in order to maximise his/her autonomy and give him/her a sense of responsibility in the performance of daily tasks (washing themselves, getting dressed, going to the bathroom...).

### 3.4. Organisation

Is the daily routine organised to meet the children's needs? Do adults communicate with each other, divide tasks and encourage the children to talk about events of the day or things that interest them? Are lesson plans and daily routines outside - eating, sleeping, playing - taken into account? Similarly, it is important to analyse the daily plan and routines and decide if these are sufficiently structured and yet still flexible, if variations to the program are introduced thus promoting autonomy and respecting the needs and interests of the children, with smooth transitions between events. Therefore, it is important to observe if one part of the day has free play and the other part of the day has a variety of indoor and outdoor activities that are monitored by the adult and initiated by the children (ibidem).

### 3.5. The adult style

Is the adult empathetic in their interaction with the children? Does he/she provide stimulating interactions? Does he/she promote and offer autonomy? Does he/she understand the needs and interests of the child and introduce elements in the activities to enhance involvement? Is the adult sensitive towards the children? Does the adult understand the children's feelings, ensures that their needs are met (for attention, affection, assertion...) and understand their emotions? The adult should sustain their practice upon three branches of experiential attitude: sensitivity, autonomy and stimulation; above, one can observe the respective organisation in the *scheme of the temple*.



EXPERIENTIAL ATTITUDE

Figure1. The Scheme of the Temple (Portugal & Laevers, 2010)

At the basis, the educator's experiential attitude is operationalized into: (1) *Sensitivity or experiential dialogue*, meaning the true and profound relationship the educator establishes with the children, meeting their emotional needs, for safety, for affection; in this sense, the educator must make sure the child feels understood, listened to and accepted; (2) *Autonomy*, corresponding to the way the educators stimulate the child's autonomy, how they allow the child's decision making process, with regards to choosing an activity, the process of monitoring the activity, the participation in setting the rules, boundaries and agreements; (3) *Stimulation*, concerning the way the educator stimulates the child by enriching the environment with new and diversified materials, activities and opportunities, taking into account the children's real interests and needs; in other words, the way the educator is (or is not) "a fertilizer of the educational ground" (ibidem). In the *crossbeam* of the temple, we have the processes of emotional release, operationalized by the EWB, and the developmental processes, translated into Involvement. Lastly, in the *pediment*, the purpose of the educational action, the personal and social development (PSD) or the child's emancipation (ibidem).

The line of thought of the experiential approach stresses the need for the educator to active listen the child, and aims to maintain an attentive attitude to the child's experiences, to the expression of their inner experience.

#### **4. Action plans for improving quality: day care centre and kindergarten**

In both contexts, we could register that the lessons plans and activities are designed based on the recognition of what the children already master, offering them *meaningful activities* (Dewey, 1971; Freinet, 1973) that constitute a real challenge to their abilities (Vigostky, 1991, 2007). At the day care, sometimes the educator showed a tendency to anticipate the child. Based on these assertions, some *action points* were formulated to be used in both settings (day care and kindergarten). These are summarised in Tables 1 and 2.

Action points. We want to...	Concrete actions to be developed
Improving game playing in the play room so that the context is more inviting and stimulating for the child	<ul style="list-style-type: none"> <li>- Creating the emotions corner (with images);</li> <li>- Introducing diversified materials: sound materials; sand box; a box full of feelings (Depondt, Kog &amp; Moons, 2004); games, puzzles, building blocks...</li> </ul>
Allowing the child more freedom/initiative and opportunities to choose	<ul style="list-style-type: none"> <li>- Diversifying and display the materials in a way that allows the children to choose, touch and explore them, i.e. books, games and building games;</li> <li>- Exhibiting the children's works on the walls.</li> </ul>
Improving the group environment so that the child can <i>feel at home</i>	<ul style="list-style-type: none"> <li>- Exhibiting the children's works;</li> <li>- Working with materials that showcase cultural diversity, for example through the use of coloured-skin dolls, images of various cultures and which show different kinds of families;</li> <li>- Working with activities and materials that allow for the exploration of emotions and feelings;</li> <li>- Using and work the emotions box.</li> </ul>
Organising the day in a more efficient way	<ul style="list-style-type: none"> <li>- Creating a board to register the children's opinion with regards to different activities and in which they can express their opinion through sad and happy smiley faces.</li> </ul>
Improving the style of the adult (sensitivity, stimulation and autonomy), with more stimulating interventions (enriching the children's game playing and creating opportunities to develop the game), a greater sense of sensitivity (more individualised and empathic attention) and promotion of autonomy (the children can choose activities and spaces that appeal to them, and their choice is respected).	<ul style="list-style-type: none"> <li>- Spending time with the child individually, telling him/her stories about emotions and exploring them;</li> <li>- Enriching the children's game playing, providing them with different sorts of materials so that they can have a greater opportunity to choose and to show initiative, for example books, puppets and images (showcasing emotions and feelings);</li> <li>- Spending time with the child in small groups, letting him/her draw in the researcher's notebook (the child evidenced to like very much to do this), enriching it with images;</li> <li>- The adult intervenes in the child's activities more closely and with increased dialogue, namely when playing is taking place, aiming to extend the children's activity;</li> <li>- The assistants play more with the children, offering them more love, affection and attention;</li> <li>- Letting the children choose activities and spaces that are appealing to them and respecting their choice.</li> </ul>

Table 1. Declaration of intent for quality improvement (Action Plan for day care)

In order to meet the needs of children in day care centre, some interventions to promote the children's self-awareness and self-esteem were designed, namely the work around emotions as "many children do not have opportunities to explore and express their emotions, not knowing what is going on with them" (Portugal & Laevers, 2010, p.122). Thus, various activities have been developed, such as the use of the *box full of feelings* (Depondt, Kog & Moons, 2004), listening/telling stories, drawing and painting. The researcher provided the children with various materials (images, masks, puppets, stories...), activities in which they found that the children were involved and stimulated, increasing their levels of EWB and I. Sometimes, they themselves took the initiative to ask to play, for example, with the *box full of feelings*.

Unlike what had been planned in the beginning, it was not possible to create a new activity area in the classroom and some materials could not be introduced, as is the case of sound materials, sandbox, puzzles, and building blocks. The researcher gave the children the opportunity to choose from a wider range of books which they could use, play with and explore. The children explored them with clear satisfaction, often taking the initiative to look for them and ask to use them, if they weren't available at a given moment.

With regards to the children's drawings and paintings, these could not be displayed on the walls because it was said they could damage the walls; they continued to be put away in the children's folders and were not displayed. It is, indeed, urgent to create strategies for improvement at this level. In addition to what was mentioned previously, the *child's opinion board* was created to register his/her point of view, his/her opinion and perspective (Laevers, 2008) regarding the educational offer. In this sense, the children identified the activities, and expressed their opinion: C1, throughout the first observation moment says "I don't like to play in the toy house!" but immediately afterward, he said "I like the machine and the bag!"; C1 and C2 highlight the fact that there are no books in the classroom "I like books, but there aren't any in the classroom!"

The importance of the adult's affective and warm contact was also stressed. The educator left the room a couple of times during the time of free game playing. The researcher proposed the educator a greater closeness and dialog with the children throughout these moments. Thus, the educator and the researcher were present during the children's play and activities, providing them with more individualised, warm, welcoming and stimulating attention (throughout playing and monitored activities...). According to Benjamin (1984, cited by Zortéa, 2008), while playing, children recreate and rethink the events that gave rise to it (the free play), through imitation, stories, scenes...

The *researcher notebook* is an instrument in which field notes, critical incidents, relevant considerations, successes and failures of the intervention and research are registered (Zabalza, 1994). It was found that children showed a strong desire and interest in the researcher's notebook (enriched with images of emotions), often asking to make drawings, view pictures and explore. Thus, the researcher put it at children's disposal, so they could handle and explore it.

At the level of kindergarten, action points were also outlined. These are summarised in the following table.

Table 2. Action plan for the kindergarten – goals and initiatives for the group/context

Specific aspects of change	Initiatives or actions to be developed
<b>Educational offer</b>	
<ul style="list-style-type: none"> <li>- Creating the feelings/emotions area;</li> <li>- Renovating the space dedicated to games and the kitchen;</li> <li>- Developing a number of scientific activities;</li> <li>- Enriching the outdoor space, creating more opportunities for broader movements and the release of energy as well as the carrying out of activities.</li> </ul>	<ul style="list-style-type: none"> <li>- Providing masks that are allusive to the different ways of feeling, i.e. of different feelings (such as fearful, angry, sad and happy). Children may paint/decorate the masks and can also create stories, develop role-playing activities and look at themselves in the mirror with the masks;</li> <li>- Developing materials for the construction of emotions masks;</li> <li>- Adding a greater diversity of games. Improving the existing ones and reorganising the space, making it more functional;</li> <li>- Adding materials to the kitchen area;</li> <li>- Carrying out the preparation of food in the context: cakes...;</li> <li>- Bringing ropes, cloths, springs, tables, chairs and materials outside that can be used for building projects, in order to provide children with different activities.</li> </ul>
<b>Group climate</b>	
<ul style="list-style-type: none"> <li>- Ensuring a positive group environment where</li> </ul>	<ul style="list-style-type: none"> <li>- Providing materials and activities that enable children to work around</li> </ul>

<p>children feel safe and cherished;</p> <ul style="list-style-type: none"> <li>- Creating a cosy and safe space;</li> <li>- Strengthening, listening and promoting mutual support relationships among children;</li> <li>- Promoting the knowledge of the other, respect, and cooperation among children and between children and adults.</li> </ul>	<p>emotions;</p> <ul style="list-style-type: none"> <li>- Taking advantage of the children's personal and family experiences to work aspects such as feelings and emotions that are related to certain situations;</li> <li>- Exploring the emotions box, offering the child various experiences in order to boost her ability to listen to others, tolerance and provide opportunities for each child to be able to express their own feelings and emotions, talk about them, their concerns and situations which they have experienced or lived;</li> <li>- Developing activities where children can express feelings or attitudes through body/voice;</li> <li>- Talking to the children about the activities that were developed, and asking them whether they liked or disliked them. This way the children can express their opinions, feel that they are listened;</li> <li>- Observing and listening to the messages of the children, their opinions and also their tastes;</li> <li>- Registering small sentences uttered by the children on every feeling/emotion and talking about the registers that were done (sentences or drawings made by children);</li> <li>- Talking to the children about situations of aggressiveness that sometimes occur between them and other children;</li> <li>- Helping children solve minor conflicts with each other through various instruments and materials;</li> <li>- Organising workgroups where responsibilities are shared.</li> </ul>
<p><b>Room for initiative/autonomy</b></p>	
<ul style="list-style-type: none"> <li>- Encouraging the decision making process and the assumption of responsibility by children;</li> <li>- Increasing the children's levels of collaboration as well as interesting and engaged participation in different activities existing in the room;</li> <li>- Encouraging creative individual expression;</li> <li>- Encouraging the decision making process and the assumption of responsibility by children;</li> <li>- Promoting a sense of confidence and high self-esteem, based on activities where children feel capable and responsible.</li> </ul>	<ul style="list-style-type: none"> <li>- Gradually boosting the children's sense of initiative throughout various moments and activities;</li> <li>- Allowing the children to decide what they will do, how they will do it and decide when a task is finished;</li> <li>- Empowering the children for their choices and behaviours;</li> <li>- Allowing children to discuss, create and adjust the existing rules in the classroom;</li> <li>- Giving the child room and time to perform the activity her own way, with different types of materials chosen by them and promote individual expression, autonomy, and an increasingly greater know-how;</li> <li>- Promoting moments of discussion and sharing of ideas in small or large group, encouraging the children to express themselves and utter their opinion.</li> </ul>
<p><b>Organisation</b></p>	
<ul style="list-style-type: none"> <li>- Ensuring the flexibility of the rules;</li> <li>- Providing more time to play outdoors;</li> </ul>	<p>Developing or giving greater visibility to the existing classroom rules, regarding the storage of materials, the behaviour that is allowed and not allowed (agree on the rules with children);</p>

<ul style="list-style-type: none"> <li>- Ensuring flexibility in the rules, when necessary;</li> <li>- Discussing and establishing agreements with the children, listening to them (not seeking to enforce our point of view);</li> <li>- Integrating the community's educational potentialities in the group's curricular project.</li> </ul>	<ul style="list-style-type: none"> <li>- Creating an <i>opinion board</i> for the children about the educational offer and hear their views;</li> <li>- Whenever possible, taking the children for outdoor activities, allowing him/her to be in touch with nature.</li> </ul>
<b>Style of the adult</b>	
<ul style="list-style-type: none"> <li>- Exercising self-assessment of both the educator and the researcher, without fearing the weaknesses one can find;</li> <li>- Being aware of the children's positive behaviours and value them, strengthening those moments;</li> <li>- Moderating the tendency to quickly intervene and solve conflicts between children;</li> <li>- Trying to see reality through the eyes of the child;</li> <li>- Supporting children in their social contacts, acting as a role model.</li> </ul>	<ul style="list-style-type: none"> <li>- Providing support and positive attention whenever necessary;</li> <li>- Paying attention to the impact that children's interventions have in terms of involvement and emotional well being;</li> <li>- Thinking before acting;</li> <li>- Observing and listen to children throughout their game playing to better know and appreciate them;</li> <li>- Developing a more targeted and individualised work (providing further monitoring) with children who have more difficulties so that, little by little, they feel safer and more autonomous.</li> </ul>
<b>Other aspects</b>	
<ul style="list-style-type: none"> <li>- Putting the children in touch with some activities within the scope of literacy;</li> <li>- Telling stories about diversity and emotional education;</li> <li>- Developing exterior outings, providing the children with a greater knowledge of the world and knowledge of the surrounding environment.</li> </ul>	<ul style="list-style-type: none"> <li>- Telling stories about diversity and emotional education, using various materials;</li> <li>- Putting the children in touch with some activities in the scope of literacy, namely through: association of image to a word, interpreting poems, learning some letters of the alphabet, getting in touch with and exploring some tongue twisters, creating stories, riddles, building rhymes, playing with words and looking for/search for letters and familiar words in newspapers, magazines, flyers, among others;</li> <li>- Promoting situations of discovery of atmospheric features, related to the different seasons.</li> </ul>

At the level of the kindergarten, several actions and strategies were developed, keeping the children's internal experience and lived experiences in mind. In this sense, the researcher developed a set of strategies and activities that are mentioned below.

The *box full of feelings* was part of the everyday activities available in the contexts, allowing for several learning processes and experiences to take place so as to boost the sense of listening to others, tolerance, providing opportunities for each child to say the names that are given to feelings and emotions, talk about themselves, talk about their concerns and situations which they lived. The children showed high interest and a liking for the box full of feelings: used the images, put on the masks walking through the different areas of activity, playing with finger puppets.

The researcher (in collaboration with the educator and the assistants) provided the children with several materials and activities:

- Images and tables about *How I am feeling today* in the researcher's notebook, so that the child could say how she felt on a specific day or at a specific moment; The children asked to draw and see the notebook; they also looked for the tables to fill them out;
- Acknowledging the children were very interested in the box full of feelings, the educator was proposed to create an *emotions area* where the children were able to paint/decorate masks about feelings (fearful, angry, sad, happy); this area was enriched with the masks and a mirror, giving the children the opportunity *to give wings to their imagination* (they saw themselves in the mirror, did role-play, came up with new stories...); indeed, the creation of an emotions area was very important for the children, as they had the opportunity to explore and deal with their emotions by experiencing activities that they had the opportunity to choose;
- The children were provided with different stories on the theme of emotions, so that they could explore them; during free play, they frequently asked to play with the stories: "Exploring the stories allows for the expression of feelings and evokes the recognition of feelings that are common to many children" (Portugal & Laevers, 2010, p.122);
- An opinion board for the children on the theme of educational offer was created to hear and register their point of view; according to Laevers (2008), in the scope of experiential approach it is essential to try and see the *reality* of everyday practice from the children's point of view; on this board, the children could put smiley faces, according to Brooker (in Oliveira-Formosinho, 2008), seen as pivotal to let the child show that she like or dislike certain situations or activities, as is the case of the child C3, who showed her dislike for the activity "physical education class" – "I don't like balls when they go up and down!". C3 and C4, during an initial register, show their dislike for the storytelling activity – "I don't like to listen to stories";
- The children could express through drawings and their point of view what each emotion/feeling meant for them;
- The drawings and the children's opinions were displayed in the activity room;
- The researcher offered each child an *emotions cube* (to take home); the children sat on the floor playing with the cube and role-playing what they saw in the pictures (each side of the cube showed the expression of a feeling);
- The children's works were displayed in the classroom, allowing the child to feel valued and giving them the opportunity to show the result of their work; often the children called the researcher to see their work and asked - "is it nice, Sofia?";
- The children had the opportunity to prepare food. C3 and C4 showed their interest in doing this kind of activities – C3 says "I like to mix everything and put it in the oven"; C4 says "I like to bake and eat the cake!";

- The outdoor space is an extension of the indoor environment (Post & Hohmann, 2003); With this in mind, in this specific context, the outdoor space was enriched with materials; the educator gave the children the opportunity to carry out certain outdoor activities, taking the table, chairs, cloths, springs, ropes, ... placing them in a way that facilitated the creation of small groups and gave the children the opportunity to spend time in a different space; whenever possible, the adult allowed the children to perform outdoor activities and be in touch with nature (i.e. library, the dinosaur museum, ...);
- The researcher was always present throughout the children's activities, establishing a warm and affectionate contact which, according to Rygaard (2006), helps the child to establish an affective state of being. In addition to this, the adult observed and listened to the children, allowing them to express their opinion and to feel that they were listened.

## 5. Conclusion

The use of this analysis and assessment tools allows the educator, alongside with the assessment and monitoring of the quality of the educational intervention, to define the children who are under emotional distress and in need of a more differentiated educational intervention: a practice that is sustained by sensitivity, autonomy and stimulation. In an analysis focused on processes of creating shared learning experiences, where the voices of children and their look provide different courses of action and where the concerns of adults unite in order to meet their respective needs and interests. It is urgent to support educators in looking for and applying other kinds of knowledge and alternatives, in a participatory, democratic and transparent process.

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## Assessment of nutritional status of 10-14 years old adolescents using mediterranean diet quality index (kidmed)

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### Abstract

This study is conducted to evaluate the nutritional status of 10-14 years old adolescents determined by Mediterranean Diet Quality Index (KIDMED). 229 male adolescents who go to football school participated in the study. Participants' nutritional status was determined through a 16-item KIDMED Index. The mean age was  $12.15 \pm 1.08$  year, weight was  $39.16 \pm 6.30$  kg, height was  $143.07 \pm 8.62$  cm. Results indicated that 10.5% of the participants had a low quality diet ( $\leq 3$  points), 64.2% had a mid-quality/needs-improvement diet (4-7 points) and 25.3% had an optimal quality diet ( $\geq 8$  points). KIDMED Index is a suitable index for assessing Mediterranean and Healthy Diet. Healthy diet is very important for adolescent who play sports. Adolescents diet quality should be increased with healthy nutrition education.

Keywords: Kidmed index, adolescent, nutritional status

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## 1. INTRODUCTION

Individuals that do sports during their adolescence need a balanced diet in order to grow, develop and to optimize their sporting performance and to protect their health. An adequate and a balanced diet will enable them to implement healthy eating habits during their adulthood and reduce risk of many diseases when accompanied by physical activity (Meyer, O'Connor, and Shirreffs, 2000).

There are many methods available for the evaluation of individuals nutritional status. One of these is the Mediterranean Diet Quality Index (KIDMED) (Koksal, Tek, and Pekcan, 2008a). It is thought that the Mediterranean diet is one of the healthiest diet models (Mariscal-Arcas et al., 2009). Although there are regional variances, the Mediterranean diet consists in the main of vegetative nutrition (fruits, vegetables, cereals, beans, nuts and seeds), mid-level dairy products, mid-level fish and poultry, a small amount of red meat and olive oil forms the main source of oil in the diet (Schröder, Mendez, Ribas-Barba, Covas, and Serra-Majem, 2010; Costarelli, Koretsi, and Georgitsogianni, 2012).

This study was carried out in order to assess the nutritional status of 10-14 year old age group individuals that are attending football training schools by means of KIDMED which is a rapid, easy and applicable tool.

## 2. MATERIAL AND METHODS

### 2.1. Participant

The study was based on 229 boys in the 10-14 year old age group (age average =  $12,15 \pm 1,08$  years) that are attending football schools at Antalya Turkey between the dates of March-April 2013. Before starting the study, the required permission was obtained from the boys schools and their parents and only volunteers were employed in the study.

### 2.2. Instruments

Body weight was recorded to the nearest 100 g with the use of a digital scale (Tanita TBF 300) and with subjects standing without shoes in light clothing. The height was recorded with heels together, without shoes and body in an upright vertical position with a deep inspiration and was recorded in cms. Body mass index was calculated by dividing weight (kg) by standing height squared ( $m^2$ ). The thinness, obesity status was evaluated according to 5-19 age group WHO-2007 reference values by using the "WHO Anthroplus" program (WHO, 2007).

KIDMED was created to estimate adherence to the Mediterranean diet in children and young adults, based on the principles that sustain Mediterranean dietary patterns and those that undermine it (Serra-Majem, Ribas, Garcia, Perez-Rodrigo, and Aranceta, 2003; Serra-Majem et al., 2004). KIDMED index consists of 16 questions. Items denoting lower adherence were assigned a value of -1 (4 items), and those related to higher adherence +1 (12 items). Scores range from 0 to 12. Higher scores indicate higher adherence to the Mediterranean diet (Schröder, Mendez, Ribas-Barba, Covas, and Serra-Majem, 2010). The questionnaire is shown in Table 1 (Serra-Majem, Ribas, Garcia, Perez-Rodrigo, and Aranceta, 2003).

Table 1: KIDMED test to assess the Mediterranean Diet

<b>KIDMED test Scoring</b>	
Takes a fruit or fruit juice every day	+1
Has a second fruit every day	+1
Has fresh or cooked vegetables regularly once a day	+1
Has fresh or cooked vegetables more than once a day	+1
Consumes fish regularly (at least 2–3/week)	+1
Goes >1/ week to a fast food restaurant (hamburger)	- 1
Likes pulses and eats them >1/week	+1
Consumes pasta or rice almost every day (5 or more per week)	+1
Has cereals or grains (bread, etc.) for breakfast	+1
Consumes nuts regularly (at least 2–3/week)	+1
Uses olive oil at home	+1
Skips breakfast	-1
Has a dairy product for breakfast (yoghurt, milk, etc.)	+1
Has commercially baked goods or pastries for breakfast	-1
Takes two yoghurts and/or some cheese (40 g) daily	+1
Takes sweets and candy several times every day	-1

KIDMED Index: poor  $\leq 3$ ; medium 4–7; high  $\geq 8$ .

In addition to the KIDMED index the parents educational status, meal skipping habits and their reasons were queried.

### 2.3. Data Analysis

The questionnaire responses were analysed using SPSS version 18.0 (SPSS Chicago, IL, USA). Continuous variables are presented as mean  $\pm$  SD, whereas categorical variables are presented as absolute and relative frequencies. One way ANOVA Analysis were used to evaluate their KIDMED scores according to BMI and parents educational status.

### 3. RESULTS

The baseline characteristics of the boys are shown in table 2. 13.1% of the boys are underweight, 61.1% normal weight, 23,1% overweight and 2.6% were obese. 62.4% of the boys indicated they didnt skip meals. In the meal skipping class the most skipped meal is breakfast. Majority of the responses to meal skipping was “because I didn’t feel like it”. The meal skipping status and reasons are given in table 3.

Table 2: Age, anthropometric characteristics, KIDMED score and obesity classification

	Boys (n=229)
Age (years)	12,15±1,08
Weight (kg)	38,67 ±6,90
Height (m)	143,89 ±7,94
BMI (kg/m <sup>2</sup> )	18,56±2,04
KIDMED score	6,05±2,10
Obesity classification (%)	
Under weight	13,1
Normal weight	61,1
Overweight	23,1
Obese	2,6

Table 3: Nutrition habits of the boys

Meal skipping	n	%
Not skipped	143	62,4
Breakfast	38	16,6
Lunch	18	7,9
Breakfast-lunch	5	2,2
Dinner	-	-
Snack	25	10,9
Total	229	100,0

The reasons of skipping meal		
Not skipped	143	62,4
Weight loss	6	2,6
Lack of time	20	8,7
Not in the habit	20	8,7
Economic reasons	5	2,2
Because didn't feel like it	35	15,3
Total	229	100,0

While 64.2 % of the individuals had medium diet quality, 10.5 % had poor diet quality and 25.3 had high diet quality (table 4). Parents educational status and their KIDMED scores according to BMI was investigated and is given in table 5. There is no significant statistical difference between the parents educational status and their KIDMED scores and BMI ( $p>0,05$ ).

Table 4: Diet quality according to KIDMED index

	Boys (n=229)	
	n	%
Poor diet ( $\leq 3$ )	24	10,5
Medium diet (4-7 point-diet needs improvement)	147	64,2
High-optimal Mediterranean diet ( $\geq 8$ )	58	25,3
Total	229	100,0

Table 5: KIDMED score according to BMI and parents educational status

Mothers Educational Status	Mean $\pm$ SD	F	p
Illiterate	6,21 $\pm$ 1,8	1,66	0,15
Literate	5,63 $\pm$ 2,5		
Primary School	6,07 $\pm$ 1,8		
Jr High	5,40 $\pm$ 2,1		
High School	6,22 $\pm$ 2,0		
University Community College	6,63 $\pm$ 2,1		
Post Graduate	6,05 $\pm$ 2,1		
Fathers Educational Status			
Illiterate	6,00 $\pm$ 1,4		
Literate	5,36 $\pm$ 1,8		
Primary School	5,31 $\pm$ 1,7		
Jr High	6,23 $\pm$ 2,0		
High School	5,94 $\pm$ 2,1		
University Community College	6,79 $\pm$ 2,2		

Post Graduate	5,50±0,7		
BMI	1		
Under weight	6,03±2,1		
Normal weight	5,96±2,0		0,85
Overweight	6,25±2,1	0,26	
Obese	6,33±2,2		
	4		
	5		

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F: one way ANOVA

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#### 4. DISCUSSION

In the study carried out with rapid, easy to use and applicable tool KIDMED, on the nutrition status of 10- 14 year age group boys in football schools in Antalya, Turkey, it was found 13.1% of the boys were underweight, 61.1 % normal weight, 23,1 % overweight and 2.6 % were obese. In the study carried out in a group of 785 adolescent boys from all over Turkey in the 11-14 age group that participated in the basketball selections, it was found 13.1 % were underweight, 37.6 % normal weight and 49.3 % were obese. But we were informed, it could be wrong to evaluate these adolescents who are active and have a high muscle mass, according to BMI as this could be misleading (4). In the study carried out at the province of Antalya central primary school during June 2008-December 2009 on, 6-15 age group of 5150 boys, it was found 16.8 % of the boys were slightly obese and 11.8 % were obese (Akdemir, Toktas, and Ozer, 2010).

When the KIDMED score was evaluated in accordance with the BMI, there was no statistically significant difference between them ( $p > 0, 05$ ). In another study on 1140 boys in the 9-13 age groups, it was found the correlation between adherences to the Mediterranean diet is inversely associated with obesity (Lazarou, Panagiotakos, and Matalas, 2010). In a similar study on 1125 children in the 10-12 age groups, it was also found inverse correlation between adherences to the Mediterranean diet existed (Antonogeorgos et al., 2012). In another on 84 primary school children in Turkey, it as the KIDMED diet quality index dropped the risk of obesity increased (Samur, Günebak Sahin, Donmez, and Besler, 2008). In contrast to the other studies, this study did not find a difference between the KIDMED points of underweight, normal, slightly obese and obese children. The fact that the subjects in this study were actively engaging sports may have influenced the results.

37.6 % of the adolescents skip a meal and the most frequently skipped meal is breakfast. The highest frequency response has been "I didn't feel like it". Many other studies in Turkey have come up with similar results (Akar Sahingöz and Sanlier, 2011; Akar Sahingöz, 2009; Unusan, Sanlier, and Danişık, 2006). During the adolescent period growth and development is continuing, and for adolescents engaged in sports nutrition has even more of an importance. This should be communicated to children and individuals.

While 64.2 % of the subject have medium diet quality, 10.5 % have poor diet quality and 25.3 % have high diet quality. In the study carried by Köksal et al, (2008) in Ankara province centre, on 624 volunteer and healthy children and adolescents between the ages of 7-18, (268 male, 356 female) it was found that in 15.1 % the KIDMED index was very low, in 59.3 % it was medium and in 25.6 % it was good. (Köksal, Tek and Pekcan, 2008a). In another carried by Köksal et al, (2008b) on 225 healthy volunteer adolescents in the 12-18 age group and it was found that the KIDMED index was very low n 21.3 %, in 61.8 % it required intervention and in 16.9 % the KIDMED index was optimal. In a study carried out in Ankara Turkey on 464 volunteer boys and 426 girls in the age group 10-14, totalling 890 children, it was found that 17.9 % had low, 59.2 % medium and 22.9 % good diet quality index (Akar Sahingöz and Sanlier, 2011). These results display a similarity to our study. In contrast to our study, in a study carried out in Turkey in 2008 by Samur et al. on 84, 5<sup>th</sup> grade primary school children in the 10-12 year age group (40 male, 44 female) it was found that 2.4 % had a very low diet quality, 21.4 % medium level and 76.2 % had an optimal diet quality. The sampling structure of this study differs from the other studies.

The KIDMED score was evaluated according to the educational level of the parents and a statistically significant difference was not found between the KIDMED score and educational level of the parents ( $p>0,05$ ). In a study on 1125 children in the 10-12 age group, it was found if one of the parents had a high level of education then the child's KIDMED score was higher (Antonogeorgos et al., 2012). In another study in Turkey it was found that a high level education of the mother resulted in a high KIDMED score for the child (Akar Sahingöz and Sanlier, 2011).

KIDMED index proves to be successful in Turkey. But when the nutritional status of adolescents who are actively engaged in sports is evaluated, the anthropometric and bio-chemical measurements must be made in parallel with the KIDMED index and the nutrition consumption must be recorded. Coaches and families must possess information on adequate and balanced nutrition of adolescents actively engaged in sports and the adolescents must be trained in the subject.

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4<sup>th</sup> International Conference on New Horizons in Education

# Attention capture preferences in teachers and pupils: differences and similarities

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## Abstract

Conceptualization of the term “attention” and understanding of underlying processes or states in psychological or lay terminology tends to be very diverse. This means that attention as a pre-condition for successful and effective learning could be differently perceived by teachers and differently by pupils. In the present paper we focus on differences in ways of capturing attention preferred by teachers and pupils.

*Keywords:* Attention; Pupil; Teacher; Learning, School; Teacher Competences

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## 1. Introduction

When the well-known Russian psychologist Ushinsky (in Ukhtomsky, 1950, p. 58) defined attention as „the door to child's soul, and through this door everything that is in consciousness has to pass”, and warned that “not a word of instruction should miss this door because otherwise it does not reach the soul”, he had no idea how fitting these ideas would be in the 21<sup>st</sup> century (Cabanová, 2012).

The volume and quality of stimuli an individual must process has changed, and the natural adaptation ability of any person is exposed to increased pressures on daily basis. The “door to one's soul” is wide open and sometimes there is quite a draft. Individual psychoregulators - of different measure and strength in every individual – however allow us to cope with this pressure exerted by multiple stimuli. A specific position is occupied here by attention, a psychological quality that creates the foundation of many effective abilities of an individual. Attention on one hand reinforces (or thwarts, if insufficient) the natural adaptation ability. On the other hand, it is a prerequisite to effective and creative contribution to the surrounding world (Cabanová, 2010).

If we look at this problematic on the level of school, we discover that attention, its level, and identification of the level of attention by teachers is unfortunately not represented in literature. The importance of attention in the learning process is understood to be unarguable (Smetanová, D. 2012), however, in standard Slovak or Czech textbooks of pedagogy or didactics (see e.g. Kalhous, Z., Obst, O. et al., 2002, Průcha, J., 1997) we will not find a chapter or a separate part focused on the issue of pupil attention in school. There are no monographic texts focused specifically on this issue, with the exception of the publication by Lokšová and Lokša (2006) where attention is discussed in relation to motivation, relaxation and creativity of children in school.

## 2. On Attention

In the wide sense of the word attention concerns all mental activities, from noticing something all the way to concentrated observation of something. Objects, phenomena or activities on which we focus our attention have one thing in common: for a certain period of time they become center points of mental activity. This “central position” causes that objects, phenomena or activities on which attention is focused become more explicit or clear, and dominate over other currently ongoing mental, behavioral or real processes or events.

Attention could at least be understood in the twofold sense:

1. As a term that expresses and defines a certain current state of readiness of an organism toward a mental or behavioral act,
2. As a current level of “vigilance” or arousal of psychological or somatic activity.

The current level of attention acts as a selective factor that defines which present stimuli make their way into consciousness and trigger adequate reaction (Cabanová, 2010). This has been aptly formulated by Plháčková (2003, p. 77) who wrote that “attention is a mental process with the function of introducing into consciousness a limited amount of information and thus protect it against being overloaded by a great amount of stimuli that currently and realistically act upon a person.”

However, attention does not only mean focusing of psychological activity on the acting stimulus but it also expresses the current state of consciousness. This state of consciousness is characterized by a certain level of clarity and explicitness of the perceived object in consciousness. Attention could thus be understood also as a general property of consciousness that demonstrates itself as conscious activation of mental functions with the objective of bringing these functions up to the highest level of performance. If we thus understand attention as a psychological state that demonstrates itself in directionality and focus of consciousness (Chalupa, 1981), we have to take into consideration the fact that human psychological activity may have different intensity over time, that it may oscillate, and it is a precondition for the current level of performance.

Different definitions of attention agree in three key terms: consciousness, concentration, and content. Concentration of consciousness is most frequently understood to be such level of psychological activity that could be defined as intensity of attention. The measure of intensity of attention is considered to be the level of awareness of current somatic or psychological activity – and by this we mean those activities that go on on the conscious level. The more concentrated is consciousness, the clearer we realize our experience or behavior. These processes obviously also go on the unconscious level which means that regulation or control of behavior also have some extra-conscious attributes. When it comes to attention we however mostly speak about what goes on on the conscious level – which does not mean that all ongoing mental or behavioral activities are constantly under control.

Let us come back to the school environment. The present practice requires teachers to be flexible, creative, to apply theoretical knowledge into practice, to master effective ways of instruction, to have thorough knowledge of subjects taught, and in addition to all that to communicate effectively and have the ability to create positive interpersonal relationships. It is also required from teachers to motivate children and adolescents in the area of education (Lemešová, 2013). A part of these attempts is also the need to improve abilities of teachers to acquire such techniques that help to excite attention in pupils and maintain it throughout the class – as confirmed by Šramová (2004).

Based on long-term experience with researching attention in pupils we can state that there is a difference between individual attention performance in pupils and in the way how this performance – i.e. the level of attention in pupils – is being perceived by teachers.

In this respect we are interested in the question which strategies are most often used by teachers to capture and maintain attention of pupils, and compare them with ways of capturing attention that are preferred by pupils themselves.

### 3. The Question

Which ways do teachers prefer (or use) to capture or maintain the attention of pupils?

To find some answers we approached 188 pupils in 5<sup>th</sup> to 9<sup>th</sup> grade of elementary school, and 68 of their teachers.

Answers could be grouped into the following categories:

1. Use of auditive stimuli (change of voice, tone). This category contains answers related to style of speech – but we also included answers related to capturing attention by means of audio tools;
2. Use of visual stimuli (visual aids, technology). This category contains answers related to the use of ICT aids, projectors and other tools used by teachers in the teaching process;
3. Switching from one activity to another, testing;
4. Answers related to teacher's personality – appearance, expressing emotions, expressing approval – answers related to positive evaluation of pupils by teachers, motivation toward better performance, expressing positive emotions;
5. Interesting presentation of teaching material;

6. Inadequate or no answers, no preference in any way.

Since we asked an open questions teachers and pupils could have provided multiple answers. Percentage of answers in individual categories is seen in Table 1.

Table 1 Frequency of responses by teachers and pupils, in %

Category	Teachers	Pupils
Category 1	10 %	5 %
Category 2	54 %	18 %
Category 3	21 %	11 %
Category 4	11 %	25 %
Category 5	4 %	22 %
Category 6	0 %	20 %

Unfortunately one fifth of pupils did not answer this question or do not prefer any way of capturing attention by pupils. What is however alarming is that while 54% of teachers prefer visual means of capturing attention only 18% of pupils find this way to be preferable. We presume that teachers overestimate the use of technology at the expense of other ways. The highest number of pupils – 24% - indicate that their attention in classes gets captured mostly by appearance of teachers and expression of positive emotions. A slightly lower number of 22% of pupils get attentive whenever the material is presented in an interesting way. What is striking is that only 4% of teachers capture attention of their pupils by interesting presentation of material.

As we know from relevant research and from school practice, attention of pupils in classes or throughout the school day oscillates. It is thus vital for a teacher to master ways how to capture attention and especially how to keep it up; and the question is whether these ways are accepted by pupils.

In our research 47% of pupils stated that with respect to capturing and maintaining attention they prefer what we could call “teaching mastery” – which means teacher's personality, his or her ability to present the material in an interesting and stimulating way. These are the capabilities that teachers do not consider to be vital; only 16% of teachers accepted this way of capturing attention in their answers. Use of visual stimuli and their preferences by teachers could also be caused by the societal pressure toward modernization and technologization, but also the idea that preparation of pupils for the needs of society is a priority and the needs of pupils are being overlooked. 20% of pupils who were not able to answer or gave inadequate answers could consist of either excellent pupils or pupils with no motivation for academic performance. From the point of view of psychological theory several ways preferred by teachers are not effective and only have short-term effect (auditive and visual stimuli).

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4<sup>th</sup> International Conference on New Horizons in Education

# Attitudes and knowledge of students undergraduate a university in Mexico about distance education.

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## Abstract

The objective of this research was to determine the attitudes and knowledge of Students Undergraduate at the Faculty of Accounting and Management in a public university in Central Mexico, about Distance Education (DE) supported by the Information and Communication Technologies (ICT). The research project was descriptive. The subjects used in the sample were taken from students in their second and eight semesters. The questionnaire used was adapted to the institutional context. The results rendered evidence that 74% of the students said they would be willing to study by distance, supported by Information and Communications Technologies. Based on the results of this study, it is fair to say that the design and implementation of the Distance Education Project at the Faculty of Accounting and Management has a good chance of success.

*Keywords:* Distance Education; Attitudes; Knowledge.

## 1. INTRODUCTION

In the year 2006, the Faculty of Accounting and Management (FAM) at a public university in Central Mexico took up the challenge to change. One of the first steps towards this change was to update the curriculum, which in turn, resulted in the implementation of the current educational model called: Curricular Model 2006 at the FAM (Faculty of Accounting and Management, 2006). In order to contribute to the development and implementation of this model, school authorities decided to take some actions to promote an educational model supported by Information and Communications Technologies (ICT) and in the near future, offer schooling through Distance Education (DE). In order to offer an educational model by distance, the Project for Distance Education for the Faculty of Accounting and Management was designed (in Spanish: Proyecto de Educación a Distancia de la Facultad de Contaduría y Administración, 2010).

The Project for Distance Education is based on the following studies: “Attitudes of Teachers at the faculty of Accounting and Management Towards Distance Education” (in Spanish: “Análisis de las Actitudes de Profesores de la FCA ante la EaD”) and “Evaluation of the Course Management System DOKEOS FCA” (in Spanish: “Evaluación del Uso del Sistema Administrador de Cursos DOKEOS FCA”) However, according to the National System of Distance Education (in Spanish: SINED) (2010) it is necessary to evaluate the attitudes and knowledge of undergraduate students towards DE and its implementation at the Faculty of Accounting and Management as well.

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## 2. BACKGROUND

In the year, 2010 the National System of Distance Education established that DE increases the chances to provide education, and considering some provisions, a greater number of institutions for higher education will look for opportunities to implement this mode. According to Lupión y Rama (2010), DE has been established as a new, important reality for higher education in Latin America and the Caribbean. These authors affirm that the increase rates in DE are far superior to those of the traditional face-to-face mode.

In addition, in the higher education area of the Sectorial Education Program 2007-2012 for Mexico (SEP, 2007), it was established as the third objective:

“To promote the development and use of information and communication technology in the educational system in order to support learning, expand their competencies for life and to ease their integration into the knowledge society” (p. 11).

One of the strategies presented in the same program to achieve the previous goal was, “to promote open and distance education through permanent quality and innovation standards and criteria, with special emphasis on regions and groups who lack access to conventional in-school services” (SEP, 2007; p. 40).

## 3. RESEARCH PROBLEM

The FAM of a public university from Central Mexico offers three undergraduate programs, Accounting, Management and Public Management; there are 3457 registered students and 263 Professors (García, 2011).

The Academic Programs are organized into four subject sections: a) first cycle, from first to sixth semester; b) second cycle, from seventh to ninth semester; c) free elective courses, this means that students can choose three courses between the fourth and sixth semester; and d) depth elective courses, students can choose six courses out of ten professional emphasis (Facultad de Contaduría y Administración, 2006).

Within this context, the Faculty of Accounting and Management has developed the following strategies to become flexible, open, innovative and dynamic: a) to implement the Curricular Model 2006 for the FAM (Facultad de Contaduría y Administración, 2006) and b) the Distance Education Project for the FAM (Facultad de Contaduría y Administración, 2010).

## 4. PROBLEM-LITERATURE CORRELATION

The revision of literature demonstrated that most of the findings in the study related to the attitudes and knowledge towards DE indicate the need to prepare and train the teachers for the use and implementation of ICT within DE. Some of the authors following this line, highlight the need to provide teachers with at least a course in the use and application of ICT, and therefore lower the risk of academic failure (Ho Song, 2000). Consequently, the search for bibliography for this research project was directed towards three areas: a) Distance Education, b) Information and Communication Technology, and c) attitudes and knowledge. In terms of this research project, the concepts referred to are:

### 4.1. Distance Education (DE)

The concept considered was that of Simonson et al. (2009), who defined it as an institutional education, backed up by a traditional school or university, in which there is a separation in time, distance or intellect between the students and the teacher. These educational agents interact through telecommunications systems which allow sharing different media and resources to learn from experiences.

#### 4.2. *Information and Communication Technologies (ICT)*

These are the products of processes and products derived from hardware y software tools which offer support, in relation to storage, processing and digital transmission of information (González, Gisbert, Guillen, Lladó y Rallo, 1996).

#### 4.3. *Attitude*

Gagné (1985) defined it as the mood which reflects on a student's or teacher's behavior in relation to an object, or towards a specific situation. It is the result of personal and relational experiences, which influence people in terms of likes or dislikes.

#### 4.4. *Knowledge*

It is the information which transforms something or someone, in order to do something, or so that the individual or the institution have the capability to adopt a different or more efficient action (Drucker, 2003).

### 5. OBJECTIVE OF THE STUDY

To determine the attitudes and knowledge of undergraduate students at the Faculty of Accounting and Management in a public university in Central Mexico, towards distance education supported by Information and Communication Technologies.

### 6. HYPOTHESES

The favorable attitudes and knowledge shown by the students towards DE, will help the optimal implementation of this educational mode at the Faculty of Accounting and Management in a public university in Central Mexico.

### 7. METHODOLOGY

#### 7.1. *Research design*

The research design used in this study was descriptive, in order to provide information about the current conditions, in this case, the attitudes and knowledge towards DE among students in the second and eight semesters at the Faculty of Accounting and Management (Cohen & Malion, 1990).

#### 7.2. *Participants*

The student population was composed of 3457 students, male and female, ranging from 18 y 35 years of age, who study between the second and eight semesters of the undergraduate programs for Accounting, Management and Public Administration at the FAM. Due to the characteristics of this study, a representative stratification of students participating per semester was needed. Hence, an intentional sampling without replacement was done. From that population, a 5% was chosen at random to constitute a pilot sample of 173 students. From the remainder (3284 students) another 5% was chosen randomly (165 students), who were stratified per semester in order to conform the final sample.

### 7.3. Instruments

A valid questionnaire was designed by experts in Distance Education (DE). An Alfa Cronbach ( $\alpha = .7381$ ) analyses of internal consistency sample was also carried out. This instrument was organized into two sections: a) socioeconomic and b) Elements of Distance Education. The socioeconomic section showed the participant academic profile. The Distance Education elements section was structured into 19 items according to Distance Education knowledge factors, motivation, communication and Information and Communications Technologies (ICT). A five choice-response Likert scale was used. The response choices were determined as following: 1. Totally disagree, 2. Disagree, 3. Neither agree, nor disagree, 4. Agree and 5. Totally agree.

### 7.4. Data analysis

Data was presented descriptively; the average, frequency, standard deviation, median and mode were calculated for each one of the items (Hernández et al., 2010). We used The Statistical Package for the Social Sciences (SPSS®), version 20.0 to process the information.

## 8. RESULTS

The results showed that 92% of the participants in this study do not have experience in the Distance Education format. From this finding is observed that 8% of students reported having experience in DE is minimal. However, this group was the one that showed more willingness to study this modality. Consequently, from a qualitative perspective it is appreciated that the distance education modality can be considered as a possibility for training and education.

Another result was that 83% of students having an activity enunciated formal employment and 74% of them said are willing to study under a distance learning supported by ICT. Importantly, the sixth, seventh and eighth semesters are who make up a higher percentage this segment.

As for the motivation and communication factors, the results showed that these factors are positive for all students, particularly in participants who have: a) experience in distance education, b) willingness to study in this mode c) a formal job.

Finally, it was shown that 58% of students were undecided regarding lack of face to face relationship between teacher and student in the context of a distance education modality. However, the rest of the participants felt that the non-attendance dehumanizes the educational relationship.

## 9. CONCLUSIONS

According to the results, we can say that the design and implementation of the FAM Distance Education Project has success possibilities, despite the lack of experience with DE from students. This information can be asserted due to the fact that most students work already, and 74% would be willing to participate in a distance education mode.

In relation to the outcome of ICT can be concluded that the Distance Education Project of the FAM should consider the intensive use of these technological tools as a means of communication to support, facilitate and manage an ethical content required for the development of effective learning activities.

Another conclusion is that the motivation of students to participate in a distance education modality can be increased through information dissemination prior and timely. This information should emphasize how to communicate and interact with each other, which is clearly leaving his new role in DE.

With regard to the lack of face-to-face in a distance education mode is proposed to establish a propaedeutic course in order to induce students to their new role within the DE. It will also be necessary to implement in the Distance Education Project of the FAM a mentoring process as a fundamental support of DE.

Finally, it is important to note that this research is part of the basic diagnostics to design and implement the Distance Education Project of the FCA. This allows us to conclude that the development of this project represents a reference point for replication in other academic institutions of this university.

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4<sup>th</sup> International Conference on New Horizons in Education

# Attitude and approaches of faculty members regarding formal education and distance learning programs

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## Abstract

Distance learning, which is a formal or institutional education activity that brings together students, instructors and education materials in different locations via communication technologies, is an education method that becomes commonplace in the whole world and whose components start to be used more day by day in formal education. In distance learning, knowledge and communication technologies as well as the ability of faculty members to use these have importance. However, because of distance learning applications not being able to be widespread enough and the prejudgments to this area; it is being observed that the adaptation of faculty members teaching in formal education to distance learning methods take time.

In this study, attitudes of faculty members, who are teaching the same courses both in formal education and distance learning in Turkey Akdeniz University, towards distance learning, their observations regarding the similarities and differences in the behaviors of students being educated in formal education and distance learning, and the attitudes of students towards education and their active participation to class will be identified via survey method. As a result, recommendations regarding distance learning programs will be developed based on faculty members' attitudes and approaches towards formal education and distance learning.

Key Words: Distance learning, formal education, educational technology

## 1. INTRODUCTION

We encounter distance learning practices in higher education based on communication and information technologies as an education method becoming more wide spread every day. As is the case in the rest of the world, new departments providing distance learning services are being commissioned in our country every year, tend of new distance learning programs are started at foundation degree, undergraduate, college graduation and post graduate levels attended by thousands of students. Since 1982 when distance learning works started - (Özer, 1989; 4-5) the number of distance education programs in Turkey has increased. It will be possible to understand this development when we merely look at the increase of the two year period. While the number of universities providing distance learning was nineteen in May 2010, this number has nowadays reached forty eight (Uzem Türkiye, 2013)

In line with the spread of distance learning, some findings of research conducted on the efficiency of distance learning by students educated by these programs and lecturers teaching in these programs have revealed that there is a linear relationship between increasing awareness in distance learning and the efficient use of the distance learning system as well as satisfaction by the said system (Yiğit et al., 2010; 27 - Okçu et al., 2008; 370 – Tezci, 2009; 1290). However this situation also sets forth that the positive opinions on distance learning are

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restricted with the people utilizing the distance learning system. In fact, as may be understood from Yıldırım's (2010; 29-37) study conducted in Turkey between 2009-2010 and whereby the findings of distance learning research comprising lecturers and students have been amalgamated, it is observed that for groups of people who are uninformed about distance learning there are many differing attitudes such as the opinion that distance learning cannot be as efficient as formal education, indecisiveness concerning whether distance learning is a sufficient education system by itself, constitutes an alternative to formal education or that it shall remain merely as a supportive model of formal education and that therefore there is no clear standing against the structure of distance learning. For example Yıldırım (2010, 41-42) has determined in a study he has conducted on a private university's distance learning and formal education programs, that students learn faster and more efficiently with visual content and simulations, connect more regularly with lecturers and they view distance learning practices as more efficient, that distance learning however impedes social life, cannot set up a campus environment, that lecturers cannot efficiently use forums and that they have certain infrastructure problems. According to another study conducted among students attending both formal education and distance learning programs (Balcı and Tengilimoğlu, 2012), great majority of distance learning students are working and residing outside the town or region where the University is established. Therefore, we encounter distance learning as an education system addressing the actively working labor force and which in this sense fills a great vacuum. Therefore the efficiency of distance learning practices is of great importance.

As may be well known, the purpose of distance learning is to eliminate the time and venue factor in education. Therefore practices in distance learning are performed to substitute the elimination of the time and venue factors present in formal education. It is observed that distance learning is generally pursued by asynchronous, simultaneous and compound practices.

In asynchronous practices students can access class notes uploaded on the system anytime and anywhere they wish and study by downloading these on their computers. Simultaneous courses however are held on the date and hours at which they are announced. Lecturer can use smart boards, camera and microphones in classes. Students can watch classes live in an internet environment, ask their lecturers written or verbal questions and practice/implement applications. With educational television, teleconference and similar practices provided in the studio environments, it is possible to offer online courses over interactive interfaces (Alkan, Genç and Tekeder, 2003; 1-9) Apart from all the aforementioned, students may increase their knowledge by participating in the forum practices whereby they can share information on the course amongst themselves as well as with the lecturers and analyze additional sources.

All these procedures must be undertaken by certain standards to reach the quality target in education. These standards are classified as the quality of learning materials, the support of students by lecturers, system management, access facility, display and feedback mechanisms (Teknotürk, 2011). Apart from the abovementioned, web based distance learning and the web based distance learning systems must hold certain properties (Al and Madran, 2004; 4-7) Software used in distance learning ensures the recording and archiving of all kinds of activities, thereby facilitating the follow up on and measurement of the above stated standards. As is the case at Akdeniz University where the research is being conducted, there are Research and Implementation Centers in many universities providing distance learning, while there are content development units, data processing units and units such as photo film and web design in many higher education institutions. The activities held are performed by technical staff and lecturers employed in these units. For example, the weekly class notes in Akdeniz University where the research is conducted are prepared by the lecturer yet controlled by the content development unit and issued by adding visual materials supportive of education (flash, animation, changes in the visual order of class notes etc.). In formal education however these studies are generally conducted individually by the lecturer, while the measurement of the efficiency of the education is generally made either by informal means or methods such as surveys, interviews and grade points. Therefore, with the methods applied in distance learning, quality measurement in education and the control of education works can be applied more easily. It is

possible to compare the differences between methods applied in formal education and distance learning as follows:

Table 1. The differences between methods in formal learning and distance learning

Practice	<i>Formal learning</i>	<i>Distance learning</i>
Interactive course (Class environment)*	Available	Available
Out of class consultation	Regularly at the lecturer's office or over the internet if the lecturer has specified certain office hours for consultation. Accordingly, it depends on the lecturer.	Regular forum practices and kept under record
Regular forum practices and kept under record	Supplementary books, class note copies or having notes taken during class. Depends on the preference of the lecturer	Regular and enriched in content
Use of slide show / Visual description	Varies according to whether the lecturer uses slides regularly each week.	Regular class notes, video, animation etc.
Weekly study questions	Varies according to the content prepared by the lecturer	Regularly included in class notes.
Home-works	Once or twice per semester	Weekly short home works in much greater numbers over forum practices
Exams	At least twice a semester, being classical written exam and a test	Internet exams providing more frequent and faster examination yet with low security.

Although distance learning practices are theoretically accepted as a model assisting formal education, in depth research must be conducted on practices in both education systems and the effects of such practices on students and lecturers must be measured. In order to ensure contributions to the field in this sense, a response thereto shall be searched over the answers given by lecturers and distance learning practices the overall framework of which is set forth above by the Akdeniz University case and the correspondences thereof will be determined.

## 2. METHOD

The instructors lecturing in both formal and distance associate degree programs of the Mediterranean University were included in the study for measuring the attitude of the instructors towards the distance education and the difference between the distance education applications and formal education and the data were obtained by the survey method. In addition to the questionnaire, the instructors were requested to state in written whether they had observed a significant difference between the performances of the formal students and distance education students. Moreover, the distance education programs and its contents were researched; the applications of the instructors in the distance education during an academic term were observed and particularly the problems of the instructors lecturing in the distance education were determined.

Answers were searched for the following results in the research:

What's the degree of the differences between the applications of formal education and distance education?

Is there any significant difference between the active participation of the students to the courses in the formal education and distance education? What is the attitude of the instructors towards the distance education? What are the opinions and suggestions for the problems suffered in the distance education applications and/or improving the efficiency of the applications performed in the distance education?

### 3. FINDINGS

By considering the interview, questionnaire and observations with the instructors; the answers to the survey questions in the study are presented in tables.

#### 3.1. *The differences between the interaction level between the Distance Education and Formal Education*

When the instructors were asked whether there was a significant difference between the level of interaction with the student in the distance education and formal education, the findings in Table 2 were obtained. 60% of the instructors participated in the research stated that the courses were more highly interactive in the formal education, while 40% of them mentioned that there was no significant difference between the formal education and distance education in terms of interactivity. Of course, the contents of the course (for example; the interactivity of the course of sports culture in the formal education won't be the same with the distance education) or the way of lecturing of the instructor is considerably effective.

Table 2. Is there any significant difference between the active participation of the students to the courses in the formal education and distance education?

Answers	Number	Ratio (%)
The courses are highly interactive in the formal education.	12	60
There is no significant difference between the formal education and distance education in terms of interactivity.	8	40
The courses are more highly interactive in the distance education.	0	0
Total	20	100

#### 3.2. *Attitudes of instructors towards the distance education*

In order to determine the attitudes of the instructors towards the distance education, questions in likert scale were developed and searched under the following titles and the answers obtained were presented in tables.

Table 3. Level of sharing the statement of “When I don’t establish face-to-face communication with the students, the effectiveness of the course decreases”

Attitude	Number	Ratio (%)
I disagree	14	70
I agree	6	30
Total	20	100

Level of sharing the statement of “When I don’t establish face-to-face communication with the students, the effectiveness of the course decreases” was 30% and a positive result was obtained in favor of the distance education. Most of the instructors (70%) stated that the students were able to communicate adequately in the studio environment or by means of forum applications.

### 3.3. Attitudes of instructors regarding lecturing in the studio

It was investigated whether lecturing alone in the studio affected the motivations of the instructors negatively and the following findings were obtained.

Table 4. Level of sharing the statement of “Lecturing alone in the studio decreases my motivation”

Attitude	Number	Ratio (%)
I strongly disagree	6	30
I disagree	4	20
Neutral	6	30
I agree	2	10
I strongly agree	2	10
Total	20	100

Although a decided attitude couldn’t be observed, this statement was generally responded negatively and it appears that the instructors could lecture comfortably in the studio. It was observed that the instructors who had difficulty in their first lectures were adapted to the studio and presented a rather comfortable lecture, later.

### 3.4. Communication with the students in the distance education

The instructors were asked their opinions whether they could communicate adequately with their students in the distance education and the following findings were obtained. Being in consistent with the finding that the interaction level stated in Article 1 was at medium level, the level of sharing this statement was at medium level and it was responded positively with a difference of 10%.

Table 5. Level of sharing the statement of “I can communicate adequately with the students in the distance education”

Attitude	Number	Ratio (%)
I strongly disagree	2	10
I disagree	4	20
Neutral	6	30
I agree	8	40
I strongly agree	0	0
Total	20	100

### 3.5. Attitudes of instructors regarding forum applications

In forum application carried out for interview with students, sharing of information and references regarding the course, assignment (coursework) application, weekly study and etc., the attitudes of the instructors were investigated in terms of follow-up of assignment (coursework) and student’s studies and their levels of sharing the statement of “I can make the students do more assignments (course works) and applications by means of forum applications” were evaluated. The findings are presented in Table 6.

Table 6. Level of sharing the statement of “I can make the students do more assignments (course works) and applications by means of forum applications”

Attitude	Number	Ratio (%)
I strongly disagree	4	20
I disagree	0	0
Neutral	8	40
I agree	8	40
I strongly agree	0	0
Total	20	100

As is seen in the Table, a decided attitude regarding effectiveness of the forum applications became evident. It appears that since it became obligatory to perform forum application and opening new subject titles and carrying on communication with the students in the distance education, the instructors carried on such applications regularly each week.

### 3.6. Difference between using of course hours in the formal education and distance education

The level of sharing of the statement of “I can make use of the course hours more effectively in the distance education” was searched in order to investigate the opinions of the instructors regarding whether there was any difference between the use of course hours in the formal education and distance education and a decided positive result in favor of distance education was obtained. The findings are presented in Table 7.

Table 7. Level of sharing the statement of “I can make use of the course hours more effectively in the distance education”

Attitude	Number	Ratio (%)
I strongly disagree	0	0
I disagree	2	10
Neutral	4	20
I agree	10	50
I strongly agree	4	20
Total	20	100

### 3.7. Distance learning applications

The instructors were asked about their level of sharing the statement of “I frequently use audio and smart board applications in the distance education” and a positive result was obtained. The instructors stated that they frequently performed the smart board and audio applications. It was observed that the instructors used the podiums enabling direct applications on the student screen in addition to the smart board and microphone was particularly used in foreign language courses. However, it was observed it wasn't much preferred since audio transmission took long due to slow internet connectivity of the students and low quality microphones.

Table 8. Level of sharing the statement of “I frequently use audio and smart board applications in the distance education”

Attitude	Number	Ratio (%)
I strongly disagree	0	0
I disagree	4	20
Neutral	4	20
I agree	8	40
I strongly agree	4	20
Total	20	100

### 3.8. Offering solutions for the problems of students

It's observed that the problems of the distance education students like mid-terms, grades, registration are solved via e-mail; however, more frequent communication between the instructors and students affects the problems like affective components, success in course, motivation of the students and etc.

Table 9. Level of sharing the statement of “I can offer solutions for the problems of the students in the formal education more easily”

Attitude	Number	Ratio (%)
I strongly disagree	2	10
I disagree	2	10
Neutral	2	10
I agree	12	60
I strongly agree	2	10

Total	20	100
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### 3.9. Student's success and tracking the interest level

Vast majority of the lecturers that have participated to the study declared that they fail to closely follow the student accomplishment and interest to the class. Findings are depicted in Table 10.

Table 10. Support to the expression of "In distance learning I fail to control student's interest to the class and student's success"

Approach	Number	Rate (%)
Absolutely I do not support	2	10
I do not support	2	10
I have no decision	2	10
I agree	10	50
I agree completely	4	20
Total	20	100

### 3.10. Application of distance learning programs in formal education

Vast majority of the lecturers agree that "It is possible to implement forum seasons that executed in distance learning, online exams, opportunity to enter to the classes that are missed etc. into the formal education". The findings are indicated in Table 11.

Table 11. Support rate of the notion that "It is possible to implement forum seasons that executed in distance learning, online exams, opportunity to enter to the classes that are missed etc into the formal education "

Approach	Number	Rate (%)
Absolutely I do not support	0	0
I do not support	2	10
I have no decision	0	0
I agree	0	0
I agree completely	18	80
Total	20	100

Lecturer's orientations referring to the adaptation of distance education programs into the formal education have been observed significantly satisfactory. Also as far as observations held during one season course notes that were composed for distance learning were distributed to formal education students as class notes and again at class environment diagnosed to have been applied as presentations. In that respect, the fact that potentiated distance learning to be so popular in cyclical environment is also observed to have been approved also in the environment where the study is conducted. Searching out to enhance formal education using the gains inherited by long distance learning shall also improve the quality of currently applied training.

### 3.11. What are the variations between applications in formal education and distance education?

Programs conducted during one season under the course content; examined under the headlines of course note preparation, negotiation hours with students, brief homework, applications via internet environment, data or source allocation, term homework, giving presentation assignments to the students, laboratory/workshop works and applications made in formal learning and distance learning were compared. Primarily most remarkable difference between distance learning and formal learning is found to be concentrated on weekly class notes. Most of the lecturers (%75) for their classes at formal education do not compose notes weekly but in distance learning they stated out that they compile notes weekly. Some of the lecturers while follow a precise book in formal education in distance learning over a standardized template they said that they make weekly course notes. As well as observations made over one term lecturers at the beginning are mostly forced from preparing written class notes for every course, but timely it is established over a certain system and most lecturers compose class notes before the class and loaded into the system setting.

Another parameter observed at the applications is negotiation hours with students. In formal education while lecturers arrange regular negotiation hours in distance learning naturally negotiations with students are carried out at Formal Management System and Forum applications. Entire lecturers that are participated to the works (%100) every week made weekly negotiations with student via forums or social networks and produced solutions for the problems of the students, in the contacts held with students they have no incompleteness according to formal education.

When the brief homework and internet based works are taken into concern in formal education brief homework given in one term etc., applications while on average per each class is **1.5** in distance learning principally at forums weekly average brief homework given corresponds to **2.6**. Track of the homework in forum environment being lower and easier and available for archive formation avail brief homework in distance learning to be applied in more abundantly.

In summary, in distance learning programs when allocating homework lecturers allocating the course different than formal education in distance learning composes weekly class notes and compare to formal education more number brief homework/weekly internet etc., applications are available. Lecturers support the application of distance learning programs (course class, online exams, unit assessment questions etc) into the formal education (%88.9) and state out that they use the materials that apply in distance learning also into the formal education.

### *3.12. Approaches, perceptions and recommendations of lecturers for distance learning*

To learn approaches, perceptions and recommendations of lecturers for distance learning, ideas for problems encountered in distance learning in depth negotiations were held with lecturers whom joined to the study and questions such as “*What Are The Main Problems In Distance Learning Programs In Your University?*”, “*What are the Required Interferences in Distance Learning to Improve Efficiency in Distance Learning?*” and answers below down were provided:

### *3.13. What Are The Differences Between Distance Learning And Formal Learning?*

- In fact distance learning must not constitute an alternative for formal learning. Information technologies must taken place in every segment of instruction programs and applications that are applied in distance learning must be dispersed over the entire segments of formal education.
- Distance learning has advantages for employees and especially for disabled individuals. Especially due to employment in formal learning it requires expansion for students whom are not able to attend to classes satisfactorily.

- In formal learning any student whom is not interested into the courses with as much number lecturers as he/she wants fails upon face to face communication. Also in distance learning enthusiastic and successful student even though via internet channel assimilates the information given and earns success at the classes. For example some of our students in distance learning are found to be more successful than widespread of students at formal programs. Also in formal education only the ones coming to the exams or although making participation to all classes there are some very unsuccessful students. Therefore, I do not very huge difference between formal education and distance learning in terms of quality, level, even applications. In distance learning, when student consultancy is made successfully and efficiently disadvantage emerged due to lack of same time and environmental unification shall be eradicated.
- In distance learning if students achieve high attendance to live form studio classes also viability in formal learning shall also be provided there. Only disadvantage of the distance learning since all students follow classes at any time they wish a disorganized structure shall be emerged. Also in formal education if low attendance is gained that shall negatively effect lecturers. Apart from that, I suppose there is no other difference between distance learning and formal education.

### 3.14. *“What Are The Fundamental Distance Learning Problems In Your University?”*

- Importance given to formal education from the lecturer’s point I suppose is underestimated in distance learning courses. For that reason, I suppose we as the lecturers offering classes must challenge much more.
- Principally during university exams period over our university’s official web page or from other platforms I suppose advertisement facilities have been ignored.
- For distance learning classes a class note template shall be compiled, this must also be adopted to formal education, whereas according to the course content interrelation level must be able to be intensified. In distance learning foreign language training is more harsh compare to formal education. New organizations are available in that matter.
- Distance learning likewise plenty of universities also in our university especially student affairs and remaining relevant personnel’s lack of knowledge in that matter I suppose led to student’s failure to gain desired gains from the system.
- Distance learning course fees paid for lecturers may be required to be risen. In that matter, from distance learning students additional material fee may be claimed. Because, they create much less costs than formal program students.

## 4. CONCLUSION

Both in formal and distance learning in the present which applied in association with lecturers emerged circumstance generally; lecturers generally is positively oriented to distance learning, they also anticipate to apply plenty of gains inherited by distance learning into formal education. Included in formal education but paying attention to motivate students into that system and incompleteness of definitions related to formal learning lecturers determined some adaptability problems owing to newly developing system and technical problems.

Another point appealing attention in the study in distance learning no interactive communication problem exist during courses, but in extra class works factors debilitating student’s motivation or such as failure to track student performance are present as the negative structures. For example, in formal education for students whom are at the

class but poorly interested at the class the lecturer may execute some involvements to appeal attention into the class, whereas, in distance learning contact between student whom did not make attendance with class and lecturers is nearly negligible considering as if entirely cancelled. If the student out of cyberspace class also not attended to forum applications lecturer even will not be aware of the student's attendance, thus that shall always shaken student and lecturer inter-relations. To eliminate negative outcomes of lecturers to track student's performances a lot of methods must be developed. Higher magnitude advertisement of distance learning and its expansion; principally employees, disabled and the parties whom are graduated from the other units and striving to sophisticate their knowledge accumulations its attractiveness must be dispersed over higher masses that has been proved in that present study. Eventually, approach of lecturers toward distance learning may be defined as if it is open to development and oriented to apply distance learning opportunities into the formal education. Negative sides of distance learning are referred to lack of monitoring the student performance, to fail to make rapid solutions for problems. In association with the sophistication of distance learning applied methods and technologies if adopted to formal education makes us to anticipate as if in the future more desired outcomes shall be derived from the both education types.

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4<sup>th</sup> International Conference on New Horizons in Education

## Autopoiesis and dance in the teaching-learning processes.

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### Abstract

In recent times, the progresses of the human sciences and neurosciences have shown that the body experience has a deep relationship with the emotional and cognitive processes. So, think of the human being as a fusion of body, mind and emotions, it offers the opportunity to explore new ways of giving value to the body experience of the child. Therefore, the dance education is a discipline appropriate to the world of childhood, it helps the rapprochement between body and mind: the language of the body in dance merges with the language of the soul. In an enactive perspective, dance can be compared to the flow of languaging and emotioning; language is not placed in the brain structure and is not a physiological phenomenon of the nervous system but it is an autopoietic process. The emotioning flow is conditioned by languaging, as well as languaging is complementary to emotioning. Dance, as an ethical possibility for man, is an example of languaging and emotioning, because with the body language humans create and convey emotions subjectively interpreted by the beholder. Therefore, dance can be considered an educational activity, like the other disciplines contributing the formation of personality, ensuring physical, mental and intellectual wellbeing. The dance education in schools may be proposed through the didactic laboratory, it represents a time and a space where you want to harmonize the child's personality through the integration of thoughts, feelings, emotions, motor skills and physicality.

Keywords: *languaging, autopoiesis, emotions, dance, laboratory.*

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## 1. Introduction

Nowadays the progress in humane sciences and of neurosciences has highlighted how the body experience is closely linked to the emotional dimension and to the cognitive processes, ending up in a holistic perspective of the subject of learning that is essentially meant as a subject-person. Thus thinking of the education of corporeity, in this context, means thinking of a sort of education based on recognition and acceptance of and giving worth to one's own body on the one side and, on the other side, it means thinking of new educational ways that can give worth to the child's corporeity in its holistic unity of body, mind and emotion.

Over the centuries, school has been conditioned by the deep body-soul dualism and has often produced educational systems based on giving privilege to rationality, that have fostered a dualistic view of the body and of the mind meant as separate fields of reference.

Dance, seen as a particular form of body expressiveness, seems to cancel the borders between body and thought: with dance, body language and soul language mix in the harmony of being; here it takes on specific and peculiar educational goals and contributes to shaping the global personality of the subject- person under the physical, psychic, intellectual, emotional and affective profiles.

## 2. Autopoiesis and Dance

Under an enactive viewpoint, it may be compared to the languaging and emotioning flows, where it is not primarily to be found in the brain structure and is not a structural physiological phenomenon of the nervous system and, in a relationships environment, it exists and springs from the structural coupling of organisms and is strictly linked with the emotions of living together. In this matter, Maturana and Varela coin a new word, languaging, which indicates giving shape to my experiences and my emotions (conversing); in this context, emotion is the stimulus, the motivating element that leads to action.

The emotioning flow is conditioned by the languaging flow, just like the languaging flow is complementary to the emotioning flow. The interaction between the languaging and the emotioning foster the mutual consent domains that, in their turn, are the precondition for the language development and lineage formation (Pastena 2011).

Living in a conversational flow implies a set of self-referential-recursive coordinations of languaging and emotioning. The way we any time participate in the flow of languaging is the outcome of our interactions related to the particular conformation that our structure presents at exactly that moment (Maturana H., 1988).

Maturana and Dávila state that the whole socio-cultural set up stands on the pleasure of living together and on the capability of loving; it is emotion that supports and makes man a social being capable of generating /self-producing his knowing how to be a man in accepting others (Maturana&Davila, 2006).

Under this profile, dance seen as man's ethical chance, is a languaging and emotioning example, because with body language one can create and arouse in others emotions that can be subjectively interpreted by anyone who looks at them. In the act of dancing emotion defines the action; in this perspective, emotion and love are the foundation of man and the foundation of society. Here dance becomes a means of accepting the other man because it is able of giving emotions to those who observe and admire the dancer. In the choreography of dance, the dancer and the observer (who acts and who benefits) are part of an unusual perception: the existence of man and the situation of the world are recreated in the imagination. The imagination transcends the real and gives life to the choreography (Zagatti F., 2006). Dance, in the philosophical perspective, is considered the art of anti-dualism, where the dancer is able to contain, in the physical world, other worlds. Dance can be defined as the art of using movement to communicate, create worlds and build their own identity.

Dance teaching in schools takes on the value of dance education; it complies with the child's natural inclination to movement and favors an eloquent communicative language. Learning is not provided by an order of

prearranged codes, but springs from a spontaneous, natural and free movement that leads to a process of self-productive regeneration and of autopoietic determination of one's being.

All human beings live in on-off mutual consent emotional flows, which they learn from the coexistence of other human beings. In a socio-cultural environment of living together, when human interacting is outside the domain of the emotioning and languaging flows, one enters a behavioral mechanism that increasingly reduces the chances of using mutual consent acts. This leads to a restriction in recognizing the other as the other legitimate one; it also leads to a loss of the wish of living together, to discord in cohabitation and finally, to the general disruption of society (the structural pairing-off no longer occurs as a spontaneous and lasting life style) and, consequently, it brings about the end of the socio-cultural order of reference .

On this subject, Maturana states that "We human beings are living systems that exist in language. This means that although we exist as human beings in language and although our cognitive domains (domains of adequate actions) as such take place in the domain of languaging, our languaging takes place through our operation as living systems. Accordingly, in what follows I shall consider what takes place in language[,] as language arises as a biological phenomenon from the operation of living systems in recurrent interactions with conservation of organization and adaptation through their co-ontogenic structural drift, and thus show language as a consequence of the same mechanism that explains the phenomena of cognition" (Maturana H., 1988).

Under this view point, dance can be considered as a particular form of languaging and can be used as a means of acceptance of the other, because it can arouse emotions in those who are together in a dancing/languaging domain and in those who co-participate in the dance time, which generates/self-produces the harmony of living.

Thus, the experience of the educational dance becomes an opportunity to re-discover the body (that becomes art expression) as a means to bring about meaningful and personal messages. One discovers the language of emotion and understands that the qualities of the movement vary according to the emotions and the sensations experienced. With dance, everybody improves their awareness and body perception in a structural coupling dominion where one learns to listen to and to know one's own body), interpersonal relationships are strengthened and everybody is valued in their being different: the contact with the mates, thanks to the activities carried out, is the first step in creating cohesion in a group that can work together. With dance one works in the field of wellbeing and to build one's own identity in a harmonious and creative dimension; the educational dance includes the expertise of doing (by expanding the basic movement language), that of creating (by boosting imagination and fancy), that of observing (by acquiring observation rules and movement analysis). Elicited by instinct, a child is put in a position to create and invent movements and gestures coming from his innermost feelings. A dancing pupil becomes a creator of worlds in an autopoietic process where he discovers himself and his inner capability of being.

### **3. Educational dancing and the teaching laboratory**

Dance laboratory, which is structured in the Italian Primary School with interdisciplinary and transdisciplinary methodologies, can be programmed using the "project theme", which allows to intersect dance and school planning, using topics such as intercultural education, education for visual and plastic arts.

Educational dancing in Italy is suggested in schools with a teaching laboratory that is planned and made available by the dance teacher. The laboratory is meant to harmonize the child's personality by integrating thought, sensitivity, affectivity, and motor skills. The laboratory represents space and time and its use is divided in various stages, starting from admittance, warming up, exploration right to composition and execution of the planned training. In the time-space of the laboratory, the child is thought to recognize, experience and familiarize with the main principles of dancing, such as action, space, time, dynamics and relationship.

The dance workshop is characterized by the ritual of its phases; repetition allows us to capture the improvements in pupils' behavior, the assimilation of the rules and autonomy of action. The scheme that is used

in a dance laboratory provides some didactic phases: welcoming, heating, individual and collective exploration, individual and collective composition, the final stage with the vision and reflection.

There is a set of activities that can be carried out and can be divided as follows:

Activities carried out during the acceptance stage.

Silent Good morning: that is when they learn how to say "Hello" to their mates just with a gesture or a movement, without using the voice. The teacher may ask to use either slow or fast, either small or ample gestures, or also a gesture showing their mood of the day, etc..

Activities during the warming up stage.

Painting with the body: the body will be used as a painting brush by painting circles with the head, points with the elbows, straight lines with the feet etc..

Activities carried out during the exploration phase.

Being invisible: the students are asked to play with their bodies imagining that they are alternatively visible and invisible. In this, the learners must be able to control the parts of their bodies.

Being wind: one child will have to imagine that he is the wind, the other one imagines he is the object blown by the wind. The one representing the wind will show where the wind comes from and how strong it is without ever touching his mate's body; the one representing the object, must move accordingly.

Being the humor of the body parts: image a sad arm (and move it as though it was sad), then move it as though it was happy, angry etc..

Activities carried out during the composition stage.

The magic wand: the magic wand will show the transformation of contrasting elements: summer/winter, night/day, good ones and bad ones etc.

Adjectives: One chooses an adjective and tries to shape it up with his body; then he tries to show the various grades of the adjective, : the comparative and the superlative.

Poems: recite poems accompanying them with gestures and movements (solo, in pairs or in groups)

The learners get in touch with a new person, that of a specialized, professional dance teacher, with pedagogic, educational and artistic expertise. The aim of his work is to arouse the child's body perception and emotions by stimulating his expressiveness and making him wish to improve in inventing and observing. It is important that the dance teacher creates a positive rapport with the learners, getting them to abide the rules so as to establish the ideal conditions where the lived experience may become educational experience. The dance teacher must be able to get all the information in his teaching environment; in the laboratory he can link up with the other disciplines in a cross-curricular viewpoint by taking decisions on the music and the theme to deal with, starting from the interesting points of the world of motions and from everyone's imaginary world. The stimulus can be an object, an emotion, a natural element, a trade, or any event that can lead to the world of dance.

The educational dance can give new shape to the experience of growing, it fosters the physical and mental development as well as the child's emotional enrichment by contributing to building his own identity and helping to shape a sensitive, harmonious body; it makes the child careful in listening and relating with the others, as well as the keen observer of other people's movements.

#### 4. Conclusion

In recent years, the Human Sciences were very interested in the significance of corporeality in education. In fact, think of man as inseparability of body, mind and emotion offers the chance to experience new ways of educational. In Italy, physical education and dance are today in the national school curriculum, but do not have a central role. The child, in the process of personality formation and construction of an identity, before the mental awareness of having a body, is a body that knows and feels emotion (Gamelli, 2011). The dancer and choreographer Martha Graham said that the dance is a hidden language of the soul; a soul that dance tells much more of a soul that speaks. Dance expresses us in an authentic way manifesting the deep part of our being.

Another dancer Doju Dinajara Freire says, instead, that dance is something that belongs by nature to anyone. In conclusion, bringing the thought of Rudolf Laban, dance intensifies every day life; it is like a poetic movement that unfolds in a time and a space (Laban, 1999).

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# A behaviour study on ablution ritual among Muslim in Malaysia

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## Abstract

Ablution is a ritual washing performed by Muslim and it is part of compulsory activities to ensure cleanliness before the Muslim perform prayer it has been recorded in the Holy Book's of Quran. In general, ablution followed by washing on particular body, based on *Quran*, *Sunnah* and the Scholars consensus, the ablution ritual which they have a few rules and manner when performing the ritual. However, base on research the Malaysian Muslim knowledge on ablution is very basic and not detailed. In this work we reported about the Muslim understanding towards their knowledge on ablution and propose a tool to control the behaviour of Malay society on ablution ritual to minimize usage of water. In all probability, a survey has been done to capture the ablution ritual among Muslim society in Malaysia. The groups investigated were in between of 20 to 40 years old. Most of Muslims show their understanding of performing ablution procedure. Most of them, practicing more than one time while sweep water on compulsory body as required. However, with most of male agreed and the rest female disagreed with the excessive consumption can be categorized abluitions as a waster while performed the ablution, but while the consuming water in ablution ritual refer to the Quran all of them agreed. In order to overcome this problem respondent mostly agreed with the suggestion of introducing new design for ablution tub design system. As conclusion, ablution ritual in Malaysia was reflected by the human behaviour and only the ablution performing system will able to control their habit in order to reduce of water usage while practicing the ablution.

Keywords: Ablution performance, human behaviour, water.

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## 1. INTRODUCTION

In Islam ablution is a ritual washing performed by Muslim and it is part of compulsory activities to ensure cleanliness before they performing prayer (Besari A. R. A, Zamri R, Yusaeri A, Palil M. D, Prabuwono A. S, 2009). As claimed by Abu Hurairah, Prophet Muhammad Peace Be upon Him (PBUH) mentions that "He will only accept the prayer of a person that has done ablution ritual" (Rahman Z. A, 2012). In general, ablution followed by washing on particular body. The washing ritual it involve s washing at four compulsory area followed by washing of face, both of hand, forehead to crown of head and both feet. It also recorded in the Holy Book's of Quran (Johari N. H, Anwar R, Hassan O. H, 2012), "O you who believe! When you rise up to prayer, was your face and your hands as far as the elbows, and wipe your heads and your feet to ankle (Kamal A. M, 2008). Based on Quran, *Sunnah* and the Scholars consensus, the ablution rituals have a few rules and manner when performing the ritual.

Within the teachings of Islam, it recognizes have four *mazhab* of Sunni Islam, which is a *mazhab* Imam Hambali, *mazhab* Imam Syafi'i, *mazhab* Imam Hanafi and *mazhab* Imam Maliki (Fox J. J, 2004). The majority of Malaysian Muslim it follow a Sunni Muslim of Imam Syafi'i. As stated by Walker E. W, (2001), the standard argument is that Sunni Islam ultimately prevailed over Shia Islam in the region because it was better able to accommodate local practices and traditions, including eventually Sufism, a mystical and popularized form of Islamic worship. Moreover, in this work we reported about the Muslim understanding towards their knowledge

on ablution and propose a tool to control the behavior of Malay society on ablution ritual to minimize usage of water.

## 2. RESEARCH METHOD

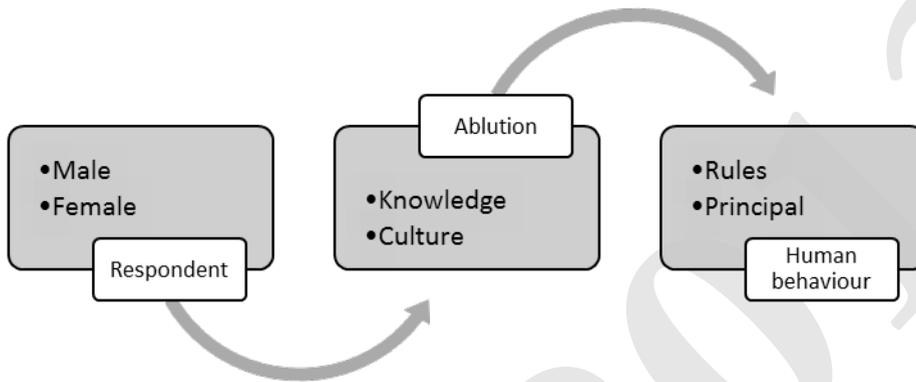


Figure 1. Research process

The figure 1 shows the flow chart of research process in this work. Thru survey at Masjid Sultan Salahuddin Abdul Aziz Shah (MSSAAS) Shah Alam, a survey has been done to capture the ablution ritual among Muslim in MSSAAS. The survey was systematically structured and divide into several sections and had been complied using factors identified in the background study. The respondents were pickled randomly base on different background (Kamaruzaman M. F, 2012).

The question covered several regarding human behaviour while performing ablution ritual and understanding respondent about ablution ritual in different gender. The groups investigated were in between of 20 to 40 years old because to identify how this age area think about the ablution behaviour. Following the compulsory pillar required while perform the ablution among of them can identify the following compulsory pillar but some of them lack of knowledge the ablution ritual.

Majority of Malaysian Muslim practiced more than one time while sweep water on compulsory body as required. However ablution repetition for one times it can be done, it show that the Malaysian Muslim does not have ablution's knowledge in detail, so it can recognize how deep the Malaysian Muslim knowledge of ablution.

When it is refer to questionnaire, we declare the excessive consumption can be categorized ablutions as a waster it shown the differences responds between men and women. It because to classify knowledge between men and woman among Malaysia Muslim society about rules repetition when performed ablution and principal during perform ablution ritual as stated in general knowledge. The result come out with 50 respondents from men answer yes and respond from women not consistent, when 24 respondents answer yes and 26 respondents answer no, as shown in figure 2.

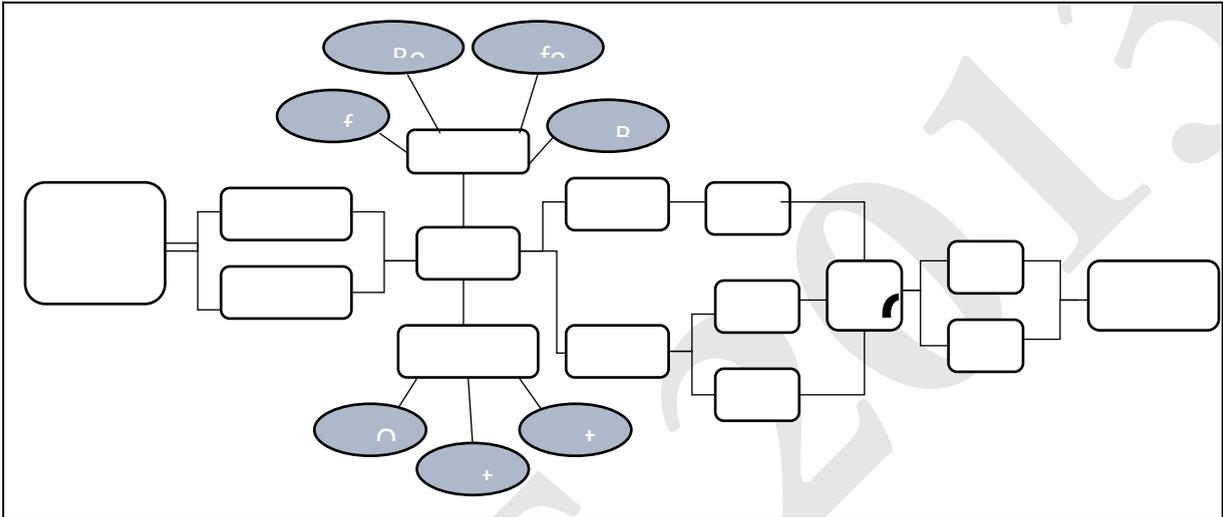


Figure 2. Level of knowledge among the Malaysian Society.

The figure 2 shows how deep level of knowledge among the Malaysian Muslim society it can identify when we declare the wastage in terms of Islam is highly forbidden practices as mentioned in the Quran, the result shown with totally different. When all of respondent from women consist answer yes. It because to classify between men and woman thinking about rules and principal during perform ablution ritual when refer to the Quran. It related with the importance of consuming water while performing the ablution should be controlled among with women and men because ablution ritual was reflected by the human behaviour. For the reason that to identify the human behaviour should be control or other wise.

### 3. RESULT AND DISCUSSION

Most of Malaysian Muslims show their understanding of performing ablution procedure but they knowledge on ablution is very basic. Majority of them practiced more than one time while sweep water on compulsory body as required because the proper way of ablution ritual is washing the particular body for three times as done by the Prophet Muhammad PBUH (Al-Bukhari M, 1986). With the intention of the average of ablution process required of about 6 to 9 litter of water volume, however as Prophet Muhammad PBUH has done is a *sunnah*.

Amount of water about half to 2 litters it enough to apply on the body (A. R. A Besari and et all, 2009), because certain *hadis* mention the Prophet Muhammad PBUH used to perform ablution with one *mudd* of water (equal to

¾ liters) (Faruqui N. I, Biswas A. K, Bino M. J, 2001), (Faruqui N. I, 2003). On the other hand, when we declare the excessive consumption can be categorized ablutions as a waster, the respondent from men answer yes, but respondent from women not consist when 26 respondent answer no and 24 respondents answer yes. However when we declare the wastage in terms of Islam is highly forbidden practices as mentioned in the Quran, they answer yes, particularly respondent from women. When declare about wastage in general they are agreed with the statement but when the wastage refer in the Quran the change their thinking. It shows that women need a system or tool to control their behaviour before their performed the ablution ritual because human behaviour it something that come naturally. However it is possible to be control using a tool or mechanism (Tomasello M, 1991), (Henrich J, Gil-White F. J, 2000).

#### 4. CONCLUSION

As conclusion, ablution ritual in Malaysia was reflected by the human behaviour and only the ablution performing system will able to control their habit because human behaviour it natural to have a tool to control it. In order wise, it to reduce of water usage while practicing the ablution. In order to overcome this problem respondent mostly agreed with the suggestion of introducing new design for ablution tub design system

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# A calculation scheme for measuring the efficiency of knowledge texts for vocational education

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## Abstract

Innovative tools developed in education should be in line with the economic reality. The innovations of disadvantageous cost-to-benefits ratio could be interesting, but not sustainable in use for a long time. The paper provides a calculation scheme to measuring the efficiency of investments into such an innovation in education - knowledge texts. As other authors focus on the learning outcomes reached through the texts or time savings in a learning process, we are dealing with knowledge texts from the viewpoint of economic efficiency. General calculation scheme as well as the case study on its application is provided in the paper.

*Keywords: Knowledge text, knowledge unit, calculation formulas, economic efficiency, vocational training.*

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## 1. Introduction

Increasing number of innovations in business processes, ICT or technologies as well as a number and speed of changes in legal environment requires permanent enhancement of knowledge of all employees, managers and company owners through vocational education. It is essential to ensure, so that the learning tools used for such an education are not only useful, but also time-saving and cost-efficient. The educational tools for educated people should provide the addition to data and information, also knowledge, which can then be applied in practice and solving specific problems within and outside the company. The article presents knowledge texts as a possible tool for vocational education and also examines the economic efficiency of investments in these teaching tools from the perspective of corporate costs and benefits.

Truneček (2004) emphasizes the importance of developing people skills knowledge, sharing knowledge, their optimum, efficient and economic use of innovation and work with knowledge. On the other hand Kislingerová et al. (2008) describes the importance of innovation for the development and prosperity of the company. Tomek and Vávrová (2009) regard the innovation as one of the important parameters not only for external relations, but also for internal relations firms and organizations. Innovation is the impetus for the development of business concepts. Tidd and Bessant (2009) show that management innovation in the enterprise is often very difficult, innovation in an organization requires vocational training, a number of textual support in the form of directives, guidelines, methodologies, regulations, etc.

Enhancing the quality of formal education as well as corporate vocational training is one of the most important topics. It can be documented by the amount of public financial resources allocated to the training; for instance, in the current call (one of many) for projects on the training (ESF, HREOP, call No. 94), there is allocated 700 mil. CZK. It is crucial to spend the resources efficiently so that it becomes an investment, not consumption.

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Schollevá (2008) states, that the economic efficiency of investments is considered the relationship between economic and social effects. It is expressed by comparing the economic income investments with a value of costs incurred to achieve them. That the investment was considered economically effective, it must be the overall effect resulting from its use be higher than the costs of the investment. Economic efficiency indicators, that are used to evaluate, taking into account individual criteria to investment decisions.

Basl and Blažíček (2008) describe the effects the introduction of new information and knowledge support. Effects can be both a financial nature and non-financial nature (process effects, learning and growth). Innovations in information and knowledge-based systems require a significant investment, so organizations are monitoring for "business effects", ie. the emphasis is on saving and return on invested funds.

Many authors also deal with the evaluation of efficiency of education and different pedagogical models (Tudor, 2012, Singer and Moscovici, 2008). Starý and Chvál (2009) describe the models of quality and efficiency on a pedagogical level. Efficiency of individual learning methods is one of the most common aspects of evaluating the efficiency in education (Maňák and Janík, 2009). Special attention is given to working with textbooks. Experiments dealing with textbook analysis clarify the impact of individual characteristics and parameters of the textbooks on learning outcomes (Mikk, 2007). More authors, e.g. Duric and Song (2012), Asaishi (2011) or Tannenbergová (2009), aim at the analysis of educational texts. Typically, they evaluate and measure characteristics such as the didactic facility of textbooks, the difficulty of the text, terms analysis, rate of information density, etc.

Interdisciplinary cooperation among related areas dealing with knowledge acquisition and sharing allows using methods and approaches developed in Knowledge Engineering in pedagogical and didactic disciplines. Knowledge Engineering provides formalized models for representing explicit knowledge, which is the object of transfer and sharing in education or consultancy with experts. Some authors, e.g. Glava and Glava (2011) or Brožová, Houška et al. (2011), emphasise the importance of the General Systems Theory and systems approaches for this purpose. The systems approach was also used for the development of a new representation of knowledge, the knowledge unit (Dömeová et al., 2008). The knowledge unit is a very appropriate form of knowledge representation for human users, because it allows expressing the formal model of knowledge in a natural language as well as creating texts including knowledge in explicit form (knowledge texts). Also the systems approach is suitable for developing metrics for the evaluation of learning outcomes, which are understood as one of the indicators of the knowledge transfer quality (Rosales et al., 2012).

Rottensteiner (2010) mentions, that the comprehensibility rate of a text is the key variable for This is in line with our purpose. This paper stems from the necessity to suggest the methodology for measuring the efficiency of knowledge transfer realized by the knowledge texts. Also we are dealing in case study with the issue of vocational training for farmers by using knowledge texts.

In this area, educational support of farmers as well as sharing knowledge among them is limited or does not exist at all; this is reflected in the priorities of the CAP for the programming period 2014-2020 (RSZF, 2012).

Therefore, it is important that knowledge and expert systems that help in solving problems, as well as didactic tools, have started to develop. Many authors, e.g. Kawtrakul (2012), Song et al. (2012), Léger and Naud (2009), Saunders et al. (2005) have started deal with knowledge and expert systems used in agriculture in some chosen problem domains, but outside the Czech Republic environment. In our previous works we suggested several innovations leading to the improvement of educational texts. As specified in Materials and Methods, we worked with a new representation of elementary piece of knowledge – knowledge unit – and developed a procedure to creating educational texts based on the knowledge units. The objective of this paper is to present a methodology for measuring the economic efficiency of the procedure leading to the development of knowledge-based educational texts. The methodology is also applied in a particular case study on vocational education in agriculture sector.

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## 2. Materials and Methods

### 2.1. Knowledge units

In further text we understand “knowledge text” as a specific form of the text, which expresses explicit knowledge directly. Based on our previous research (Dömeová, Houška and Houšková Beránková, 2008) we see production rules and their advanced version, knowledge unit, respectively, as the most suitable form to representing explicit knowledge in the text.

Formally, we suggested to define knowledge unit as (Dömeová, Houška and Houšková Beránková, 2008)

$$KU = \{X, Y, Z, Q\}, \quad (1)$$

where

- $X$  stands for a problem situation,
- $Y$  stands for the elementary problem being solved in the  $X$  problem situation,
- $Z$  stands for the objective of solving the elementary problem,
- $Q$  stands for a successful solution of the elementary problem (result).

Next we should explain the adjective "elementary". The rate of elementarity is determined by the user and his/her ability to understand and apply the rules included in elementary knowledge. If any part of the knowledge unit is too difficult, so the user is not able to work with the knowledge unit efficiently, it is necessary to divide such a complex problem into more sub-problems understandable for the user. This is in accordance with previous intuitive views of knowledge units and their definitions (Zack, 1999).

Even if there is no unique way to create sentences based on the production rules (Kendal and Creen, 2007), we may always express the knowledge unit in the following textual form (Dömeová, Houška and Houšková Beránková, 2008):

If we want to solve an elementary problem  $Y$  in the problem situation  $X$  to reach the objective  $Z$ , then we should apply the solution  $Q$ .

### 2.2. Knowledge text

We also specified how to distinguish between a standard text and knowledge text, and how to create the knowledge text. For this purpose, we developed the following procedure (Houška, Rauchová, 2013).

Step 1: Select a standard text for transformation

We can either choose a standard text that will be transformed, or we can use the codification of knowledge, based on knowledge acquisition from the experts. A procedure of knowledge elicitation from the expert is described in the paper by Cowan (2001). The aim of this activity is to get the procedural knowledge that can be represented by the methods used in knowledge engineering. The time-consumption of the interview depends on the extension of problem domain.

Text selection is the crucial part of the process. This is not the issue of efficiency, but effectiveness. Formally we are able to transform any text into the knowledge form, but it is sometimes useless. Two typical cases follow.

- The purpose of the text is to provide information. This is a meaningful purpose of the text only to inform the reader about some facts, events or other realities. We can often meet informative texts in fact-based disciplines such as history or geography.
- The text in an original form is already well-structured. We usually meet highly-structured texts in much formalized disciplines such as mathematics, physics, operational research, etc. The texts naturally describe procedures and algorithms and so the knowledge has been already expressed in its pure form.

### Step 2: Analyze the text to identify knowledge units in analytical form

In a standard text, knowledge is usually hidden. To reveal it, we have to analyze individual sentences, paragraphs and sections. On the level of individual sentences, we should aim at complex sentences and find three-dimensional constructions (Havlíček, Brožová and Šubrt, 2006): the relationship between two objects supplemented by the objective of a related problem solved. The text is sometimes written in simple sentences or compound sentences. In this case we should analyze whole paragraphs to identify the subject of the knowledge first.

After the identification has been done, we can formalize the knowledge extracted from the text and represent it through a knowledge unit. In particular, we identify all components of the knowledge unit (X, Y, Z and Q) and assign the text statements to them. Let us note that this is still analysis, not synthesis; that is why the individual statements reach the quality of information only.

### Step 3: Convert the analytical form of knowledge unit into a natural language

This phase covers the synthesis, which allows us to merge information included in separated parts of the knowledge units and express it in the natural language. Obviously, the knowledge unit is being expressed as a complex sentence. On one hand, it sometimes makes the sentence longer than the original one; on the other hand, there is no doubt on the existence of the knowledge in the text. The sentence could be corrected stylistically, but its sense cannot be changed.

### Step 4: Add auxiliary information and data supporting knowledge into the text

No text can be based on complex sentences representing individual knowledge units, because it would be extremely difficult to read. Thus the auxiliary information is returned back to the text support knowledge, explain its segments, provide necessary data, etc. This approach is in concordance with a common understanding of the knowledge chain Data - Information - Knowledge (Aven, 2013).

## 2.3. *Effects leading to savings*

To determine the effect of using the knowledge of the text leading to increased productive time in the organization was based on an experiment by Rauchová and Houska (2013). Rauchová (2012) designed a formula. Increase productive time has eventually leads to savings. The effect of using the knowledge of the text is based on the percentage difference in the accuracy of solutions of identical examples using KT and ST, the effect is reduced by more time-consuming KT necessary for the preparation of the text, further reducing the effect of each case incorrect solve the problem, since it must read the average time required for examination and time spent on the repair of solving the problem (about half the average time at work to KT) and the subsequent time to have a second inspection (approximately half of the time allocated to the first check). Rauchová (2012) has said, that the usage of knowledge-based texts leads to an increase in productive time of 4.2%. Verification of the coefficient on a representative sample of students is the subject of further research.

According to Schoellová (2008) investment is one of the essential conditions of long-term prosperity of the company. It is characterized by a larger one-time or short-term spending early and the expected return of the funds and their evaluation. The main criterion for selection is the ability to evaluate investments. When deciding on possible investments should take into account the vastness and non-recovery of investment, as well as risk and time factor. It is necessary to note that the adoption of inappropriate investments may change the company's prosperity. That the investment was considered economically effective, it must be the overall effect resulting from its use be higher than the costs of the investment. Dynamic indicator (Net Present Value) based on discounted cash flow analysis is often used for measuring the efficiency of investment. Net Present Value (*NPI*) can be count as follows:

$$NPV(i, N) = \sum [R_t / (1 + i)^t], \quad (2)$$

where

- $R_t$  stands for cash inflow minus cash outflow,
- $i$  stands for the discount rate,
- $t$  stands for the time of the cash flow.

### 3. Results

#### 3.1. Calculation formulas

Calculation formulas were designed for costs and benefits analysis. The usage these formulas in the same steps corresponds to methodology for measuring economic efficiency of an investment into the knowledge texts used for vocational training.

Costs Analysis

Following formulas describe costs for investments into knowledge texts.

$$C_{tot} = C_{cod} + C_{ku} + C_{cr} + C_s + C_{up}, \quad (3)$$

where

$C_{tot}$  stands for the total costs of the codification of knowledge, creation of educational texts and actualization of its content (currency units),

$C_{cod}$  stands for the costs of codification of knowledge altogether (currency units),

$C_{ku}$  stands for the costs of services: a one-day course learning to knowledge representation and use of knowledge units (currency units),

$C_{cr}$  stands for the costs of creating educational texts (currency units),

$C_s$  stands for the costs of services: proofreading and didactic control (currency units),

$C_{up}$  stands for the costs for updating of educational texts depending on problem domain and branch (currency units).

$$C_{cod} = \left( \frac{p}{t_{cod}} \right) \cdot (w_{ki} + w_{ex}), \quad (4)$$

where

$p$  stands for a number of pages that need to be done (pages),

$t_{cod}$  stands for time-consuming codification (pages / hour),

$w_{ex}$  stands for the wage rate of the expert (currency units/ hour),

$w_{ki}$  stands for the wage rate of the knowledge engineer (currency units / hour).

$$C_{ku} = n_{per} \cdot p_{rku}, \quad (5)$$

where

$n_{per}$  stands for a number of people participating in the transfer of knowledge representation and use of knowledge units (number of person),

$p_{rku}$  stands for the price of the course on knowledge representation and use of knowledge units for one person (selected currency / person).

$$C_{cr} = p \cdot t_{cr} \cdot w_{ed}, \quad (6)$$

where

$t_{cr}$  stands for the time required to produce one standard page (hour / standard page),  
 $w_{ed}$  stands for the recalculated hourly salary rate of educator (selected currency / hour).

$$C_s = p \cdot pr_{did}, \quad (7)$$

where

$pr_{did}$  stands for the price of didactic revision and proofreading (selected currency/standard page).

$$C_{up} = ACH_{ku} \cdot p \cdot \frac{(C_{cod} + C_{cr} + C_s)}{p \cdot KU_{pp}}, \quad (8)$$

$$ACH_{ku} = \frac{(2/3 * ch_{dt} + 2/9 / ch_{it} + 1/9 ch_{kt})}{5}, \quad (9)$$

where

$ACH_{ku}$  stands for average change of knowledge units during 5 years per 1 page (knowledge units/page),

$KU_{pp}$  stands for average estimated number of knowledge units per 1 page (knowledge units/page),

$ch_{dt}$  stands for a number of changed knowledge units per 1 page influenced by changes on data levels in time  $t$  ( $t=1, 2, \dots, 5$ ) (knowledge units)

$ch_{it}$  stands for a number of changed knowledge units per 1 page influenced by changes on information levels in time  $t$  ( $t=1, 2, \dots, 5$ ) (knowledge units)

$ch_{kt}$  stands for a number of changed knowledge units per 1 page influenced by changes on knowledge levels in time  $t$  ( $t=1, 2, \dots, 5$ ) (knowledge units)

#### Benefit Analysis

Following formulas describe benefits from investments into knowledge texts.

$$S = AS_{pp} \cdot n_{stud}, \quad (10)$$

where

$S$  stands for savings resulting from the use of knowledge-based texts (currency units),

$AS_{pp}$  stands for average savings resulting from the use of knowledge-based texts per person (currency units/person)

$n_{stud}$  stands for the number of educated people (number of person).

$$AS_{pp} = \left( \frac{e_{kt}}{100} \right) \cdot E \cdot n_{wh} \cdot w_{stud}, \quad (11)$$

where

- $E$  stands for the number of credit points expressing intensity of the training course according to the European Credit System ECTS (ECTS credit points),
- $n_{wh}$  stands for the number of working hours per one ECTS credit point (hour/1 ECTS point),
- $w_{stud}$  stands for the wage rate of educated people (currency units/hour),
- $e_{kt}$  stands for the effect of using knowledge text (%).

### 3.2. Case Study

This case study is based on the calculated efficiency of investment in knowledge texts used in vocational training for Czech farmers. The knowledge will be transferred from the expert direction to end users, farmers, by using knowledge texts. We assume that the using of knowledge texts facilitate farmers training and problem solving than when they use standard educational texts. It is necessary to determine whether this investment in knowledge texts is profitable or not. Therefore, it is necessary to analyse the costs and benefits accruing from this investment and to evaluate the economic efficiency.

#### Costs Analysis

The total costs ( $C_{tot}$ ) of preparation, creation and implementation of knowledge texts in teaching are influenced by four aspects: costs incurred in the codification of expert knowledge ( $C_{cod}$ ), the costs associated with the service "course of using the methods of knowledge representation and knowledge units" ( $C_{ku}$ ), costs associated with the actual production of texts ( $C_{cr}$ ), the costs associated with didactic and linguistic proofs in the form of external services ( $C_s$ ), and the costs influenced by actualisation of knowledge texts.

We need to create 100 pages of textual support for teaching ( $p$ ), i.e. 100 pages of text containing knowledge from the expert. Based on experiments by Rauchová et al. (2013), we assume that the average time required for the codification of knowledge using methods commonly used in knowledge engineering is 1 hour per standard page ( $t_{cod}$ ). To determine the costs of this action is necessary to know the salary costs of an expert, i.e. 335 CZK / hour ( $w_{ex}$ ) and salary costs of a knowledge engineer, i.e. 308 CZK /hour ( $w_{ki}$ ). Salary costs have already included the social security and health insurance paid by the employer:  $C_{cod} = (100/1) \cdot (308 + 335) = 64,300$  (CZK), according the formula (4).

The "course of using the methods of knowledge representation and knowledge units" is attended by 1 educator ( $n_{per}$ ) who will participate in the revision of texts using the concept of knowledge units. Price of the course is comparable to the cost of the soft-skills course, which is in the Czech Republic around 7,260 CZK ( $pr_{ku}$ ), the price of service has already included the value added tax:  $C_{ku} = 1 \cdot 7,260 = 7,260$  (CZK), according the formula (5). It is also necessary to take into account the time at which the override codified knowledge into one standard page using knowledge units, according to Rauchová (2013), experts estimate this period to 1.3 hours/standard ( $t_{cr}$ ). The adjusted wage rate of teachers, creating 100 ( $p$ ) knowledge texts, in the Czech Republic is 178 CZK/hour ( $w_{ed}$ ). Salary costs have already included the social security and health insurance paid by the employer:  $C_{cr} = 100 \cdot 1.3 \cdot 178 = 23,169$  (CZK), according the formula (6).

Costs are also affected by the external services: the didactic control and texts proofreading. The rate per standard page is 182 CZK ( $pr_{did}$ ), the price has already included the value added tax:  $C_s = 100 \cdot 182 = 18,200$  (CZK), according the formula (7).

Costs are also affected by the updating depending on branch, i.e. different effects of legislation, economics or technology, which is reflected in changes in the knowledge texts. Changes in the knowledge units are caused by changes on three levels - data ( $ch_{dt}$ ), information ( $ch_{it}$ ) and knowledge level ( $ch_{kt}$ ). In the agricultural branch, we can estimate knowledge changes of knowledge units per page caused on three levels during 5 years ( $t = 1,2,\dots,5$ ).

See Table. 1

Table 1. Numbers of changes of knowledge units per one page depending on 3 levels (data-information-knowledge)

KU/page year	Data $ch_{dt}$	Information $ch_{it}$	Knowledge $ch_{kt}$
1	1	0	0
2	1	1	1
3	2	1	2
4	1	2	1
5	1	1	0

From the numbers on the Table 1, we can count, according the formula (9)  $ACH_{ku}$ , which is an average annual number of changed knowledge units per 1 page, i.e. 1.1knowledge units. An average estimated number of the KU per page is 6 ( $KU_{pp}$ ), therefore the costs for updating are:  $C_{up} = 1.1 \cdot 100 \cdot [(105,639) / 100 \cdot 6] = 19,367$  (CZK), according the formula (á).

The total costs ( $C_{tot}$ ) are:  $C_{tot} = C_{cod} + C_{ku} + C_{cr} + C_s + C_{up} = 132,266$  (CZK), according the formula (3).

#### Benefit Analysis

The return on investment is expected to increase the current productive time using the of the knowledge units in educational texts. According to Rauchová (2013) the value of the effect of using the knowledge texts leading to an increase in productive time, is 4.2% ( $e_{kt}$ ), mentioned in Materials and Methods.

Assuming an increase in productive time of the percentages is necessary to calculate the average savings resulting from a change in the type of text per person. This saving is the expected return on the investment. It should be based on costs for farmers who work with knowledge texts. These costs are derived from their labor costs. Farmer are participants of education and their wage rate is 141 CZK/hour ( $w_{stud}$ ), and time-consuming training course is rated 6 ECTS credits ( $E$ ), according to European Commission (2013) credits are units expressing the importance of the subject for the study branch and load rate of students in the subject. 1 credit corresponds from 25 to 30 working hours. The number of working hours depends on the country, e.g. 1 ECTS credit in the Czech Republic corresponds to 25 ( $n_{wh}$ ) working hours.

Cost-efficiency depends on the ratio of productive time to total working hours. With an increase in productive time of 4.2% ( $e_{kt}$ ) per year i.e. 888 CZK represents annual savings to participants:  $AS_{pp} = (4.2/100) \cdot 6 \cdot 25 \cdot 141 = 888$  (CZK), according the formula (11).

If the annual average corporate savings per employee is 888 CZK, then to determine the total annual income this amount must be multiplied by the number of all the participants who work with knowledge texts and solves problems according to them, i.e. 300 farmers ( $n_{stud}$ ).

The expected annual return on investment ( $S$ ) is:  $S = 888 \cdot 300 = 266,490$  (CZK), according the formula (10).

#### The efficiency of the investment

The efficiency of this investment to knowledge texts (*ceteris paribus*) is compared with investment in standard educational texts ( $C_{tot} = C_{cod} + C_{cr} + C_s + C_{up}$ ,  $t_{cr} = 1$ ,  $e_{st} = 4$  instead of  $e_{kt}$ , *ceteris paribus*) for indicators of Net Present Value ( $NPV$ ). Theoretically, the most accurate method of investment decision based on discounting is  $NPV$ .  $NPV$  expressed in absolute terms, the difference between the PV of cash income from investments and PV capital costs of the investment. We assume that the lifetime of the investment in the texts will be four years before being updated their content.

Table 2. Net Present Value: Comparison of inflow/outflow of the investment (CZK)

Time of the cash flow	Knowledge texts	Standard texts
0	-132,266	-119,659
1	+266,490	+253,800
2	+266,490	+253,800
3	+266,490	+253,800
4	+266,490	+253,800
NPV	+707,113	+684,853

If we are deciding between two projects, where the distribution of a cash flow is different but otherwise identical conditions (rate of discount is 10%, and time is 4 years), the first project calculate the higher net present value, we select the first project, i.e. investment in knowledge texts.

#### 4. Conclusion

In this work we suggest a calculation scheme to estimate the efficiency of knowledge text to support the decision-making process on whether it worth creating educational texts based on the principles of knowledge engineering, or not. We distinguish individual cost items subject to their nature (fixed, variable; on creation, utilization, sustainability) and compare them with measurable benefits arisen from the utilization of knowledge text in vocational education. In the case study we show how significant economic effect can be reached in a real organization.

In further work we will enhance the descriptions and principles of the sustainability phase in projects on creating the knowledge-based educational texts. In particular, we will use process analysis techniques to describe its life cycle and the Activity-based costing method (ABC) to calculate the process costs. We will also incorporate the break-even point analysis to our calculation scheme to provide more specific resolution of the original problem.

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# A case study on primary science teacher candidates' perceptions towards alienating from nature

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## Abstract

One of the aims of environmental education is to make students take responsibility for protecting the environment and to lead them have nature friendly behaviors. The purpose of this study was to present primary science teacher candidates' perceptions of nature and ideas about alienating from nature. The data was conducted with 44 students who have been studying in Siirt University Faculty of Education Primary Science Teaching Department in Turkey. The data was analyzed using qualitative descriptive analysis and content analysis. The results of the study showed that most of the teacher candidates perceived nature as a living space and they stated that the reasons of alienating from nature were busy school, lesson and work schedule, depletion of natural resources and lands, and excessive urbanization.

Keywords: nature, nature education, teacher candidate

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## 1. INTRODUCTION

Human is a living creature that being in the nature, forming their life in nature with the conditions in there and can have a compulsory relationship with the nature. The background of this relationship is actually human being's dependence to the nature. Our relationship with nature is formed the way of the perception of human being's role in nature and the nature itself. The individuals' nature perception is related to their ideas, beliefs and the way that perceive the nature and how they identify human-nature relationship. Human being's nature perception is formed by the variances of family, culture, socializing, education level and personal characteristics (Arcury & Christianson, 1990; Kattman, 1994; Disinger & Tomsen, 1995; Van Den Born, Lenders, De Groot & Huijsman, 2001; Bang, Medin & Atran, 2007; cited in Kutru & Soran, 2012). Bacon said that human commands nature. According to Goethe, nature is the mother. In the strict sense, nature is all the phenomena that do not the reason of human actions and all the non-human events. In the general meaning, nature can be defined as an infinite system of various types of living and non-living substances, affects and to be affected, can change and can be a changer, has features of self-renewing and creating, is formed without the influence of human, exists by itself, has its own code and mechanisms and covers so many notions related to phenomenon, existence, relations, interactions and processes (Atasoy, 2005). Furthermore, for individuals alienated from nature is a hard task to perceive the principles of nature as the integrity of the natural systems, the finiteness and adequateness of nature, nothing disappears in nature, there is no benefit without a return, nature knows the best, mutual dependence and cooperation, minimum harm and content, tolerance and humbleness principles. Louv (2009) stated that there was 25% of declining of natural park visits in USA between 1987 and 2003, and the most important reason of this decline is the disconnectedness between the youth and the nature. It is impossible to perceive the nature problems

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and create objective solutions to them for the individuals who does not spend time in nature and does not even know what the nature is. In literature, environment education covering land works enables students to transform knowledge into behaviors and helps the students to build positive attitudes and values towards the environment. It also provides the students' behaviors to become more permanent and sensitive about the environmental problems (Keleş, Uzun, Uzun, 2010). Environment and nature education has mainly provided in primary schools with Social and Science and Technology lessons. There is no lesson plan on the curriculum of these lessons titled as nature and environment education. The acquisitions towards nature and environment education are provided in the various units of these lessons. Teachers and teacher candidates should teach the students that natural sources have an ending; such as water, forests, soil and mineral sources can be contaminated and they are dying out; all the creatures and human being depend on the nature and people have respect and responsibilities to the nature. While the studies conducted about the nature perception of the teacher candidates are highly important in order to light the environmental education, it is also significant to understand how the teacher candidates perceive the nature. There are few studies on nature perception and nature education in our country while there is no study on the reasons of their perceptions towards alienating from nature. Therefore, the purpose of the study is to present the ideas about alienating from nature and the perceptions of nature of primary science teacher candidates. The following questions were sought to be answered:

1. How are the nature perceptions of primary science teacher candidates?
2. According to their point of view, what are the reasons of alienating from nature?

## **2. METHOD**

### *2.1. Participants*

The study is a descriptive study. The study was conducted with 44 primary science teacher candidates who are student at Education Faculty of Siirt University during the academic year of 2012-2013.

### *2.2. Data Collection and Analysis*

The interview form was used in this study as a data collection tool that was formed by the researcher in order to determine the primary science teacher candidates' nature perception and their ideas about alienating from the nature. In the interview form there were two open ended questions. An expert was consulted about the questions, conducted data and coding process in order to confirm the validity of data. Direct speeches of the teacher candidates were used in the study. The expert's confirmation has taken for the validity of data considering the consistency of raw data, the results of this data and the statements related to the questions. The data was analyzed using descriptive analysis and content analysis. There were more than one answer and statements that can be regarded as more than one theme. Therefore, there was more frequency numbers in themes obtained in analysis than the number of the participants. In the study, each participant was numbered. These codes were symbolized as (TC1, TC2, TC3...) and these codes were used when providing teacher candidates' statements.

## **RESULT**

### *Nature Perception of Primary Science Teacher Candidates*

Nature perception of teacher candidates were analyzed and accordingly it was found that there were four themes as "nature as a living space, nature as a regression, nature as a whole and balanced, nature as a source" regarding their definitions. Themes, conceptual coding under these themes and frequency of the usage of themes were shown below. Examining their definitions about nature, 56,8 % of teacher candidates have been perceiving

the nature as a living space. Examples of statements of teacher candidates who perceive the nature as a living space are shown below:

*TC1: The living space where living creatures are born, live and die.*

*TC3: The living space where living and non-living creatures live in it interactively.*

*TC8: The land where birds, trees and people live in it*

*TC14: The green land is the nature where locates out of residential areas.*

*TC17: The nature is the land where we live in it.*

*TC22: It is the land where people and other living creatures live in.*

*TC26: It is the place that has been used by living creatures from the beginning of their life time until now.*

20,5 % of primary science teacher candidates define the nature as a place used with the purpose of regression. Their statements are:

*TC2: It is the place where people rest their souls, think healthy and sometimes be comfortable and have fun like a kid.*

*TC4: It is the place where people rest, where picnic areas are full of trees. Areas where good time is passed with the peace to be nested with green.*

*TC6: It is the place where humans rest their soul and body purified from technological devices. A place where people shelter together from crowd of the city even if it is for a short time.*

*TC9: A wonderful place of heaven for people and other living things.*

*TC12: It is an amazing place that hosts every kind of beauty inside.*

*TC27: A place to rest where people find peace.*

*TC32: They are natural areas where people relax and get fresh air.*

13,6% of primary science teacher candidates define the nature as a whole and balanced. The statements of the teacher candidates' who define nature as nature as a whole and balanced are as follows:

*TC5: Nature is a sum of events, living and non-living. Sum of communities consisted from plants, forests and animals.*

*TC31: It is the area where the living lives and interacts with their environment.*

*TC36: Where living and non-living environment is nested within in a balance.*

13,6% of primary science teacher candidates define the nature as a source. The statements of the teacher candidates' who define nature as a source are as follows:

*TC11: Nature is a life source for all the living.*

*TC20: Nature is the resource that helps individual to comprehend their existence.*

***Primary science teacher candidates' perception towards alienating from nature***

When primary science teacher candidates' perception towards alienating from nature is investigated, 40,2% indicate alienating from nature as busy work schedule, the intensity of the lessons and exams. According to this information, some of the teachers' statements are as follows.

*TC6: The pace of everyday life and work intensity*

*TC8: Spending too much time at school*

*TC11: The intensity of lessons*

*TC17: The intensity of exams*

*TC19: Our social duties (i.e. school, work, domestic affairs)*

*TC23: Not to be able to find a common time to spend with friends due to the intense pace of work*

25,7% of teacher candidates define the reason of alienation from the nature as the decrease in natural areas. Accordingly, some of the teachers' statements are as follows.

*TC2: Decrease and long distance of nature areas*

*TC7: Destruction of forests*

*TC11: Decrease in forest areas*

*TC15: Destruction of nature areas*

*TC27: Nature not to be beautiful as it used to be and destruction of nature*

17,9% of teacher candidates define the reason of alienation from the nature as technology addiction. Some of the teachers' statements are as follows.

*TC2: computer, internet*

*TC28: television*

*TC30: technology addiction*

10,4% of teacher candidates define the reason of alienation from the nature as concretion and urbanization. According to this information, some of the teachers' statements are as follows.

*TC2: unguided urbanization*

*TC7: concretion*

5,9% of teacher candidates define the reason of alienation from the nature as harmful animals in nature. Some of the teachers' statements are as follows.

*TC24: animals in nature*

*TC26: wild animals in the nature (e.g. Crimean-Congo disease)*

## **Discussion and Conclusion**

In our study, it has been found that primary science teacher candidates perceive nature as a living space and regression for the nature. It is followed by perceiving nature as a whole and balanced and nature as a resource. In

similar studies, Kökşer (2012) stated that most of the primary school students perceive the nature as "*botanical element*" while most of the teacher candidates perceive the nature as a life-space. In the study of Kahyaoğlu (2013) it is indicated that a majority of primary teachers perceive nature as regression purpose while others perceive as living space, forest and greenery. In Kutru and Soran's study (2012) university students' associate nature with green. Yardımcı and Kılıç (2010) indicate that primary students perceive environment as a place of plants and animals. Wenzel and Gerhardt (1998) stated that students identify nature with forest and greenery concepts (cited in Kutru & Soran 2013). In the study of Vining, Merrick and Prica (2008) participants define nature as untouched by human, not man-made, beautiful and peaceful place.

In this study, it is identified that teacher candidates places human very few in their nature perception. This condition may be caused by the perception of nature not being man-made according to teacher candidates. It has a vital importance to perceive the integrity, function, importance and multi dimensionality of nature to continue our existence on this planet. This can be achieved by being together with nature from an early age. It is very hard to expect to protect nature from a generation far away from it. Atasoy (2005) defines that social, economic, political and engineering errors that is caused by people from human – nature relationship is derived from cultural, ethical and misconceptions or lack of thinking. Along with this it is stated that drastic improvements in human – nature relationship should not be expected unless drastic changes are done in educational institutions that educate individuals on knowledge, culture and morals and gives environmental awareness, attitude and behaviors.

When primary school science teacher candidates' perception towards alienating from nature is investigated, 40,2% indicate alienating from nature as work schedule, the intensity of the lessons and exams. According to this, some of the teachers' statements are as follows. Louv (2009) stated that the cause of young people alienating from nature is the transition from real world experience to virtual nature. In Yardımcı and Kılıç's study (2010) it is identified that the education given to individuals is not sufficient to allow the integration with nature. In a study conducted by Verboom Vasiljev on middle school students, it was found that more than half of the students have very little or no exposure to parks, zoos, botanical gardens, or conservation areas (cited: Louv, 2009).

In conclusion, environment and preventing environmental problems, building better perception of the nature among people, preventing alienating from nature day by day via the effect of developing technology, enabling more nature experiences in order to form a sustainable relationship between human and nature and promoting nature education inside the nature are highly important issues.

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## A classroom experiment on social responsibility

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### Abstract

This work proposes a teaching-learning activity encouraging students to think and discuss on social values: respect, solidarity, and a like. The main goal is the student becomes aware of economic and social extend of her own decisions. To this purpose, we design an activity combining experimental economics and structured debate discipline. This activity is developed in three phases. First, students participate in a laboratory economic experiment based on ultimatum game. Second, a structured debate on a controversial social topic is organized, affirmative team against negative team. And third, a discussion class to collect students' opinions and final evaluation.

**Keywords:** social responsibility, ultimatum game, experimental economics, structured debate.

### 1. INTRODUCTION

The present work offers a teaching-learning experience similar to Dickinson (2002), conducted to develop communication, analysis and critique skills from a social and economic point of view. With this purpose, the experiment joins two different methodologies: structured debate and economic experiment. On the one hand, the structured debate sets a framework for students to acquire and develop information and communication competencies. First, thesis and arguments require a previous searching and documentation work, and second the argument and rebuttal require a clear and precise communication style. On the other hand, the economic experiment allows the student to involve in the topic discussed beyond one person that watches, analyses and makes critiques, since her decisions have an economic interest to herself and her opponent.

Specially, this teaching-learning experience was carried on through two main phases. The first phase consisted of an economic experiment based on ultimatum game. Two weeks later took place the second phase: a structured debate. Students were distributed in teams of three or four students each, and then teams were paired. One team was assigned the role of affirmative group and the other the role of negative group. From students' proposals the issue to discuss was selected. Proposals should be on a social and controversial concern. It deserves to be mentioned the fact of students were enrolled in their first course of degree on Business and Administration (BA) (Economics Faculty of Valencia University in Spain).

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The main goal of this activity is to create interest and consciousness in students on social responsibility issues with economic value. Through this experience, the student takes decisions, reacts when her own interest is involved and faces up the others' opinions on the debated issue.

In opinion of students expressed in ad hoc questionnaires, this activity allowed them to make a deep reflection on social values by an amusing and interesting activity, game-debate, which awakes logic reasoning and consciousness on the consequences of actions and decisions for oneself and the others.

The structure of the paper is the following: in section 2, the theoretic model is explained together a brief review of related literature. The section 3 is devoted to the design of the classroom experiment (game and debate). In section 4, a statistical analysis of experimental data is showed. Students' opinions on learning experiment are reported in the section 5. The section 6 concludes the paper.

## 2. Theoretical Model: Ultimatum Game

The ultimatum game (Güth et al., 1982) is a two-player sequential game. The players face a resource distribution problem under unequal bargaining conditions. The final distribution of resources between players depends on their individual decisions. The first player (proposer) proposes how to divide the resource between the two players, and the second player (responder) can either accept or reject this proposal. If the second player rejects, neither player receives anything. If the second player accepts, the resource is split according to the proposal.

The Fig 1 (a) shows the extensive form representation of an  $x$  proposal ultimatum game. The proposer offers the amount  $x$  of  $M$ . If the responder accepts, she receives  $x$  and the proposer  $M-x$ . If she rejects the offer, neither player receives any amount.

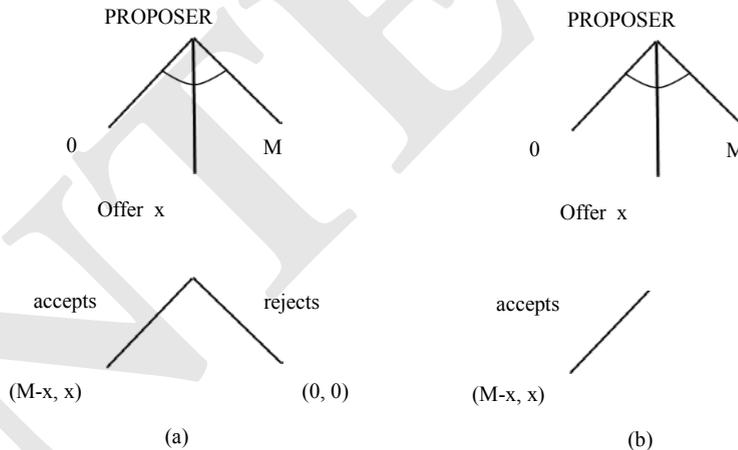


Figure1: Ultimatum game *versus* Dictator game

The game is solved by backward induction. Clearly, the responder's decision will be to accept all non-zero offers, since the payoff when she accepts is greater than when rejects the offer ( $x > 0$ ). The proposer knows it, and will offer the minimum possible amount to maximize her own payoff ( $M-x$ ).

According to the standard prediction of Economics Theory, on the one hand, the rational proposer will offer the minimum amount possible and keep the rest for himself, almost the whole. On the other hand, a rational responder will accept any small amount, because anything is better than nothing. However, this prediction is not corroborated by experimental economics studies. The experimental evidence is that responders punish excessively selfish proposers by rejecting their offers. Sometimes, proposers make 50%-50% offers due to a moral sense, or the fear of rejection and to loss everything.

A variant of ultimatum game is known as dictator game (Forsythe et al., 1994). The responder does not have any decision power (Fig 1(b)), therefore, the offer is never rejected. The distribution of resource only depends on the proposer's willingness to share.

The results of earlier experiments (Hoffman et al., 1994) on individuals' altruism behavior based on dictator game with anonymity of subjects show that the 46% of dictator players share the 30% of resources at least. The authors interpret anonymity as fairness indicator as a pure preferences phenomenon, and discuss that the apparent altruism behavior could be due to the social importance that the proposer gives to what the others think of him. Some alternative explanation of anonymity effect are: (1) can eliminate the motivation to make donations because the beneficiary is not identified, and (2) proposer's decision depends on personal valuation but not the social valuation (Eckel & Grossman, 1996).

The fairness hypothesis has been tested by comparing the distributions of offers made by proposers in the ultimatum game versus the dictator game (Forsythe et al., 1994): if non-trivial offers are only by fairness, the both distributions will be equal. This presumption is not experimentally corroborated, since there are significant differences: i) the 22% of proposers in the dictator game play altruistically (at-least-50% offers), the number rises up to 65% in the ultimatum game. ii) The 0% of proposers in the ultimatum game offers the subgame perfect nash equilibrium amount, this percentage is 36% in the dictator game. Similar experiments support the previous results (Eckel and Grossman, 1996), the 62.5% (30 out of 48) of dictator players do not share anything, and the 8.3% of them does at least the 50%. However when the beneficiary player is a charity institution, dictators behave differently: the 27.1% (13 de 48) does not make donation and the 31.25% donates less than the 50%.

It is important to remark that the proposer assumes an opportunity cost related to the reject risk. This risk is only present in the ultimatum game, where the responder has decision power. The reject risk depends on the responder's reservation value that the proposer does not know. Therefore, the proposer will reduce the reject risk by increasing the amount offered.

### **3. Design of Classroom Experiment: Game-Debate**

The experiment was run with students enrolled in the first course on BA Degree of the Faculty of Economics (Valencia University, Spain): 79 students distributed in two groups of 54 (23 males and 31 females), and 25 students (12 males and 13 females), respectively.

The first part of the classroom experiment, ultimatum game, took place for 90 minutes of a practice class of the subject "incorporation to university" at the middle of quarter. The second part was developed in the two next classes linked to the underlying topic: social responsibility. The week before the ultimatum game experiment, students were informed about the activity, no information on content was given. The attendance was compulsory and the score summed up to the student's final score of subject. They were said that the minimum score possible was 0.25 and the maximum 1 point. A linear rule was used to compute the student's score. This rule was a

function of the student's payoff, and the minimum and maximum payoffs of assigned group, responders or proposers. Two separated rooms were needed to run the experimental game and also the help of two mentor students. The proposer players were allocated in one room, and the responders in the other. In this way anonymity was guaranteed. The students were cry-out called one by one, given an identification number, and the set of instructions. The game was played 10 rounds, in each round each proposer was randomly paired to a responder. The pairs were always different, thus reciprocity between the two players was not possible. The phases completing the game-debate activity are described below:

- **Game phase:** The teacher reads instructions aloud (15 minutes), and 10 rounds were played. Each round was organized as follows: (1) Students were said the amount of resource (pie) available. Each proposer took her sharing decision and wrote down her offer in a piece of paper that handed to the teacher (2 minutes). (2) Once responders received offers from proposers, they had 2 minutes to accept or reject them and fill up their decision sheet. (3) Next, the piece of paper was back to proposer, who took note of the responder's decision and the gain obtained in the round (2 minutes). After finishing the experimental game, students were asked to fill up a questionnaire: (1) What do you think is the underlying topic? (2) Find an example of the real life. (3) Do you think you would have played in the same way if your pair had been a friend of yours? (4) How do you consider yourself: selfish, altruistic, equalitarian? (5) How do you think you would have played the opposite role? (6) Which social values are important to you? (7) What of the activity do like or dislike you the most? (10 minutes)
- **Debate phase:** Through a debate activity the underlying topic (social responsibility) was developed from another point of view. Critical reasoning and synthesis skills were emphasized rather than verbal or non-verbal communication skills. One 90-minute class was dedicated to explain the structure of debate and students made a written practice on how to postulate arguments for and against, and another 90-minute class to the very debate. Students proposed some general concern questions to debate, they showed particularly interested into the followings: "Public vs Private Health Care Systems", and "Public vs Private University Studies". Students were distributed in teams of three or four students, the teams were paired, and assigned to the negative or affirmative side to debate. They were given a week's time to research and argue for and against. The class debate lasted 50 minutes, 25 minutes per pair. The formal debate was structured as follows: (1) The affirmative team opens the debate and presents their case for 3 minutes. (2) The negative team presents their case for 3 minutes. (3) The affirmative team presents their first rebuttal for 4 minutes. (4) The negative team presents their first rebuttal for 4 minutes. (5) The affirmative team presents their second rebuttal for 4 minutes. (6) The negative team presents their second rebuttal for 4 minutes. (7) The negative team presents their summary for 3 minutes. (8) The affirmative team presents their summary for 3 minutes and closes the debate. (9) The audience decided the most convincing argument and the winner team was determined.
- **Discussion phase.** In order to connect the game phase to the debate phase, students were encouraged to find out similarities and differences between both experiences. In doing so, they were able to bring together social and economic aspects existing in bargaining process between agents, individuals or institutions.

#### 4. Quantitative Analysis of Experimental Data

This section is devoted to the quantitative analysis of experimental game played by students. Two sessions were run, the first one is the baseline case, and the second the treatment. In order to contrast the behavior of proposers, which is represented by the offer, from one session to another, the message "She/He is in your hands"

was added in second session instructions for proposers, only. We conduct a basic statistical analysis to study the raw data of the experiment.

#### 4.1. Basic statistical analysis

In order to gain a first intuition on players' playing, we begin with the graph analysis of results of two experimental sessions. The box and whiskers diagram (Fig 2) elaborated on the percentage offered of pie in the ultimatum game is useful to detect the existence of homogeneity in mean or/and variance between the two groups of proposers and as well as the existence of extreme values. At first sight we find that interquartile range ( $IQR = Q_3 - Q_1$ ) of the session 1 is greater than that of session 2 (0.05 vs 0.025). Therefore proposers of session 1 show a more opinion variability. There exist extreme values, although more compensated in the session 1 than in the session 2. In the session 1, extreme values produce a slight positive asymmetry of 0.29, whereas in session 2 very low extreme values produce a negative asymmetry of -3.78. There is a negligible difference between the mean values of both sessions (47%-48%). However by comparing empirical distribution functions of percentage offered by proposers of each session (Fig 2) significant differences are found. According to the two-sample Kolmogorov-Smirnov test, it rejects the null hypothesis  $H_0$ : data come from the same distribution function ( $D = 0.3231$ ,  $p\text{-value} < 0.0001$ ). This evidence provides our first result: the two groups of proposers are not homogeneous, that is to say, they behave differently in relation to sharing decision.

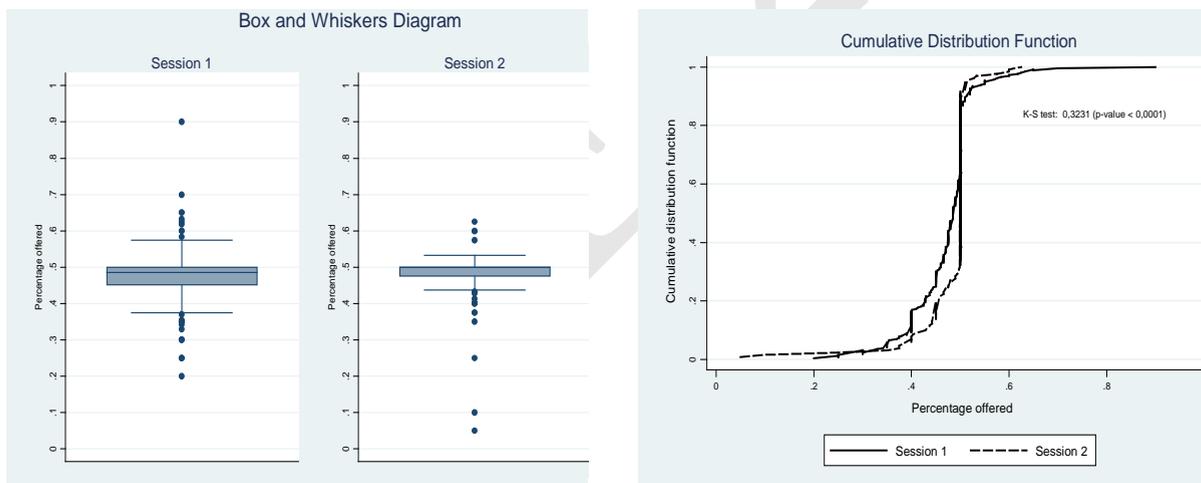


Figure 2: Box and Whiskers Diagram and Cumulative Distribution Function of experimental results of ultimatum game.

Recall that in each session students played 10 rounds, they were randomly and anonymous paired, and the pie size changed each. The pie available in each round was determined by random selection without replacement from the set  $\{1, 2, 8, 10, 20, 35, 50, 75, 100, 200\}$ . Fig 3 shows percentage offered per round by proposers of the sessions 1 and 2 in the ultimatum game. The blue line represents the average percentage, slightly below 50% in both sessions. The red (green) line represents the maximum (minimum) percentage. The width of bounds (max-

min) session 1 is larger than those of session 2, what indicates that the first group of proposers shows more variability than the second.

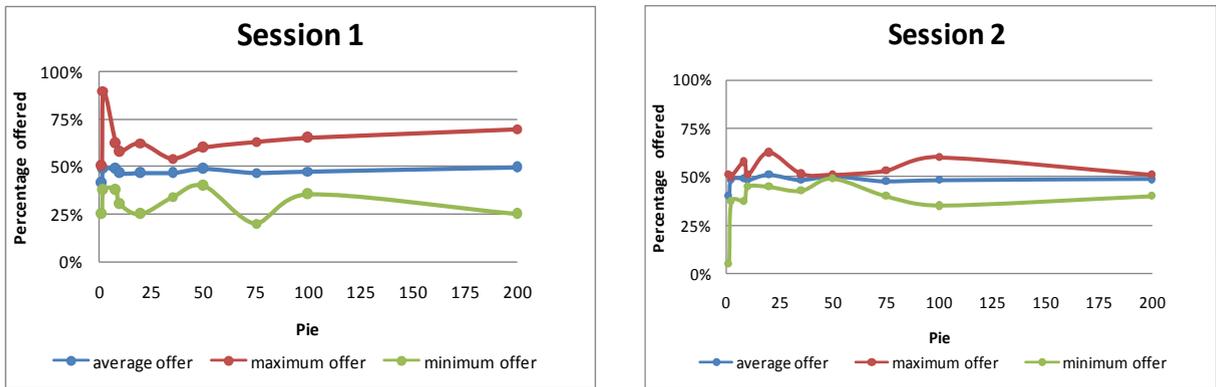


Figure 3: Average, maximum, and minimum percentage offered in ultimatum game.

Students were asked for additional information without effect in their gains: *How much would you offer if there was no reject risk (dictator game)? How much is the minimum offer acceptable to you?* The findings from proposers' answers are the followings: (1) The average percentage offered decreases in both sessions: between 16% and 24% in session 1, and between 1% and 8% in session 2. (2) The discrepancy of opinions increases between sessions. Proposers of session 1 show more solidarity than those that of session 2. The relative frequency histogram of percentage offered in each game (ultimatum *versus* dictator) and session let us detect the differences of behavior of the two groups of proposers.

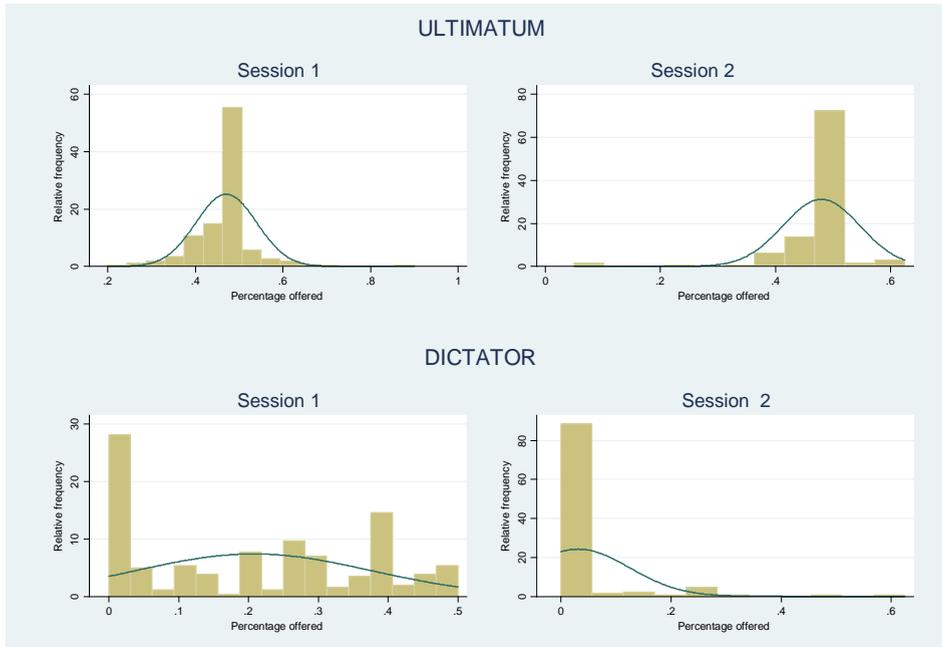


Figure 4. Histograms of relative frequencies

In relation to the question made to responders about the minimum acceptable offer we compute the envy coefficient by Fehr and Schmidt (1999). The responder will accept the offer  $x$  if she obtains a higher utility than rejecting:  $U(1-x, x) > U(0,0)$ . Then, responder's utility will equal the offer  $x$  minus the dissatisfaction by receiving an amount less than that of proposer ( $x < 1-x$ ). The responder's utility can formulate as  $U(1-x, x) = x - \alpha(1-2x)$ . Let  $x^*$  be the minimum amount that the responder would accept, the envy coefficient  $\alpha$  is computed from the equation  $U(1-x^*, x^*) = x^* - \alpha(1-2x^*) = 0$ , as  $\alpha = x^*/(1-2x^*)$ . Table 1 shows the approximation to responders' envy degree, computed for the average minimum percentage required for accepting the offer. The Wilcoxon sum rank test, applied to the two independent samples, does not let reject the equal median null hypothesis,  $H_0$ : responders of session 1 and session 2 have the same median envy coefficient ( $p$ -value = 0.1619). Now, we provide our second result: both groups of responders exhibit the same median envy degree.

In relation to the percentage of offers accepted: responders of session 1 accept between 50% y 89% of offers received (mean = 75%, median = 77%). The numbers for session 2 are 62% y 92% (mean = 83%, median = 85%). According to the Wilcoxon sum rank test the null hypothesis of equal median values is accepted ( $p$ -value = 0.1187).

We finish this section with two questions on gender. The first one: *Who reject more men or women?* Aggregated results (Fig 5) show that 27% (20%) male (female) responders reject the offer received. Therefore, men reject more than women. In session 1, this difference grows up to 10 points, whereas in session 2 the difference of 1 point is in favor of women.

The second question is related to proposers: *Who offer more men or women, and under which conditions?* Figs 6 and 7 represent the distribution of proposers by gender, level of offer, and session under ultimatum and dictator conditions, respectively. Under reject risk condition (Fig 6), the modal level of offer is between 25% and

50% of resource. The percentage of men and women offering this level are 87% and 84% in session 1, and 85% and 94% in session 2. In addition, in session 1 the 16% of women offer more than 50%, only 10% of men offer this percentage. Therefore, we can say that women are somewhat more generous than men in session 1. The opposite happens in session 2, 13% of men and 2% of women offer more than 50%. When there is no reject risk (Fig 7), the gender result holds for session 1: 47% of women offer more than 25%, whereas 72% of men offer less than 25%. However in session 2 the higher percentages of men and women are for zero offer (88% vs 68%). Therefore, when responder is under absolutely indefence conditions, it seems that women have more propensity to sharing than men. We conclude the third result: on average, women accept lower offer and make higher offer than men.

Table 1. Responder's envy degree,  $\square = x^* / (1-2x^*)$

Pie	Round	Session 1	Session 2
1	2	4.60	11.50
2	5	4.26	12.83
8	4	9.11	4.61
10	6	6.18	4.95
20	1	7.22	7.00
35	9	8.99	3.62
50	8	9.50	5.05
75	7	5.10	3.59
100	3	8.17	4.12
200	10	15.96	5.21
average		7.909	6.248
median		7.695	5

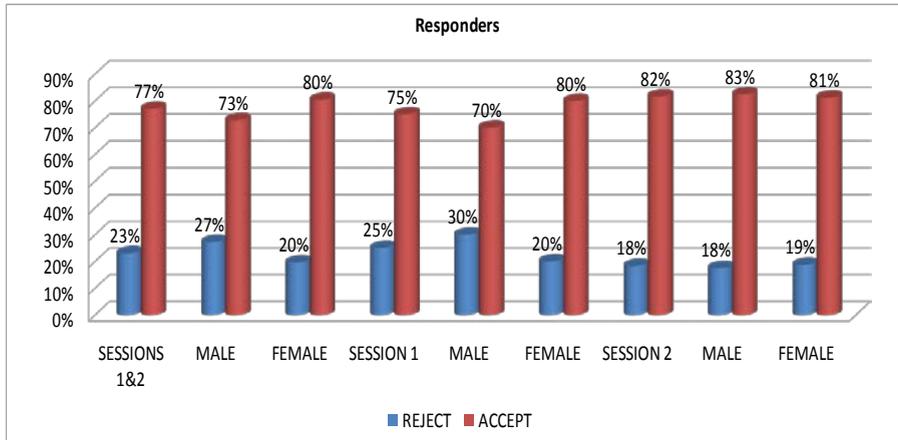


Figure 5. Distribution of responder's answer (by session, and gender).

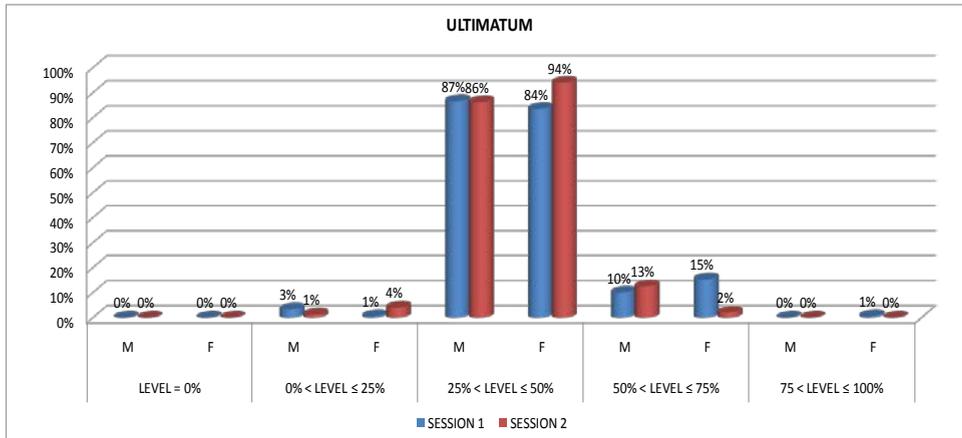


Figure 6. Distribution of ultimatum proposer's offers (by session, and gender).

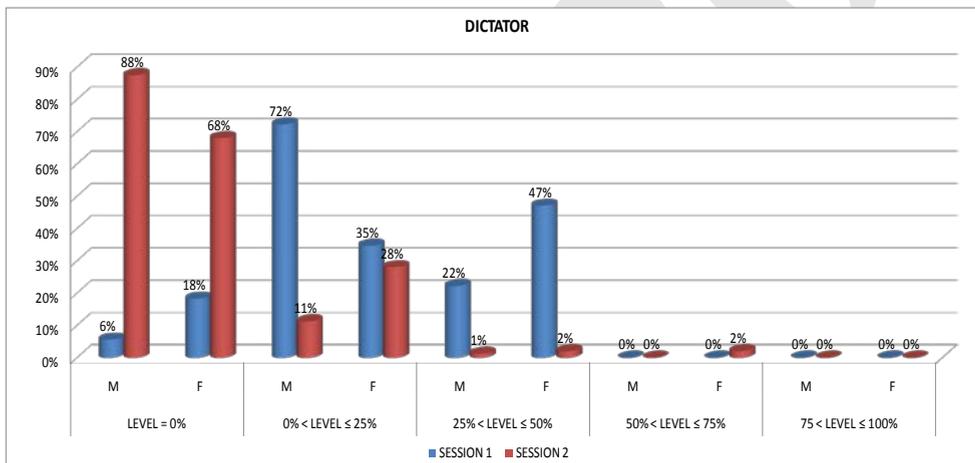


Figure 7. Distribution of dictator proposer's offers (by session, and gender).

### 5. Qualitative Analysis: Students' Opinions and Evaluations

Just finished the first phase of the experiment, ultimatum game, students were asked to fill up a questionnaire of some questions on the experience. We get usefull and interesting information from answers.

First, students made an interpretation of game and the underlying topic. The results can be summarised as follows: (1) Most students thought of game a recreation of economic agents interaction, such as consumers-companys, institutions-users, and so on. (2) Some of them declared that the target was to maximise profits, exercise strategic skills and competitive spirit. (3) They found similarities between the ultimatum game and the supply and demand. Students associated the fact of accepting offers to the reservation price or maximum price

that they would pay to buy a product. As a first conclusion, we can say that few students thought of underlying topic related to empathy or generosity towards the others. They understood the game as a competition one.

Second, we asked students to find real life examples organized under similar rules to ultimatum game. They gave some interesting examples: (1) Prices of products and consumer's decision to buy or not. (2) Studies on willingness to buy before launching a new product. (3) Labor market, the worker accepts or rejects offers depending on wages. (4) At home, sometimes one needs to bargain rooms or wages. (6) Auctions and bets.

In spite of main target was to encourage reflection on social fairness, some interpretations of students have been studied by literature, for instance, Gächter and Ferhr (2002) on labor market.

Third, according to Cabrales and Ponti (2011), the proposer's behavior could change if the responder was a relative or friend. The results of answers given by students are the followings: In session 1, the 40% of students would not change their offers, the rest declared that they had been more sensitive and equalitarian. In session 2, the 65% of students found some reasons to change their behavior. Some students claimed that one offers an equalitarian agreement to a friend. However, other students thought of getting advantage of friendship, because a friend accepts anything.

We think that the fact of a higher percentage of student proposers in session 2 changed their mind could be due to relax the idea of absolute power reinforced by the message "She/He is in your hands". This sentence could have induced a selfish behavior maximizing profit without taking into account others.

Fourth, students were asked to declare the self-perception on altruistic, selfish, and equalitarian character. In session 1, the 62% of students said to consider themselves as equalitarian, the 32% as selfish, and the 6% as altruistic. In session 2, the respective percentages are: 80%, 14%, and 6%.

This classification is in line with experimental results. On average, the percentage offered was around 47%. Therefore, except some outlier cases, most proposers offered an amount close to 50% of the whole.

Fifth, in order to contrast the behavior exhibited in ultimatum game, students were asked to express the minimum offer under no reject risk conditions (dictator game). The offers were not equalitarian at all. In session 1, students offered a percentage between 16% and 21%. In session 2, the average percentage fell up to 0%.

Finally, students were asked for social values considered important to them. The oftenest ones were: respect, equality, honesty, sincerity and friendship.

Two weeks later of the game experiment and after the debate class, a discussion class was developed to highlight differences and similarities between the ultimatum game experiment and debate on social topics. This class was structured in the following steps: (1) *Brainstorming*. We asked students to share ideas on the relationship between the game and the debate. In the blackboard, the teacher wrote words such as economic agents, public resources, private resources, human capital, taxes, distribution of wealth, bargaining power, social inequality, solidarity. As result, the topic of game experiment emerged in a natural way: *distribution of resources under unequal bargaining power*. (2) Make a comment of the following sentence by Ferh and Schmidt (1999): "Almost all economic models assume that all people are exclusively pursuing their material self-interest and do not care about "social" goals per se"(pag.817). More than 50% of students agreed. Students argued for a few minutes, some of them thought of being selfish is similar to nasty and inconsiderate to others. We clarified the term selfish as "one is in charge of her/his own responsibility" and this is maturity. (3) Explanation of the

ultimatum game and dictator game in extensive form representation (Fig 1). Students concluded the results of the subgame perfect Nash equilibrium. (4) We showed the experimental evidence: proposers offer between 30% and 40% of pie, and responders reject offers less than 30% of pie. (5) Which factors could explain proposers' and responders' behavior? Students answered that proposer's behavior could be due to reject risk. And they related responder's behavior to emotions. We concluded with Ferh and Schmidt (1999) model. (6) Finally, students' results obtaining in the game experiment were showed and commented. Higher grades were obtained by responder students accepting all offers received.

## 6. Conclusions

We found that the full activity proposed in this paper was a useful and interesting activity to involve students in an interactive exercise which increased sensitivity in the social responsibility and justice issue. In addition, analysis of students' answers and choices offer us some interesting conclusions.

Firstly, we can observe as within the ultimatum game, students tend to offer a piece of pie near 50%. We calculate students profits as a function of the student's payoff, and the minimum and maximum payoffs of assigned group, therefore the most rational behavior seems to be offer 50% of the pie.

However, within the dictator game, when there is no risk of rejection, strong differences in the proposers' behavior were found. Proposers try to obtain the maximum benefit offering a very little part of the pie, in some cases near to 0%. Under this situation, students didn't show any feeling of solidarity with the responders.

These results strongly contradict the opinion that students have about their selves. Specifically, in group 1, the average offers are about 20% and 62% of students consider themselves as an egalitarian, while in group 2, the average offer was around 0% and the 80% of the students defined themselves as egalitarian.

Secondly, results showed some behavioral difference between genders. On one hand, we found that men reject more than women. On the other hand, in group 1 women are somewhat more generous than men, while opposite happens in session 2. However, under no rejection risk it seems that in both groups women have more propensity to sharing than men.

Finally, the full activity proposed in this paper put students in a situation in which they have to take decision and chose a specific orientation for their decisions and opinions. When students realizes about the differences between their self-perception and their choices, they can reflect about the link between core values and everyday actions and decisions. They can also realize that discourses about values are not abstract theories but are part of life and daily decisions.

Therefore, the main goal of this activity was achieved. This experience creates interest and consciousness in students on social responsibility issues with economic value. They could take decisions, reacts when their own interest is involved and faces up to others' opinions on the debated issue.

We firmly believe that any university graduate, perhaps especially BA graduates, should acquire particular sensitivity in social responsibility and justice issues, in order to apply it in their work and daily lives. Therefore, subjects which encourage reflection and sensitivity in this field should be integrated into academic programs. Meanwhile, activities as the proposed in this work can be a useful tool, which allows students to gain maturity in thinking and feeling in decisions related to social responsibility and justice issues.

## Acknowledgements

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# A comparison of self confidence levels and personal growth initiative skills between managers and employees

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## Abstract

This study has been conducted with the aim of analyzing the relationship between Self-confidence and Personal Growth Initiative Scale levels of employees and managers. All the employees and managers are selected from big companies and schools which is in Istanbul and the rest of the employees participants are also selected by the using random selection method from small shops or companies. Such descriptive statistics as mean, standard deviation as well as reliability analysis, independent T test and correlation analysis have been made use of within the scope of the research. The results suggest that there are relationships between the self-confidence and Personal Growth Initiative levels of employees and managers. Although the data acquired is rather recent, it would not be wrong to claim that they are striking. This is the first time self-confidence and Personal Growth Initiative are investigated with level of employees and managers in a thesis therefore the research is important. As can be seen, between level of employees and managers, Self-Confidence and Personal Growth Initiative are positive according to gender. Some of the data acquired by means of the investigation seems to support hypotheses. That is, there are meaningful differences in terms of age as far as self-confidence and personal growth initiative of the employees and the manager are concerned.

*Keywords:* employee, Manager, Self-confidence, Personal growth initiative

## 1. Introduction

Self- confidence is considering from subjective perspective and thinking about themselves abilities or failures. Moreover self- confidence encloses to comment on you and after these commenting, results of this comment and reflections of feelings about it (Kasatura, 2000). Personal Growth initiative usually means to be understood like increasing inherent energy. But when we search the concept about this thesis, it changes. It isn't only about inherent energy, if it's considered closely, (that's important) it effects a situation's conduct, continuity and results (Brenegar, 2005).

A person, who has self- confidence, proves oneself with his/her abilities and achieves. Person can see his/her positive ways and when he/she achieves something, they would know that these achieves are results of conscious and to assume responsibility (MEB, 2008). They don't only see the positive ways; they see and accept their negative ways. As part of Almanac Higher Education efforts; concept of self- confidence germinates at a young age. So infancy, childhood and adolescence are the most important periods. If a child has a positive

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individualism, then they can be more curious, successful and social than the others. As we see, self- confidence carries with different concepts (The NEA Almanac of Higher Education, 1995).

About researchers, people who have self- confidence love themselves. They accept negative and positive ways about themselves. According to them, all the people can be powerful and powerless. Sometimes, in some articles, self- confidence and leadership are together. If managers and employees treat a question under several heads, most of the managers are working better when the employees are comfortable and glad full at global companies (Tutar, H., Altınöz, M., & Çakıroğlu, D., 2009)

If there are complication and chaos, employees can need a leader who has a talent about solving problems and keeping calm. Leaders are the people who can catch the new chances after big exchanges. In spite of having certainty and danger, they appraise these and create new forms (Zel, 2006).

The concept of individualism which is mixed in self- confidence is formed of social interaction and people identify the social environment with perception of individualism. People accept the experiences which are suitable in concept of individual; they regret which are not suitable or they change the concept which can connect with the perception of individuality. Sometimes people want to have some specialties which they have not. Correspondingly, people can't be glad full the specialties that they have. At this point, if people want to have something different, that means "Ideal Individuality" (Rogers, 1959).

According to Super (1963, 1970), career choice is a declaration of person's designs about oneself and individuality. So, there are lots of common point between specialties of people and career choice. This study is important because of minor workings about personal growth initiative. From a national perspective, there are rarely studies about comparison of self- confidence and personal growth initiative. So this study will supplement to the future studies.

## 2. Purpose

The purpose of this research was to explore the relationship between self confidence levels and personal growth initiative skills between managers and employees. In this study we hypothesized that there will be a positive relationship between confidence levels and personal growth initiative skills. In addition, in this study, the subquestions below will be answered. These questions are;

Are there any expressive affairs between self- confidence ranks and personal growth initiative of managers and employees?

Are there any expressive affairs of self- confidence ranks between managers and employees?

According to gender, are there any expressive affairs about the self- confidence ranks of managers?

According to gender, are there any expressive affairs about self- confidence ranks of employees?

According to gender, are there any expressive affairs about personal growth initiative ranks of managers?

According to gender, are there any expressive affairs about personal growth initiative ranks of employees?

## 3. Method

### 3.1. Research Methodology

This study is arranged at comparative relational scanning model. This model is defined about changing degrees together between two or more variables. In that model starts from the most possible solution with the comparison way, the reasons are decreased to “one” reason.

### 3.2. Participants

Study participants are composed by managers and employees. Sample group is between 25-40 and in all, there are 165 (%52.4) women and 150 (%47.6) men. Present study is limited with the answer of 315 people who is called as managers and employees. Therefore it's impossible to be analyzed the entire sample, the study is limited.

### 3.3. Data Collection

#### *Personal Information Form*

The purpose to prepare this form is to gather information about participants and their socio- demographic occasion. In this form there are 4 questions about age, gender, to know about manager or employee and their sector.

#### *Self- Confidence Scale*

Self- confidence measure is used to realize self-confidence scale .Self- confidence measure's points are between 1 and 5. After the inquiries, if we look the substances, under two factors; the substance which is in first factor is related more internal than the other factors and it's called “internal self- confidence”. These symbolize about love and to know one self thinking about positive ways, to know powerful and powerless. Second factor is related self- confidence with social environment, so it's called “external self- confidence”. These are about communicating easily, to speech/ criticize about one self clearly, to control the feelings and to get risks.

#### *Personal Growth Initiative Scale*

Personal growth initiative measure is used to realize personal growth initiative skills. It's developed by Claes, Beheydt and Lemmens (2005). The scale is adapted to Turkish at 2011 by Akin and Anlı (2011). The points of personal growth initiative measure are between 1 and 6. 1 means: “I certainly don't agree” and 6 means: “I certainly agree”. The original form of the measures: 1 means: I certainly don't agree, 2 means: I generally don't agree, 3 means: I rather don't agree, 4 means: I rather agree, 5 means: I generally agree and 6 means: I certainly agree. The highest point of the measure is 54 and the minimal point is 6.

The data which get are loaded to the computer. To compare the ranks; correlation is used. Moreover the differences are compared by “t” test.

## 4. Findings

Correlation is used to determine to answer of this question: “Is there a significance relation of self- confidence and personal growth initiative skills between employees and managers or not?” The findings which are acquired are Table 1.

Table 1. Descriptive Statistics and Inter-correlations of the Variables

Variables	1	2	3
1. Internal self- confidence	1.00		
2. External self- confidence	.66**	1.00	
3. Personal Growth Initiative	.56**	.47**	1.00
Mean	72,25	63,04	40,93
Sd	7,52	6,80	5,96

\*\* p< .01.

When the table is analyzed a significance relation can be seen. There is a positive relation between internal self- confidence and external self-confidence with personal growth initiative. There's positive relation between internal and external self-confidence too. In conclusion personal growth initiative is mostly interactional with internal self-confidence; there's positive relation. Internal self-confidence is the only strong variable.

Table 2. Manager's Self-Confidence Levels in Terms of Gender

Variable	Gender	N	X	Ss	t	Sd	P
Internal self- confidence	Female	65	71,72	7,68	1,734	157	.08
	Male	94	69,45	8,44			
External self- confidence	Female	65	62,34	6,92	1,862	157	.06
	Male	94	60,23	7,06			

The t test is a significance test which is used to compare the differences between two averages. In table 2, according to gender variable, self-confidence points average and standard deviation is seen. According to the form, there isn't any significance difference about internal self- confidence and external self-confidence:

Table 3. Employer's Self-Confidence Levels in Terms of Gender

Variable	Gender	N	X	Ss	t	Sd	P
Internal self-confidence	Femal	100	73,9	6,4	0,695	154	.48
	Male	56	74,63	5,97			
External self-confidence	Femal	100	65,14	6,09	0,321	154	.74
	Male	56	64,82	5,67			

In table 3, according to gender variable, self-confidence points average and standard deviation is seen. As we see, there isn't any significance relation about internal self-confidence and external self-confidence.

Table 4. Manager's Personal Growth Initiative Skills in Terms of Gender

Variable	Gender	N	X	Ss	t	Sd	p
Personal Growth Initiative	Femal	65	39,6	5,89	0,164	157	.87
	Male	94	39,77	6,5			

In table 4 according to gender variable; personal growth initiative points averages and standard deviation is seen. According the form, there isn't any significance relation about personal growth initiative.

Table 5. Employer's Personal Growth Initiative Skills in Terms of Gender

Variable	Gender	N	X	Ss	t	Sd	p
Personal Growth Initiative	Femal	100	42,49	5,06	0,92	154	.35
	Male	56	41,66	5,96			

In table 5, according to gender variable, personal growth initiative point's average and standard deviation is seen. According to the form, there isn't any significance difference personal growth initiative of employees.

## 5. Discussion

The diagnosis which had acquisition will be discussed according to inquiries (hypothesis) and will be annotated in hypothetical perspective (outlines). The aim of this study is analyzing and comparing the relation of self- confidence and personal growth initiative skills between employees and managers. According to this purpose, all the surveys are strained to employees and managers in big companies and schools in Istanbul and the rest ones are strained to the specific sectors (transportation, education and health). The surveys have the information of demographic characteristics, self- confidence ranks and personal growth initiative skills. They're implemented face to face technique.

All the questions which is in the surveys are multiple- choice questions. The data which acquisitioned are analyzed with SPSS 11.5 programme. Item analysis and construct validity are implemented and according to the purpose, correlation analysis, parametric, non- parametric tests, reliability analysis and descriptive statistics are used. According to the measure of self- confidence, sample 796 high school students groups are selected from Istanbul, Kocaeli and Sakarya. 135 students are from Istanbul, 213 students are from Kocaeli and the rest (448) ones are from Sakarya. Girls are 386 (%48) and the boys are 410 (%52). 285 of them are at the first class (%35.8), 243 of them are at the second class (%30.6), and the 268 of them (%33) are from third class students. The factor analyze is the determining factor which discovered by Tabachnick and Fidell(1996) to create the number of the work group. According to these criterion, 300 people as "good", 500 people as "very good" and 1000 people as "perfect".

This analyze doesn't include 27 students who choose always the same answers or who doesn't choose only of the answers. As it's told before, t test is used to realize the significance differences about gender variable. Gender variable is examined in detail in this study.

Starting point of this study , it's assumed to get significance differences about self- confidence measure between employees and managers. According to the diagnosis, the dimensions of self- confidence (internal and external) haven't got differentiations between women and men. It's both valid for managers and employees. If it's looked out sectorial perspective "the parallelism is appearance": managers and employees from companies to petty dealer. The t test is used to betray the power of independent and/or parallel groups. The results show the parallelism in self- confidence between genders. That means there's no significance difference between genders.

The results of some meta- analysis show the interaction between personality, social environment, work life and personal growth initiative. In this parallelism, there's a big interaction with self- confidence, too. It is seen that, there's a positive and significance relation between self- confidence and personal growth initiative. (Öğüt, Akgemci ve Demirsel, 2004). The Turkish form of personal growth initiative measure is done to 2 groups. Moreover the validity and reliability analysis are examined, too. First group occurs from 336 high school students; testing and repeating the test, 111 students had done the measure again 4 weeks apart. 68 English teachers worked for the linguistic equivalence of the measure.

Personal growth initiative is associated with self- confidence rank. At the end of the study, there isn't any significance relation about personal growth initiative skills between employees and managers. Both of the genders and two perspectives (managers and employees), there is a positive relation between personal growth initiative and self- confidence.

In this study, it's assumed to get significance differences about self- confidence and personal growth initiative measures between employees and managers. The diagnoses are proved.

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4<sup>th</sup> International Conference on New Horizons in Education

# A comparative analysis of conservatories and departments of music education in terms of the place of technology use in their music education

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## Abstract

Today, the importance and necessity of technology use is an undisputable matter. Thanks to this, it has become possible to advance in education. Educational/instructional technologies (computer-aided teaching, material development etc.) and music technologies (sound recording, tonmeister etc.) are separate disciplines. The aim of this study is not to investigate only one of the above fields and then make inferences. However, what comes to the mind first when it comes to music, education and technology are the ones above. Therefore, these concepts will be explained in order to prevent a potential incomprehensibility and to lay the scientific foundations of the study. Advanced technologies are used effectively in music and music education, as they are in all other fields. If a music educator is unaware of useful technological facilities, it is necessary to look for such facilities in the environment in which s/he is active and especially in the educational environment. An educator can use something in her teaching activities to the extent she knows and comprehends it. For this reason, in terms of the relationship between music, education and technology; an education on using technology should be provided on the issues of educational environments (schools, courses etc.) and education systems (curricula etc.). Thus, the main purpose of this study is not to define the extent to which music educators use technology, but to determine the extent to which music education programs include this education and to underline the necessity of using them effectively. To this end, the universe of the study consists of conservatories and departments of music education in Turkey. These programs will be compared, courses in these programs aimed at teaching technology use in music education will be examined, and findings will be interpreted.

**Keywords:** Conservatories, Departments of Music Education, Music Education and Technology Use.

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## 1. Introduction

The advance of technology has rendered necessary its effective and functional utilization in arts, in general, and in the field of music, in particular. It is possible to train undergraduate students in technology and thus to enable them to effectively use it. Today, there exist vast technological opportunities that can be used in music education.

In the process of preparation of the Master's thesis entitled "Analysis of Technology Use by Music Educators in Music Education", which I supervised in 2009, music educators' knowledge levels in music technologies were examined (Beşer, 2010). It was observed that teachers and academics, including professors of conservatories, did not have sufficient knowledge of using technology in music education.

If a music educator is unaware of useful technological facilities, it is necessary to look for such facilities in the environment in which she is active and especially in the educational environment. An educator or an artist can use something in her teaching activities to the extent she knows and comprehends it. For this reason, the relationship between music, education and technology is addressed here with respect to curricula and teaching plans. With this approach, the main purpose of the study is not to define the extent to which music educators use technology, but to determine the extent to which music education programs include this education and to underline the necessity of using them effectively. **In this study that I am presenting, the importance of adequately using technology in music education will be emphasized and the extent to which curricula include relevant courses will be determined.**

According to Engler, technology is an integral component of education. When education is seen as a web of communication between teachers, students and the environment; it then becomes clear that instructional technologies play a significant role in defining these relationships (Engler, 1972:62, <http://uretim.meb.gov.tr/egitekhaber/s92/yazarlar.htm>, 18 Haziran 2013, saat: 14.00).

Contemporary education is aimed at training individuals in the most appropriate and advanced manner as a balanced unity by considering their physical, mental and intellectual aspects. More importantly, it is aimed at a total improvement. The main function of contemporary education is forming modern societies that consist of modern individuals, as required by the contemporary life. For this reason, an education system that will reach all segments of the society and contemporary methods are needed. Due to changing programs and approaches, it is observed that the expected/desired level of success cannot be achieved. Components of a desired education are endearing music to the individual and endowing her with a perspective to differentiate between good music and bad music. In order to achieve them, it is necessary to utilize advanced methods and technology.

A total development will be accomplished in music education when problems pertaining to planning, programs and methods are overcome.

Benjamin Bloom, in his book that has been translated to dozens of languages, underlines the importance of planned education: A society, which needs a high number of individuals with diverse skills, cannot stick to methods of obtaining these skills only through selection. Such a society has to develop these skills early on and to take the necessary steps to provide a planned education aimed at these skills for long times. For these

reasons, societies, which desire to have members who are capable of solving complex problems, keeping up with rapidly changing conditions, verbally communicating at advanced levels, and rapidly learning complex and new ideas; have to implement a planned and programmed education in order to be able to facilitate the development of these skills from early childhood and to improve them in school years (Bloom, 1998:251-252)

Since the opening of Music Teachers' School (Mûsiki Muallim Mektebi) in 1924, music-teaching curriculum has undergone numerous changes. The Ministry of National Education's view of music curricula along with potential changes has influenced the model of training music teachers. Main issues in music education can be juxtaposed as follows:

Professional qualifications of the music teacher,

- Inadequacy of music class hours,
- Regulation of the music curricula,
- Insufficiency in music instruments and materials,
- Insufficiency of reference books and repertoires,
- Inability to effectively utilize contemporary methods and technology.

In my opinion, the most important one among these issues is the one that pertains to the utilization of contemporary methods and technology in music education. Technological materials and highly-developed devices fill classrooms, but there exists a lack of skilled educators and experts who are capable of using them.

## **2. Technology Use in Music Education**

### **a. Technology, Educational Technology, Instructional Technology**

Technology is humans' control over nature by means of science.

Technology is the control of a group, which is technically effective both in concrete and experimental terms, over the rest of the unity (people, events, machines etc.) by means of an organizational hierarchy (Mc. Dermott, 1981:142, <http://uretim.meb.gov.tr/egitekhaber/s92/yazarlar.htm> , 18 Haziran 2013, saat: 14.10)

## Educational Technology

Education is the process of developing behaviors and talents, and acquiring knowledge, skills and attitudes. Technology, in very general, can be defined as forming functional structures required to have control over nature by using acquired skills (Alkan, 1998:16).

Given these meanings of these sub-concepts; educational technology then could be defined as the functional structuring of learning or teaching processes by using relevant knowledge and skills with the purpose of holding control over education in general, and the learning situation in particular. In other words, it is the act of designing, executing, evaluating and improving learning-teaching processes. (Alkan, 1998:17)

## Instructional Technology

Instructional technology is a technological concept, which is based on the idea that teaching is a sub-dimension of education and on the consideration of unique aspects of certain teaching disciplines. This term refers to a systematic approach that comprises all of designing, executing, assessing and developing teaching-learning processes in line with certain special objectives, by simultaneously using human and non-human resources, with the purpose of forming effective learning arrangements pertaining to relevant disciplines. (Alkan: 19)

Instructional technology is the branch of science, which examines the analyzing, designing, developing, execution and evaluation of processes and instruments that could be used in organizational, designed and curriculed environments for the purpose of enhancing “desired learning”( <http://tr.wikipedia.org>, 19.06.2013, 17:58)

### b. Musical Technology and Technology Use in Music Education

The term “musical technology” generally refers to all technological issues dealing with the art of music. More specifically, it refers to the act of executing activities such as playing, recording, composing, storing and performing by means of electronic instruments and computer software. (<http://tr.wikipedia.org>, 19.06.2013, 18:04)

Technology use in music education, on the other hand, refers to the execution of the above-mentioned activities for educational purposes. It is receiving the support of technological devices in the process of acquiring concepts and behaviors related to the science of music.

In today's conditions, in fact, all educators are expected to have a certain idea about all these fields. They are supposed to be useful to themselves and to their environments by using educational, instructional and musical technologies to certain extents. Ample opportunities in the form of materials, hardware and software that serve the above purpose are available today.

What might be the Technological Devices that can be used in Music Education? (Beşer, 2010:31-59)

Reflection Devices (Overhead Projector, Slide Projector, Opaque Projector, Film Strip Projector, Video Projector [Barcoveision], Datash ow [Lcd Panel], Conference Projector),

Devices used to Record and Play Video and Audio (Record Player, Cassette Player, Music Player, External Speaker, Television, Radio, Video Player, VCD Player, DVD Player, Video Camera, Voice Recorder),

Devices used in Music Education (Metronome, Tuner, Smart/Interactive Music Board, Computer, Midi Keyboard, Electronic Keyboard, Digital Piano, Synthesizer, Sampler),

Computer Software (Operating System, Web Browser, Office Applications, Programming Software, Web Design, Programming and Database Software, Picture and Graphic Software, Video Playing and Slide Software, Music Education Software, Note Writing Software, Voice Recording and Processing Software, Music Production Software) and other technological data (experimental instruments, mobile devices and software [iPhone, educational devices and toys, walkable piano, portable music instruments, foldable drum etc.]. Examples are the following: Foldable Piano, iPhone, walkable piano and other samples (Beşer, 2010: 58-59)

How these instruments/materials should/could be used in music education is a subject of another and more extensive study. For this reason, this issue will addressed briefly in the "suggestions" section.

What this study actually desires to emphasize is a planned inclusion of these materials in programs with the aim of endowing candidates with knowledge and experience.

### 3. How should Today's Music Education be?

Music (*lat.* Musica, *gr.* Musike, *fr.* Musique, *ita.* Musica, *tur.* Muzik, *ger.* Musik, *ar.* Musîkî) is the art of expressing ideas and imaginations in mono- or poly-phony (Sözer, 1996: 490)

Music is a universal language, a means of communication, and an important step of education that has been strengthening the unity of societies since the beginning of humanity (Ergöz, 2007: 7).

Music is among the essential sources of life for human beings. A person, who is nourished with adequate and correct music, is likely to have a healthier and more quality structure of thinking and feeling. In general, people who live with music emerge more prominent in societies in terms of a higher quality worldview and skills such as problem-solving. In this respect, individuals with higher music awareness, and societies composed of such individuals, are unlikely to fail in other segments of life (Beşer, 2010:5).

We need to train individuals who know about and effectively utilize technology in order to popularize music across the society and to provide a better education.

Education is the process of deliberately forming desired behaviors in an individual's life. (Ertürk, 1982:12)

Music education, on the other hand, is the process of endowing the individual with musical concepts and behaviors, and rendering her more competent in a planned manner.

Here, what is referred to is a planned education that serves for a certain purpose. We should reflect our objectives and targets in our programs. It might become possible to obtain better results if programs are revised in this manner.

A contemporary music educator should be someone, who is knowledgeable about all subjects related to music, is capable of playing an instrument competently, has technical and historical knowledge of Turkish and world music, is capable of analyzing, and is capable of combining all her knowledge with the latest teaching techniques and technological facilities.

The common point of programs in schools that aim to train music educators is putting more emphasis on area instruments. Candidates are trained in these programs to enable them to play an instrument competently.

However, what is more important for a music educator is learning the extent to which she should use contemporary methods and technology while teaching music than learning how to play an instrument.

It is observed that all teaching programs, including the latest one that was presented with the name of restructuration as if it was going to bring positive changes, are based on area instruments. It could be seen that the only area course that is given throughout the entire duration of education is on area instruments in all teaching programs. This shows that the main aim of all programs is to endow the pre-service teacher with the ability to play an instrument. We would be more realistic if we used the time spent for teaching how to play an instrument, a skill which teachers rarely use in their professional lives, for training music teachers who have a lot to talk about issues pertaining to music. Do music teachers cover all dimensions of music in their classes? If the answer to this question was “yes”, then we would now be able to state that we have attained a good level in general music education (Sevgi, 2003:67).

The title “music educator” does not only refer to the person who supervises in-school music courses and various music activities anymore. A music educator is now perceived as a professional who can be employed in numerous professional fields; such as instrument/sound teacher of individuals at all ages in or out of school; music expert of mass communication media (radio, TV, movie, recording studio etc.); music manager or counselor of institutions of musical therapy, large companies, tourism firms or big hotels; music expert of culture-tourism bureaucracy (gallery, museum, festival etc.); and so forth. She cannot, naturally, be expected to have acquired all skills that render her competent in all of these fields. What is meant here is that music education has long exceeded the boundaries of schools or music classes, and that music education is needed in all these fields. For the formation of the individual’s cultural/artistic sense is possible only if the act of including music in her life is performed with an educational care, which can only be shown by people who amalgamated musical skills with a pedagogical approach. (Okay, 2007)

For all these reasons, music educators should be individuals who are versatile, and capable of keeping up with contemporary methods and technological devices, so that she can be a guide to new generations.

In the final declaration of 9<sup>th</sup> National Music Education Symposium held in Marmara University, the emphasis was on the inclusion of musical technologies and programs and on departments of musical engineering. “In Turkey, the number of Faculties of Fine Arts has increased and the programs they offer have diversified. These schools should train only intermediary professionals who are experts on musical technologies. If conservatories will keep training instrument teachers, these teachers should be trained in teaching methods and instrument pedagogy. Finally, music education must be widened, it should be divided into branches, and Music Faculties or Music Universities should be established by bringing together departments on teaching, performing, musicology, musical engineering, conducting, composing etc.” (Filiz Kamacıoğlu, www.muzed.org.tr, 20.06.2013, 15:45)

#### 4. Findings and Interpretation

In this section, departments' curricula will be examined, differences will be addressed, and evaluations will be provided. It will be tried to determine the numbers of classes on technology use in music education offered in the existing programs.

##### Scope

**Universe:** Departments of Music Education and State Conservatories in Turkey.

**Sample:** A curriculum and a teaching plan from each of the following schools: Gazi University Faculty of Education Department of Music Education, Istanbul Technical University (ITU) Turkish Music State Conservatory (TMSC), Gaziantep University TMSC, and Sakarya University State Conservatory.

##### Data Collection Method and Instruments

Since 1998, faculties of education have been offering education according to a common plan, as required by the Council of Higher Education in Turkey (YÖK). In the study, eight-year teaching plans of Gazi University Faculty of Education Department of Music Education and State Conservatories constituted the sample. While some of these teaching plans were accessed online, some others were obtained directly from school managements, and then they were subjected to analysis.

##### a. Examination of Eight-Semester Curricula of Faculties of Education

Music departments of faculties of education are educational institutions that train music teachers. The candidate receives a quality training in the field of teaching. There exist 22 music departments of faculties of education in Turkey. Each year, these programs admit 30-60 students.

With the Decision (04.11.1997 - 97.39.2761) of the Council of Higher Education (YÖK), the process of restructuring faculties of education has started, and within this framework, the revised teacher training programs were put into effect in the 1998-1999 Academic year. In the restructuring efforts, programs of faculties of education that train teachers for elementary schools were restructured in a way that will meet the requirements of the eight-year continuous education (<http://www.meb.gov.tr>, 18.06.2013, 13:48).

This year, on the other hand, YÖK decided to cancel admitting candidates to faculties of education due to the high number of unemployed teachers.

The following findings were obtained after an analysis on the 8-Semester Curriculum of Gazi University Department of Music Teaching. ([www.guzelsanatlar.gazi.edu.tr](http://www.guzelsanatlar.gazi.edu.tr), 18.06.2013, 14:14)

#### Assessment:

In the curriculum, the obligatory course “Computer Use in Music” is given in the 1<sup>st</sup> and 2<sup>nd</sup> semesters with a total of 4 credits, and the obligatory courses “Computer I” and “Computer II” are given in the 3<sup>rd</sup> and 4<sup>th</sup> semesters with a total of 6 credits. Moreover, the elective course “Electronic Keyboard Training” is offered with 1 credit. While the total number of credits is 240, the number of credits of courses related to technology use is 11.

#### b. Examination of Eight-Semester Curricula of State Conservatories

State Conservatories are institutions that mostly train artists and musical scientists, mainly focusing on the artistic aspects of music. For this reason, more emphasis is placed in their programs on instrument training, sound training or theoretical training. In Turkey, there exist nearly 30 state conservatories (<http://tr.wikipedia.org>, 18.06.2013, 16:53) in different cities. While some of them focus on Turkish music, some other focus on Western music. Every year, 20-50 students enroll each of in these programs.

The Department of Music Technologies, on the other hand, was established for the first time in ITU TMSC, and today several conservatories in Turkey have this department. However, the lack of professors is an obstacle in front of opening such departments and admitting students.

#### 4.2.1. Curriculum of Sakarya University State Conservatory

Sakarya University (SAU) State Conservatory (SC) has four different departments: Basic Sciences, Turkish Music, Turkish Folk Dances and Music Technologies. While the former three are currently operating, the Department of Music Technologies does not admit students at the moment due to the lack of professors.

The 8-Year Curriculum of SAU SC Department of Basic Sciences ([www.dk.sakarya.edu.tr](http://www.dk.sakarya.edu.tr), 19 Haziran 2013, saat 16:00) was examined, and the following findings were obtained.

#### Assessment:

In the program, the course “Music Technologies” is given in the first semester with 3 credits. While the total number of credits is 240, the number of credits of the course related to technology use is 3.

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#### 4.2.2. Semester Curriculum of ITU TMSC Department of Basic Sciences Division of Music Theory

Under ITU TMSC; a total of eight departments operate: Basic Sciences, Music Theory, Vocal Training, Musical Technologies, Composition, Musicology, Musicology (English), Instruments, and Turkish Folk Dances. In this study, the curriculum of the Department of Music Theory, which was revised in 2010-2011, is addressed.

It was noted above that the first Department of Music Technologies was opened in this school.

The 8-Year Curriculum of ITU TMSC Department of Basic Sciences Division of Music Theory ([http://www.tmdk.itu.edu.tr/epTeb\\_tur.pdf](http://www.tmdk.itu.edu.tr/epTeb_tur.pdf) , 18.06.203, 14:21) was examined, and the following findings were obtained.

Assessment:

In the program, the obligatory course “Computer” is given in the first semester with one credit. Total number of credits in the program is 151; however, there is no obligatory course related to technology use in music.

#### 4.2.3. Curriculum of Gaziantep University TMSC Department of Basic Sciences Division of Turkish Classical Music

Gaziantep University TMSC have the Departments of Basic Sciences, Vocal Training, Turkish Folk Dances and Musicology.

The 8-Year Curriculum of Gaziantep University TMSC Department of Basic Sciences Division of Turkish Classical Music ([www.gantep.edu.tr](http://www.gantep.edu.tr), 19 Haziran 2013 saat 16:10) was examined, and the following findings were obtained.

Assessment:

In the program, the obligatory course “Computerized Note Writing” is given in the 7<sup>th</sup> and 8<sup>th</sup> semesters with a total of 4 credits. While the number of total credits in the program is 168, the number of credits of courses related to technology use in music is 4.

### 4.3. Comparison of the Programs

**Table 1. Comparison of the Programs**

<b>Courses</b>	<b>Faculty of Education</b>	<b>ITU TMSC Music Theory</b>	<b>SAU SC</b>	<b>GAU TMSC</b>
<b>“Technology Use in Music” Course</b>	<b>10(4.1%)</b>	<b>1 (0.6%)</b>	<b>3 (1.25%)</b>	<b>4 (2.3%)</b>
<b>Total Credits</b>	<b>240</b>	<b>151</b>	<b>240</b>	<b>168</b>

#### Assessment:

The percentages of courses related to technology use in music in curricula are the following: 4.1% in the Faculty of Education Department of Music, 0.6% in ITU TMSC Department of Music Theory, 1.25% in SAU SC Department of Basic Sciences, 2.3% in GAU TMSC Department of Basic Sciences. While all these percentages are low, it is seen that the percentage in the Faculty of Education is higher than in the other departments. Since not all departments included elective courses, they were not included in the analysis.

It was also observed in general reviews conducted on the internet that the number of courses on technology use in music is inadequate, and even some schools do not offer any such course at all.

The conservatories addressed here have similar programs, which is why they were selected.

## 5. Conclusion

The comparison of the programs suggest that these programs differ with respect to the coverage of technology use in music in courses offered. It is noteworthy that the number of such courses is low in all of these departments. The finding that the faculty of education has slightly higher percentage of such courses might have stemmed from the fact that the number of such practices has increased in the past ten years.

#### Suggestions

1. The necessity and benefits of music education at all age levels is clear today. Contemporary methods and technological devices could be used in order to popularize this education and render it more effective. In this respect, curricula may include courses on the use of technological devices in music education.

2. Elective courses should be included in curricula so that attentions of interested students can be attracted.

3. We still have departments of music technologies, which have been shut down or cannot admit students due to lack of professors. Training professors for these departments may be possible this way.

4. A lack of methods and reference books in music education is widely acknowledged. It is possible by benefiting from the facilities provided by technology to produce note books, solfeggio methods and playing methods. Mentioning here only the famous Finale software will give an idea on this matter. This note writing software is updated every year. It is possible to provide a faster and better education by including such software in our educational methods.

5. It is possible today to support printed publications visually by CDs and DVDs. For this purpose, voice recording studios and computer software might be used.

Benefiting from contemporary technologies and including these subjects in curricula both in music education and resource production will be a contemporary approach.

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# A comparison of the education systems in Turkey and Singapore and 1999-2011 timss tests results

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## Abstract

This study is limited to TIMSS tests. The problem statement can be expressed as: “How the education systems of Turkey and Singapore are differed?” “What are the results of Turkey and Singapore in TIMSS 1999-2007-2011?” This study is used literature method. Thank you to BAPKO for supporting my study.

Key words: Turkey, Singapore, education systems, TIMSS

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## 1. INTRODUCTION

A Trend International Mathematics and Science Study (TIMSS) is a research study which examines students' achievement according to some variables in participant countries in every 4-year-period. This research was commissioned by International Association for the Evaluation of Educational Achievement (IEA). The first round of TIMSS took place in 1995 and the second round in 1999. It was the third round that made TIMSS famous worldwide. It collects data on educational achievement from students at the 4<sup>th</sup> and 8<sup>th</sup> grades. It also collects extensive information from students, teachers and school principals about the teaching and learning of mathematics and science.

In 1999-2007, Turkey participated in TIMSS research at 8<sup>th</sup> grade level. Also, Turkey participated in TIMSS 2011 with 4<sup>th</sup> and 8<sup>th</sup> grade students.

The fact that some Asian countries topped the achievement list in TIMSS amazed many people and drew the attention of the industrial countries. Consequently it induced the study on these high-performing Asian countries, namely, China, Korea, Japan, and Singapore (Yee, de Lange and Schmidt, 2006: 1663).

When the Mathematics section of this survey is examined, the contents can be determined with these items: fraction and number sense, measurement, data representation, analysis and probability, proportionality, geometry and algebra. Otherwise, when the Science part of this study is examined, the subjects of science can be separated in these items: life science, physical science, earth science, biology, chemistry, physics, earth science.

Turkey is participated in TIMSS 1999, 2007 and 2011. But Singapore is participated in every TIMSS exams (1995, 1999, 2003, 2007 and 2011). Due to non-participation of Turkey in TIMSS 1995 and 2003 exams, these two applications were excluded from the scope of this study.

Each study of TIMSS involves approximately 50 countries and thousands of students in each participating country. 38 countries are participated in TIMSS 1999. After that, 59 countries are participated in TIMSS 2007. Finally, 57 countries with 4<sup>th</sup> grade students and 56 countries with 8<sup>th</sup> grade students are participated in TIMSS 2011.

### 1.1. Problem

The problem statement can be expressed as: “How the education systems of Turkey and Singapore are differed?” “What are the results of Turkey and Singapore in TIMSS 1999-2007-2011?”

### 1.2. Sub-problems

The sub-problems of this study can be arranged as:

- “1) How the compulsory education, primary and secondary education of Turkey and Singapore are differed?
- 2) What are the results of Turkey in TIMSS 1999-2007-2011?

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- 3) What are the results of Turkey and Singapore in TIMSS 1999-2007-2011?  
 4) How the results of Singapore and Turkey in TIMSS 1999-2007-2011 can be compared?"

### 1.3. Aim

The aim of this study is to demonstrate the differences between TIMSS results (1999, 2007 and 2011) in Turkey and in Singapore.

## 2. METHOD

This study is used literature method. The definition of this method can be given as below: "All books, master and doctorate thesis, articles are examined and summarized in this type of study (Karasar, 2008)."

### 3. Comparisons of Education System and of TIMSS Surveys in Turkey and in Singapore

#### 3.1. Comparison of Compulsory Education System in Turkey and in Singapore

In the table below, it can be showed comparatively the concept of compulsory education system in Turkey and in Singapore.

**Table 1 : Turkey-Singapore Compulsory Education**

Compulsory Education	
Turkey	Singapore
6-18 ages: 4+4+4 (4 year in primary, 4 year in middle school and 4 year in high school)	6-15 ages: 1-6 years in primary, 7-9 years in secondary (minimum 6 primary classes)

(12-year applications related to compulsory education Circular 2012/20, 09/05/2012, Compulsory education act, chapter 51, 2003)

As shown in the table 1, in 2012-2013 academic year, the duration of compulsory education Turkey upgrade from 8 years to 12 years (4+4+4: 4 years in primary, 4 years in college and 4 years in high school). In other words, 6-18 years are included in the compulsory education system. But, in Singapore, the compulsory education is covered students who have from 6 to 15 years old.

#### 3.2. Comparisons of Primary Education System in Turkey and in Singapore

In the table below, it can be demonstrated comparatively the primary education system in Turkey and in Singapore.

**Table 2: Turkey-Singapore Primary Education System**

Turkey-Singapore Primary Education System	
Turkey	Singapore
6-10 ages: 1-4 classes: 4 year primary	6-12 ages: 1-6 classes: 6 year primary

(Hodge, 2012, <http://multilingualphilippines.com/?p=6344>)

As shown in table 2, within the scope of 12-years compulsory education, in Turkey, the primary level involves 1<sup>st</sup>-4<sup>th</sup> grade. But in Singapore, the primary level takes 1<sup>st</sup>-6<sup>th</sup> grades (6-12 years).

#### 3.3. Comparisons of Secondary Education System in Turkey and in Singapore

In the table below, it can be given comparatively the secondary education system in Turkey and in Singapore.

**Table 3: Turkey-Singapore Secondary Education System**

Turkey-Singapore Secondary Education System	
Turkey	Singapore
11-14 ages: 5-8 classes: 4 year in secondary	13-18 ages: 7-12 classes: 5 year in secondary

(Hodge, 2012, <http://multilingualphilippines.com/?p=6344>)

As shown in the table 3, in Turkey, within the scope of 12-year compulsory education system, the college covers 5<sup>th</sup>-8<sup>th</sup> grades (11-14 years). But in Singapore, the secondary level involves 7<sup>th</sup>-12<sup>th</sup> grades (13-18 years).

### 3.4. Comparisons of Mathematics Lessons

In the table below, it can be showed comparatively the mathematics lessons in Turkey and in Singapore.

**Table 4: Comparisons of Singapore-Turkey Mathematics Lesson Hours**

Comparisons of Singapore-Turkey Mathematics Lesson Hours			
	Weekly Lesson Hours	Percentage of Mathematics Lessons in Weekly Curriculum	Annual Mathematics Lesson Hours
Singapore	29	13	124
Turkey	27	11	95

(Şişman, Acat, Aypay and Karadağ, 2007)

As shown in table 4, the weekly lesson hours are 29 in Singapore. But, the weekly lesson hours are 27 in Turkey. The percentage of mathematics lesson in weekly curriculum is 13 % in Singapore. But, the percentage of mathematics lessons in weekly curriculum is 11 % in Turkey. The annual mathematics lesson hours are 124 in Singapore. But, the annual mathematics lesson hours are 95 in Turkey.

### 3.4.2. Comparisons of Science Lessons

In the table below, it can be demonstrated comparatively the mathematics lessons in Turkey and in Singapore.

**Table 5: Comparisons of Singapore-Turkey Science Lesson Hours**

Comparisons of Singapore-Turkey Science Lesson Hours			
	Weekly Lesson Hours	Percentage of Science Lessons in Weekly Curriculum	Annual Science Lesson Hours
Singapore	23	15	14
Turkey	20	10	8

(Şişman, Acat, Aypay and Karadağ, 2007)

As shown in table 5, the weekly lesson hours are 23 in Singapore. But, the weekly lesson hours are 20 in Turkey. The percentage of science lesson in weekly curriculum is 15 % in Singapore. But, the percentage of science lessons in weekly curriculum is 10 % 20 in Turkey. The annual science lesson hours are 14 in Singapore. But, the annual science lesson hours are 8 in Turkey.

### 3.5. Comparisons of TIMSS Tests Results in Turkey and in Singapore

#### 3.5.1. Comparisons of TIMSS 1999 Tests Results in Turkey and in Singapore

Turkey is participated in TIMSS 1999 with 2204 schools and 7841 students. But Singapore participated in TIMSS 1999 with 5000 in 8<sup>th</sup> grade students (International Study Center, 2000, Martin, Gregory and Stemler, 2000).

In the table below, it can be given comparatively TIMSS 1999 international average of mathematics and science achievement and mathematics and science scores in Singapore, in Turkey.

**Table 6 Comparisons of Singapore-International Average-Turkey in TIMSS 1999 Mathematics Achievement**

	TIMSS 1999 Mathematics Achievement	TIMSS 1999 Science Achievement
<b>Singapore</b>	604	568
<b>International Average</b>	487	488
<b>Turkey</b>	429	433

(International Study Center, 2000)

As shown in table 6, when the mathematics scores of TIMSS 1999 are compared, it is seen that Singapore is ranked 1<sup>st</sup> with 604 scores. The international average of 487 was obtained by averaging across the mean scores for each of the 38 participating countries. Turkey is ranked 31<sup>rd</sup> among 38 countries with 429 scores. Also when the science scores of TIMSS 1999 are compared, Singapore is ranked 2<sup>nd</sup> country with 568 scores. The international average of this exam is 488. Turkey is ranked 33<sup>rd</sup> among 38 countries with 433 scores.

#### 3.5.2. Comparisons of TIMSS 2007 Tests Results in Turkey and in Singapore

Turkey participated in TIMSS 2007 with 16.112 schools and 1.163.830 in 8<sup>th</sup> grade students. But Singapore participated in TIMSS 2007 with 177 schools and 49.363 in 4<sup>th</sup> grade students and 164 and 50.904 in 8<sup>th</sup> grade students (Olson, Martin and Mullis, 2009).

In the table below, it can be demonstrated comparatively TIMSS 2007 international average of mathematics and science achievement and mathematics and science scores in Singapore, in Turkey.

**Table 7: Comparisons of Singapore-International Average-Turkey in TIMSS 2007 Mathematics Achievement**

	TIMSS 2007 Mathematics Achievement		TIMSS 2007 Science Achievement	
	4 <sup>th</sup>	8 <sup>th</sup>	4 <sup>th</sup>	8 <sup>th</sup>
<b>Singapore</b>	599	593	<b>Singapore</b>	587
<b>International Average</b>	500	500	<b>International Average</b>	500
<b>Turkey</b>		432	<b>Turkey</b>	454

(Mullis, Martin and Foy, 2009, Şişman, Acat, Aypay and Karadağ, 2007, Martin, Mullis and Foy, 2009)

As shown in table 7, Singapore is ranked 2<sup>nd</sup> country with 599 scores among 4<sup>th</sup> grade students. But this country is ranked 3<sup>rd</sup> country with 593 scores. The international average of this exam is 500. Turkey is participated this survey only in 8<sup>th</sup> grade students. Turkey is ranked is ranked 30<sup>th</sup> with 432 scores. Also when the science scores of TIMSS 2007 are compared, Singapore is ranked 1<sup>st</sup> country with 587 scores among 4<sup>th</sup> grade students. But this country is ranked 1<sup>st</sup> country with 567 scores. The international average of this exam is 488. Turkey is ranked 31<sup>th</sup> among 38 countries with 454 scores.

### 3.5.3. Comparisons of TIMSS 2011 Tests Results in Turkey and in Singapore

In Turkey, this exam is realized in April 2011 with 257 schools and 7.479 students in 4<sup>th</sup> grade and 239 schools and 6928 students in 8<sup>th</sup> grade.

TIMSS was administrated at grade 4 in 57 countries and at grade 8, in 56 countries (Katsberg, Ferrarro, Lemanski, Roey and Jenkins, 2013).

In the table below, it can be showed comparatively TIMSS 2011 international average of mathematics and science achievement and mathematics and science scores in Singapore, in Turkey.

**Table 8: Comparisons of Singapore-International Average-Turkey TIMSS 2011 Mathematics Achievement**

	TIMSS 2011 Mathematics Achievement		TIMSS 2011 Science Achievement		
	4 <sup>th</sup> grade	8 <sup>th</sup> grade	4 <sup>th</sup> grade	8 <sup>th</sup> grade	
<b>Singapore</b>	606	611	<b>Singapore</b>	583	590
<b>International Average</b>	500	500	<b>International Average</b>	500	500
<b>Turkey</b>	469	452	<b>Turkey</b>	463	483

(Yücel, Karadağ and Turan, 2013, Martin, Mullis, Foy and Stanco, 2012)

As shown in table 8, Singapore is ranked 1<sup>st</sup> country with 606 scores among 4<sup>th</sup> grade students. But this country is ranked 2<sup>nd</sup> country with 611 scores. The international average of this exam is 500. Turkey is participated this survey in 4<sup>th</sup> and 8<sup>th</sup> grade students. Turkey is ranked 35<sup>th</sup> with 469 scores among 4<sup>th</sup> students. And it is ranked 24<sup>th</sup> with 452 scores among 8<sup>th</sup> students. Also when the science scores of TIMSS 2011 are compared, Singapore is ranked 2<sup>nd</sup> country with 583 scores among 4<sup>th</sup> grade students. But this country is ranked 1<sup>st</sup> with 567 scores among 8<sup>th</sup> grade students. The international average of this exam is 488. Turkey is ranked 36<sup>th</sup> with 463 scores among 4<sup>th</sup> grade students. But it is ranked 21<sup>th</sup> with 483 scores among 8<sup>th</sup> grade students.

## 4. DISCUSSIONS

Salehi-Isfahani, Hassine and Assaad (2011) prepared an article with this title “Equality of Opportunity in Education in the Middle East and North Africa.” The inequality of opportunities explains a significant part of the inequality in educational achievements in most Middle East and North Africa (MENA) countries, but in a few cases, notably Algeria, its role is small. Family background variables are the most important determinants of inequality in achievement, followed by community characteristics. Inequality of education opportunities are high in several MENA countries, and have either stayed the same or worsened in recent years. The results show that, despite great efforts in past decades to invest in free public education, in most MENA countries there is plenty of room left in further levelling the playing field in education.

Öztürk and Uçar (2010) wrote an article with this title “determination and comparison of factors, which effect the achievement in science of 8<sup>th</sup> grade students, using the results of TIMSS exams in Taiwan and Turkey. These countries have some differences in socio-economic situations, the budget of education, the education conditions of parents, the instruction of teachers and the programs. That’s why, in Taiwan, the students are succeeded in two domains of TIMSS exams.

Bouhlila (2012) wrote an article with this title “The quality of secondary education in the Middle East and North Africa: what can we learn from TIMSS’ results?” The research questions addressed here are why is achievement low? And why is the gap between the top-performing countries and MENA countries large? In order to answer these questions, the paper focuses on several aspects: the first is the inefficiency of acquiring the language, the second is the inefficiency of time devoted to homework, the third is the meagre intended curriculum which is translated into a weaker implemented curriculum, the fourth aspect deals with the inefficiency of public resources devoted to the education sector. Finally, the paper highlights two other factors believed to affect students’ achievement: family background and students’ attitudes towards mathematics and science.

Ghagar, Othman and Mohammadpour (2011) prepared an article with this title “Multilevel analysis of achievement in mathematics of Malaysian and Singaporean students.” The results indicated that 57,28 % of the total variance in mathematics achievement in Malaysia accounted for school-level differences. Meanwhile, the results showed that classroom-level differences contributed to 74,6 % of the total variance in achievement of Singaporean students. Only 5,9 % of the variance in achievement in Singapore accounted for school-level differences. At the student level, mathematics self-concept was the most influential factor on achievement of students from both countries. At the school level, school climate as perceived by the school principals was the most influential factor on achievement of students from both countries.

Uzun, Bütüner and Yiğit (2010) prepared an article with this title “A Comparison of the Results of TIMSS 1999-2007: The Most Successful Five Countries-Turkey Sample.” According to results of TIMSS 1999 & 2007, students from East Asian countries were the top performers in science and mathematics. The findings obtained by TIMSS 1999 & 2007 showed that Turkish students’ low achievement cannot be explained by the variables that are attitude, time spent on homework or the education level of parents.

Aslan and Kaptan (2007) prepared an article with this title “A comparison with the relationship between the changes in the program of teaching science and the program of instruction teacher: an example of Turkey and Singapore.” In two countries, the programs of teaching science have a large content. But in Singapore, the science teachers have more cultural knowledge than Turkish science teachers. Also, Turkish science teachers receive a little instruction in service. Otherwise, they can be supported a little about references and the techniques of learning science. That’s why, in Singapore, the students took part in first or second range in science in TIMSS-R exams.

## 5. CONCLUSION

### 5.1. Results

The results of this study are given below:

- 1) According to compulsory education act, in Singapore, the children must be educated in school from 6 to 15 ages.
- 2) According to curricular 12-year compulsory education, in Turkey, the children must go to school from 5/6 to 17/18 ages.
- 3) According to compulsory education act chapter 51, in Singapore, the primary level takes 6 years (6-12 ages).
- 4) According to curricular 12-year compulsory education, in Turkey, the primary level takes 4 years (5/6-9/10 ages).
- 5) The secondary level takes 6 years (12-18 ages) in Singapore.
- 6) The secondary level takes separately 4 years in middle school (9/10-13/14 ages) and 4 years (13/14-17/18 ages) in high school in Turkey.
- 7) The weekly lesson hours are 29 in Singapore. But, the weekly lesson hours are 27 in Turkey. The percentage of mathematics lesson in weekly curriculum is 13 % in Singapore. But, the percentage of mathematics lessons in weekly curriculum is 11 % in Turkey. The annual mathematics lesson hours are 124 in Singapore. But, the annual mathematics lesson hours are 95 in Turkey.
- 8) The weekly lesson hours are 23 in Singapore. But, the weekly lesson hours are 20 in Turkey. The percentage of science lesson in weekly curriculum is 15 % in Singapore. But, the percentage of science lessons in weekly curriculum is 10 % 20 in Turkey. The annual science lesson hours are 14 in Singapore. But, the annual science lesson hours are 8 in Turkey.

9) In TIMSS 1999, Singapore is ranked 1<sup>st</sup> with 604 scores. The international average of 487 was obtained by averaging across the mean scores for each of the 38 participating countries. Turkey is ranked 31<sup>rd</sup> among 38 countries with 429 scores. Also when the science scores of TIMSS 1999 are compared, Singapore is ranked 2<sup>nd</sup>

country with 568 scores. The international average of this exam is 488. Turkey is ranked 33<sup>st</sup> among 38 countries with 433 scores.

10) In TIMSS 2007, Singapore is ranked 2<sup>nd</sup> country with 599 scores among 4<sup>th</sup> grade students. But this country is ranked 3<sup>rd</sup> country with 593 scores. The international average of this exam is 500. Turkey is participated this survey only in 8<sup>th</sup> grade students. Turkey is ranked is ranked 30<sup>th</sup> with 432 scores. Also when the science scores of TIMSS 2007 are compared, Singapore is ranked 1<sup>st</sup> country with 587 scores among 4<sup>th</sup> grade students. But this country is ranked 1<sup>st</sup> country with 567 scores. The international average of this exam is 488. Turkey is ranked 31<sup>th</sup> among 38 countries with 454 scores.

11) In TIMSS 2011, Singapore is ranked 1<sup>st</sup> country with 606 scores among 4<sup>th</sup> grade students. But this country is ranked 2<sup>nd</sup> country with 611 scores. The international average of this exam is 500. Turkey is participated this survey in 4<sup>th</sup> and 8<sup>th</sup> grade students. Turkey is ranked 35<sup>th</sup> with 469 scores among 4<sup>th</sup> students. And it is ranked 24<sup>th</sup> with 452 scores among 8<sup>th</sup> students Also when the science scores of TIMSS 2011 are compared, Singapore is ranked 2<sup>nd</sup> country with 583 scores among 4<sup>th</sup> grade students. But this country is ranked 1<sup>st</sup> with 567 scores among 8<sup>th</sup> grade students. The international average of this exam is 488. Turkey is ranked 36<sup>th</sup> with 463 scores among 4<sup>th</sup> grade students. But it is ranked 21<sup>th</sup> with 483 scores among 8<sup>th</sup> grade students.

## 5.2. Suggestions

The suggestions for other researchers are demonstrated below:

- 1) From 1999 to 2011, the mathematics section TIMSS test results can be compared in Turkey and in Singapore.
- 2) From 1999 to 2011, the science part TIMSS test results can be compared in Turkey and in Singapore.
- 3) From 1999 to 2011, the mathematics section TIMSS test results can be compared in Turkey and in other ME countries.

The suggestions for Turkey are explained below:

- 1) The teachers can be informed about TIMSS surveys in-service education programs.
- 2) The teachers can try to solve previous TIMSS surveys with their students.
- 3) The students can be informed about TIMSS exams in different seminars.

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4<sup>th</sup> International Conference on New Horizons in Education

# A comprehensive quality academic project for a bachelor's degree with accredited program and certified laboratories. The case of the degree of civil engineering in the FES Aragón UNAM

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## Abstract

In the Decade of the 1990s, a significant decrease occurred in the number of students entering institutions of higher education in Mexico, to study the degree of Civil Engineer. The decrease in enrollment at the school of higher studies Aragón of the UNAM was dramatic, insomuch the principal of the school according to the administrative chief considered, in 2002, the closure of one of the shifts.

One of the main reasons of this decrease was the economic crisis in Mexico in 1994, starting which a considerably decreased in the infrastructure investment, as well as the strike at the UNAM, in 1999, that kept the institution paralyzed for nearly a year.

This work mentions the actions that we carried out for the improvement of the curriculum, which led to accreditation and certification of its Labs. It also mentions the strategies followed by the academic and administrative staff which enabled substantial improvements and the achievement of favorable evaluations. It also talk about the main benefits for the students of the career, which impacted on the increased of enrollment.

Keywords: accreditation, certification, improvement

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## **Background**

The Faculty of higher studies Aragon (FES Aragón) is a multidisciplinary entity belonging to the Universidad Nacional Autónoma de México (UNAM), which is located in the northeast area of the capital of Mexico. This educational unit was created to generate an alternate campus of UNAM that would accommodate 12 degree programs, in which the infrastructure was not enough for the quantity of students.

The first generation was composed of 260 students divided into four 65 student groups two of them in the morning the rest in the evening.

33 generations of civil engineers, has been prepared in the classrooms of the faculty.

## **Problem**

During the 37 years of academic work of the faculty, Civil Engineer career has offered and with no interruption, however the career has been subject of various internal and external problems which reduced the enrolment and put in risk one of the shifts.

From 1976 up to 1990 there were a continuous increase in the enrolment; they recorded a maximum of 1189 students. From 1990 to 1993 there was decrease of students and we reached the number of 643 students. This setback was motivated, among other factors, because a good number of students were hired with engineering companies, without having completed her studies, considering that there was an important offer of jobs for projects, construction and supervision of infrastructure, due to a considerable investment in these products promoted by the federal Government. The workload was such, that companies accept young people without being entitled, even those who had barely passed only half of the credits of the career.

In 1994, in the month of December, there was a change in the administration of the country; there was a severe economic crisis. The huge investment in infrastructure over the previous years was made from requested loans from abroad offering guarantees that the country was not able to meet.

Unable to pay their obligations, the federal Government carried out budgetary restrictions, mainly with regard to the construction of infrastructure. The labor market of the construction industry shrank dramatically, causing layoffs in companies.

In the career of Civil Engineering of the FES Aragón there was a small increase in enrollment since 1995 and up to the year 1997 (768 students). The increase of 140 students with respect to 1993, largely responds to a good number of students who had left his truncated career returned to conclude it, due to there were no job offers.

The scant infrastructure investment lasted from 1994 until the end of the Decade, by which Civil Engineer career was not one of the attractive options for high school graduates.

In 1999, UNAM was paralyzed by a strike, which lasted for almost a year, which generates defections of students of the institution as well as a lack of potential candidates to enter, who looked for other educational options.

After the strike, in the years 2001, 2002 and 2003, enrollment drops dramatically from 545, 534 and 502 students respectively.

During those years, the career offered 240 places new students and received, on average, only 45% of them.

Due to such problems, the administration of the Faculty assessed the possibility of closing one of the shifts of the career, in order to take better advantage of the spaces and save resources in the recruitment of academics.

The panoram was not in any way encouraging, especially considering that the total number of civil engineers graduated from institutions of higher education in the country, accounted for only 20% of professionals in the field needed to meet the demands in terms of building infrastructure.

Considering the severe contraction of the registration, as well as the challenge of providing graduates with profile appropriate to the needs of the labor market, it was required an in-depth analysis of the necessary actions so that the academic program respond effectively under such circumstances.

There were meetings of the administrative responsible of the program with representatives of different areas of knowledge, to analyze the problem.

As a result of these meetings of analysis, it was identified the necessity to elaborate a diagnosis of the situation of the program.

### **Diagnosis of the academic program**

In this evaluation exercise it was consulted to Bachelor's degree graduates, teachers of the academic program and employers, through surveys.

The most important findings of the consultation were as follows:

- The training of students of the career should continue to be the generalist.
- It was necessary to increase the number of computer tools in the subjects of Applied Engineering
- It was necessary to improve the service in the laboratories of the career because some practices were not carried out for any problem and they were not rescheduled the equipment for the practices were insufficient.

There were no relationship between theoretical and practical classes; there were no coincidence with the study program, since the theory and practices were taught by different teachers.

- Insufficient and partially updated bibliographic material
- There were no formal mentoring activities in the career
- It was required to expand the range of options to get the degree.

From the diagnostic information, it was established a strategy considering the most urgent matters, establishing two lines of action:

- 1. Improvement in the process of teaching in the laboratories of the career, beginning with a good system of quality management.**
- 2. Works for the improvement of the academic program**

### **Quality Committee**

To drive improvement in services in laboratories and work improvement of the academic program, the creation of a working group which was called quality Committee considered suitable. The Committee was formed in 2003.

Within the structure academic administration of the faculty, the academic program of Civil Engineering belongs to the Division of physical and mathematical sciences and engineering. Computer Engineering and Mechanical and Electrical Engineering also belong to this division.

The responsible for administrative and academic staff of three careers in engineering and the quality Committee worked together. With this new Committee works started with the main objective of improving the service of laboratories careers in parallel.

The Committee was formed by the Chief of the Division of engineering taking the role of President and representative of the principal of the Faculty; the academic Division Secretary, taking the role of the internal quality Committee; three heads of the three careers, four technical secretaries and three chief of laboratory.

Before starting to work, the Committee members received training, which was given by staff of the coordination of research of the University (UNAM). The topics studied were as follows:

- Theoretical principles of the quality management systems
- Knowledge of Norma ISO 9001: 2000 (ISO 9001:2008 later)

### **1. The improvement of the teaching process in the laboratories of the career, beginning with a good system of quality management.**

Realization of practices in the engineering laboratory is an essential part in the formation of the students. They help student to identify different parameters that subsequently will be decisive in the design.

In civil engineering academic program, a significant number of subjects requires studying and pass the laboratory.

Deficiencies in service of the laboratories were detected; those deficiencies were associated with inadequate infrastructure, lack of equipment, absence of the technicians in charge of areas and poor planning of laboratory practices, among other things, impacting on an inadequate preparation of the students.

#### **Need for the implementation of a quality management system.**

The establishment of verification mechanisms of the quality of service in teaching laboratories, as well as the determination of actions that not only allowed correction of detected problems, but the improvement of positive aspects, these are factors that favor the establishment of a process of continuous improvement in the service. On the other hand, continuous improvement of laboratories activities includes a review and permanent updating of the manuals of practices, as well as the supervision of the activities in the laboratories.

With the establishment of a system of quality management, the following objectives are pursued:

- Provide the necessary conditions for the realization of practices for practical-theoretical subjects, so that satisfy the expectations of students and contribute in obtaining a consistent profile to the needs of the labor market.
- Establish a dynamic of continuous improvement of the service in the laboratory, which even exceeds the expectations of students.

#### **Awareness-raising and training of the staff of the laboratories**

The commitment of all those involved in the quality management system is essential for the activities y the laboratory. Therefore, it is necessary a wide work of diffusion and training of all members.

Prior to the formal implementation of the quality management system, briefings were carried out with the technical academic and teachers of practices of the laboratories; such activities were scheduled in both shifts (morning and evening), in order to facilitate the attendance of all members.

In these meetings it was informed to participants about the objectives of the implementation of the quality management system, the role that each of the members of the laboratories would play, the mechanisms of evaluation and monitoring that would be subjected and the benefits that in short, medium and long terms accrue its implementation.

### **Determination of the processes subject to control**

The quality management system can include one or more of the processes carried out. The laboratory of civil engineering was considered the following mission:

*Support and complement the teaching-learning process of theoretical and practical subjects in Bachelor of civil engineering curriculum map, belonging to the FES Aragón UNAM, as well as give complementary courses of updating and professional training.*

All the laboratories of the academic program were considered in the scope of the management system.

### **Generation of the quality management system documents**

In order to guide and give certainty to the system of management of quality, documents that will govern the activities in the laboratory must be generated.

The documents generated for the quality management system are:

- Quality manual

It is the document that establishes the scope of the quality management system, the mission, vision and goals of the Organization, specifying the responsibilities of each of the members of the system as well as measurement and control mechanisms.

- Document Control procedure

It establishes the guidelines of the quality management system for the control and preservation of internal and external documents related to the same.

- Control records Procedure

It establishes the elements of identification and control that must contain a document of the quality management system, as well as the mechanisms to ensure its identification, storage, protection, retrieval, retention and disposition.

### **Testing of the documentary processes and records control**

Before to the implementation of the quality management system, it began the documentary control of the laboratories, using new formats during a school semester. The use of new documents purpose was to detect faults existing in them, in order to make the necessary changes.

### **Implementation of the quality management system**

Once it was considered that there were solid foundations for the formal start of the work of the quality management system, it was launched under the new conditions laid down in the documents that were properly generated.

### **Evaluation system of the laboratory (SEL)**

To evaluate the service three questionnaires were generated, they were directed to the customer (student), teachers and instructors. Each instrument consists on average of twenty closed questions.

The questionnaires were applied at least twice during the semester; the first one at the middle of the semester and the second at the end of it.

The analysis to determine the causes of the non-conforming service is done through cause and effect (Ishikawa)<sup>2</sup> diagram.

Once we conclude the analysis of causes of non-conformities, the corrective actions are determined.

### **Internal audits**

From the implementation of the quality management system, at least once a year the internal audit is conducted to know the status and to take the necessary actions to correct the causes of nonconformities. These information is also valuable for the preparation of audits of certification, surveillance or recertification, carried out by an evaluation Agency.

### **External audits (for certification)**

Taking into account the improvement in the service to the client, thanks to the establishment of the system of management of quality, it was considered convenient that this was evaluated by an external instance by means of an audit for certification.

The system was evaluated by the Mexican Institute of standardization and certification, in November 2004, granting the certificate of quality.

## **2. Works for the improvement of the academic program**

Evaluation of academic programs by external peers is a virtuous process, in the institutions of higher education are taking ever greater force and in which the administrations of the same will be increasingly involved, since it is a public recognition of the academic work carried out.

Based on the positive results obtained in laboratories, the central administration of the Autonomous National University of Mexico, devoted extraordinary resources to equip laboratories and expand service coverage. Taking advantage of the support received, there were also improvements in the classroom.

In order to continue with efforts to improve the academic program, actions with the intention of subjecting it to the assessment for accreditation were carried out.

A strategy was developed in order to face the process, it is described below, it is "a way" to prepare an evaluation process for accreditation, based on the idea that the generation of a strategy will strengthen the efforts to assist the process, as outlined in document *"The seven knowledge necessary for the education of the future"*, of the United Nations Organization for education, science and culture<sup>1</sup>.

The strategy raised the following activities:

### Before the evaluation visit

- Evaluation of the appropriateness of submitting to the process (CIPP method and analysis tow).

It was considered convenient, that there would be an evaluation of the State keeping the academic program prior to submitting it to the accreditation process. We used the CIPP method<sup>2</sup> (context, input, process and product), recommended by the Joint Committee on Standards for Educational Evaluation of the United States.

To complement the evaluation, applied analysis tow<sup>2</sup> (DAFO), from whose results, positive and negative aspects of the academic program is determined and general strategies for work were established.

- Adequacy of spaces and places for teachers and technical management.

It was evaluated the necessity of hiring full time teachers as well as technical academic, and it was requested to the administration before the evaluation for accreditation of the program.

An analysis of the State that kept the facilities of the academic program was made, and it was requested to the Superintendence department to carry out the necessary maintenance work.

- Selection and training of the staff (stakeholders).

An element fundamental, prior to the accreditation process, was the formation of a compact team of specialists in each of the areas of the academic program.

- Self-diagnostic of the program (Delphi technique).

Before the evaluation visit, as a requirement of the accrediting body, responsible for the program sent a self-assessment document, previously provided by that instance. In order to have valuable elements that serve as support for a collegiate assessment, and whose evaluation parameters allow objectively qualify the status of the academic program, applied the Delphi technique<sup>2</sup>.

- Preparation of the logistics for the assessment visit.

During the evaluation visit, there are different needs to be covered. It is necessary to anticipate them.

### During the evaluation visit

- Participation of the entire team.

Everybody was involved in the process, so it was obvious that all of them worked which on a common goal.

- Assuming a positive attitude of open-minded

It was Emphasized the advisability of staying with an open mind and assuming an positive attitude, considering the comments of reviewers as valuable contributions to generate improvements in the academic program.

- We sought to satisfy those aspects that would not have been clear to the evaluators, considering that, while the visit is not concluded, evidences to clarify could be used.
- We asked the evaluators for their pinion at the end of each day and at the end of the visit (such information, even if it is unofficial, allowed us to anticipate a reaction plan).

#### **After the visit**

- Human and material resources were handled.
- The Accreditation Council members were contacted to clarify doubts with respect to the requirements set out in the certificate of evaluation.
- In the plan of reaction we established actions that benefit human and material resources and that could be shared with other programs of the faculty.
- A reaction plan was developed and submitted, unofficially, to the revision of the accrediting body.

#### **Main dividends of the continuous improvement process**

The continuous improvement process initiated in 2004, with the creation of the quality Committee, allowed to establish orderly work dynamics, with clearly defined goals and indicators of efficiency.

From the improvement works carried out in the laboratories, it was requested a review of the quality management system by an external instance. At the end of the process, it was obtained the certificate of quality.

From the improvement of laboratories, we reviewed other aspects of the academic program, as the infrastructure, study programs, evaluation mechanisms and forms to get the degree.

From the analysis, the form to get the degree grow from 1 to 9 options, study programs were reviewed, and updated as well as the bibliography of the subjects of the program.

The quality of the classrooms was improved, preparing them for the use of projection equipment.

Once the program was considered strong enough to undergo an evaluation by external peers, it was requested the evaluation for accreditation to the Council for the Accreditation of Engineering Education, obtaining the certificate in August 2007.

### **Perspectives of the academic program of Civil Engineering of the FES Aragon**

From the creation of the internal Committee of quality, the improvements carried out in the academic program without a doubt have been factor in the gradual increase of the number of students, as well as the favorable opinion from graduates and employers.

In recent years, from 2008 to 2012, the program has been rated among the top ten of the country (surveys of newspapers of national circulation "El Universal" and "Reforma").

As shown in the following table, enrollment has increased consistently over the last years.

Table 1. School population in the career of Civil Engineering

<b>YEARS</b>					
2007	2008	2009	2010	2011	2012
551	640	751	861	981	1139

\* Source: Unit of planning from the school of higher studies Aragon of the UNAM

## Conclusions

The generation of a quality system for teaching in laboratories is a process that involves the commitment of all members of the Organization: Division Chief, heads and Secretaries of the careers, technical, academic and laboratory teachers.

The quality of the profile of the students will be more in keeping with the needs of the labor market.

The members of the quality management system are also part of the academic programs in engineering. That is why the dynamics of continuous improvement will also benefit other programs.

The activities of planning prior to the evaluation process for the accreditation are decisive to anticipate the Evaluation Committee's observations, allowing establishing the plan of reaction based on the resources available to the academic program. The strategies planned with such resources allow us to face the mid-term review of the accreditation body (2.5 years), without compromising the Faculty and with the certainty of accomplishing the established commitments.

The dynamics of the work of the members of the academic program, generated from the activities of planning, contributes to the efficient use of human and material resources, for the benefit of students and academic institutions.

Continuous improvement of academic programs allows you to maintain high standards of quality of educational services and offer graduates according to the profile required by the labor market.

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# A content analysis of educational technology research in 2011

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## Abstract

The purpose of the present study is review all the articles published in 6 international from Social Sciences Citation Index (SSCI) in 2011 through content analysis method. According to the results, the most frequently used research method was found to be quantitative methodology. Among data collection tools, the most frequently used one is questionnaire and the most preferred sampling method in all the journals is convenience sampling method. It is believed that this study will provide a direction for the future studies and fill the gaps in literature.

Keywords: instructional technology, educational technology, content analysis

## 1. INTRODUCTION

The connection between education and technology has improved especially in recent years as a result of advancements observed in Information and Communications Technologies. As a result of these developments, changes in Education Technology discipline have also occurred and new research areas under the discipline of education technologies have emerged.

As the scope of Education Technology discipline is quite broad, there are many different perceptions of Educational Technology. According to experts in the field of Educational Technology, though all dimensions of education are of the interest of Educational Technology, educational processes and environment are considered to be the real specialty of this discipline (Simsek, 2002). Being a dynamic and comprehensive area, Educational Technology has passed through various stages throughout its history and its orientation has changed, which is quite normal.

Educational technology has passed through four age. First one is "The Age of Instructional Design" which focuses on the content, the second one is "The Age of Message Design" which focuses on format, the third one is "The Age of Simulation" which focuses on the interaction between teaching materials and students, and the last one is "New Age" which we are currently experiencing and in which research is increasingly focusing on learning environments and construction of them (Winn, 2002).

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When the related literature is reviewed, it is seen that research aiming to determine the trends in education technologies both in the world and in Turkey generally focuses on topic, method, data collection instruments, data analysis methods, selection of sampling and the number of citations.. Some studies from the literature are presented in Table 1.

Table 1. Studies conducted in the field of educational technologies

Author(s)	Aims/Objectives of study	Results and conclusions
Göktaş et. al. (2012)	460 articles from Turkey published in the field of educational technologies in 2000-2009 were analyzed.	<p><b>The most commonly preferred ones</b></p> <p><i>Topic:</i> Educational media and technology</p> <p><i>Data collection instrument:</i> Questionnaire</p> <p><i>Sampling selection method:</i> Purposive sampling</p> <p><i>Level of sampling:</i> Undergraduate (Education faculty)</p> <p><i>Data analysis method:</i> Descriptive analysis</p>
Lu, Wu & Chiu (2009)	413 articles published in 4 journals in SSCI in 2005-2007 in the field e-learning were analyzed.	<p><b>The most commonly preferred ones</b></p> <p><i>Topic:</i> New Roles of the Instructor &amp; Learner</p> <p><i>Method:</i> Experimental I</p> <p><i>Level of the sampling:</i> College/University</p> <p><i>Academic discipline:</i> Physical sciences and Social sciences</p>
Alper & Gülbahar (2009)	The articles published in The Turkish Online Journal of Educational Technology in 2003-2007 were analyzed to determine the tendencies in the field of educational technologies.	<p><b>The most commonly preferred ones</b></p> <p><i>Topic:</i> Computer and multimedia-based instruction</p> <p><i>Method:</i> Literature review</p> <p><i>Data collection instrument:</i> Scales</p> <p><i>Sampling selection method:</i> Easily available</p> <p><i>Level of the sampling:</i> University</p>
Kurt, Şahin & Karakoyun (2009)	Theses written in the field of Computer and Instruction Technologies were analyzed to reveal the tendencies in the field.	<p><b>The most commonly preferred ones</b></p> <p><i>Topic:</i> On-line learning</p> <p><i>Method:</i> Quantitative</p> <p><i>Level of the sampling:</i> University</p> <p><i>Data analysis method:</i> Means and standard deviations</p>

Şimşek et.al.(2009)	259 master's theses completed in the field of educational technologies at Middle East Technical University, Anadolu University, Karadeniz Technical University, Gazi University, Ankara University, Çukurova University, Hacettepe University, Marmara University and Sakarya University in Turkey in 2000-2007 were analyzed in terms of their topics, methods and results.	<p><b>The most commonly preferred ones</b></p> <p><i>Topic:</i> Computer-assisted instruction, alternative teaching-learning approaches, web-assisted learning, problems experienced in the use of educational technologies , internet-based learning and distance education</p> <p><i>Method:</i> Quantitative</p> <p><i>Data Collection Instrument:</i> Questionnaires, tests and scales</p> <p><i>Data analysis method:</i> Descriptive statistics, t-test and variance analysis</p>
Gülbahar & Alper (2009)	The journal of Ankara University Educational Sciences Faculty, the journal of Hacettepe University Education Faculty, the journal of Gazi University Education Faculty, The Turkish Online Journal of Educational Technology and The Turkish Online Journal of Distance Education were reviewed to carry out a content analysis of the studies conducted in the field of educational technologies in Turkey in 2005-2007.	<p><b>The most commonly preferred ones</b></p> <p><i>Topic:</i> E-learning and distance education</p> <p><i>Method:</i> Quantitative</p> <p><i>Data Collection Instrument:</i> Scale, test and questionnaire</p> <p><i>Sampling selection method:</i> Easily available</p> <p><i>Level of the sampling:</i> University</p>
Hew, Kale & Kim (2007)	Articles published in the journals of Educational Technology Research and Development, Instructional Science, and The Journal of Educational Computing Research in 2000 – 2004 were analyzed.	<p><b>The most commonly preferred ones</b></p> <p><i>Topic:</i> Learning environment, learning and teaching psychology</p> <p>Educational design approaches, research and evaluation approaches</p> <p><i>Method:</i> Descriptive</p> <p><i>Data collection instrument:</i> Questionnaire</p>
Ma (2000)	The theses completed in the field of educational technologies in the Department of Educational Technologies of Wisconsin University in 1977-1999 were analyzed through content analysis and citation analysis.	<p><b>The most commonly preferred ones</b></p> <p><i>Topic:</i> interactive video and the use of computers in education</p> <p><i>Method:</i> Experimental and case study</p> <p><i>Data collection tools:</i> Interview</p>

The present study rather than looking at the tendencies in the field based on the analysis of the articles published in one or few journals for a certain period of time as in many other studies, analyzed all the articles published in 6 journals of educational technologies within Social Sciences Citation Index (SSCI) through content analysis. All the articles published in these journals in 2011 were subject to the analysis. In this way, clear picture of the studies carried out in the field of educational technologies for a year was taken and most preferred topics,

methods and their distribution across the journals were determined. For this purpose, the research questions were constructed as follows:

1. What is the distribution of the studies in journals publishing educational technology research?
2. What is the distribution of (a) Research methods, (b) Data collection tools, (c) Data collection types, (d) Sampling methods, (e) Level of the sample, (f) Size of the sample, (g) Data analysis methods used in educational technology research across the journals?

## 2. METHOD

All the articles published in 6 international journals in SSCI in 2011 were analyzed through content analysis method. Content analysis can be defined as a systematic and renewable technique through which a text is summarized by reducing it to smaller content categories based on certain rules (Stemler, 2001).

### 2.1. Sample

The population of the study consists of all the education technology articles published in journals within SSCI list in 2011. However, given the limitations of the study, there is a need to make some selection among the journals based on certain criteria. In this regard, the journals listed in SSCI and having “Educational Technology” in its name were included in the study. In addition to this, among these journals, the ones having “Computer and Education” in their names and publishing articles in the field of educational technology were determined. As a result of this selection procedure, the sample of the study became 600 articles published in the 6 international journals (Australasian Journal of Educational Technology-AJET, British Journal of Educational Technology-BJET, Computers & Education-C&E, Educational Technology and Society-ET&S, Educational Technology Research and Development-ETR&D, Turkish Online Journal of Educational Technology-TOJET) in SSCI list in 2011 (see. Table2). Without doubt, there are many journals publishing important research in the field of educational technologies apart from the journals included in the present study. As it was not possible to analyze all these journals in a short time, such a limitation was used in the present study. Future research may look at other journals.

### 2.2. Data collection instruments

In the present study, Article Review Form (ARF) was used to analyze the articles. The ARF was developed by making some changes on “The Educational Technologies Publication Classification Form” developed by Göktaş et al. (2012) by means of a literature review (Hew et al., 2007; Masood, 2004; Reeves, 1995; Sözbilir & Kutu, 2008). Throughout the updating process, first the form was examined by the researchers and the new categories considered to be necessary were added. Then, the form was examined by two people specialized in the field of research methods.

In the first part of the form there is some descriptive information such as the name of the article, its author, and the journal where it is published. In the other parts, type of article, methodology of the article, its data collections tools, sampling and data analysis methods are included.

### 2.3. Data analysis

The articles in the journals selected for the present study were analyzed through ARF by the researchers. Before starting independent analyses, randomly selected 50 articles were analyzed by all the researchers and compatibility between independent observers was examined. As no incompatibility was observed between the codings of the researchers, the other articles were independently analyzed by the researchers; yet, after each

journal was completed, crosstabs were constructed (e.g. research methods with data collection instruments or research methods with analysis methods) and whether there was any problem in coding was investigated and necessary amendments were made. Moreover, throughout the period when the researchers carried out their analyses independently, the researchers came together when they met any problem while filling in the forms and following a group discussion, final form of data entry was determined. The collected data were analyzed through descriptive methods and percentages and frequencies are presented in tables.

### **3. FINDINGS**

The findings obtained from the analysis of the articles are presented below in an order parallel to that of the research questions.

The present study analyzed 600 articles published in the field of educational technologies in 6 international journals within the scope of SSCI index in 2011. When the table is examined, it is seen that the highest number of articles was published in C&E journal in 2011 and this is followed by TOJET, AJET, BJET, ET&S, and ETRD.

Table 2. The number of articles in the journals

Journals	The number of articles	
	n	%
AJET	80	13.3
BJET	74	12.3
C&E	203	33.8
ET&S	72	12.0
ETRD	41	6.8
TOJET	130	21.7
<b>Total</b>	<b>600</b>	<b>100.0</b>

The distribution of research methods in the articles analyzed in the field of education technologies across the journals is presented in Table 3. When the methods of the articles analyzed were examined, the most frequently used research method was found to be quantitative methodology (58.67%), and this is followed by mixed (21.33%), qualitative (10.50%), others (4.83%) and literature review (4.67%).

In quantitative studies, it is seen that non-experimental research (33.17%) is preferred more than experimental research (25.50%). In non-experimental studies, descriptive research method is more preferred (17.17%) than the other methods and in experimental studies, quasi-experimental method is more preferred (17.67%) than the others. Among the qualitative methods, case study (9.33%) is the most preferred research design. In studies in which mixed method is preferred the most frequently preferred design is explanatory (9.17%) and it is followed by triangulation (8.00%) and exploratory (4.17%) design. In literature review studies, most commonly seen one is the studies compiling the literature concerning the related topic (4.00%). Meta-analysis method is only seen in four articles (0.67%). Apart from all these methods, studies describing the developed technology etc. are classified under the title of others. That type of studies make up 4.83% of all the articles analyzed.

When the data presented in Table 3 are examined, it is seen that in all the articles analyzed, quantitative method is the most commonly used one and this is followed by mixed method. When compared the other journals, AJET and TOJET include more qualitative research. Literature review type of studies occupy very little place in the journals. Out of all the journals, ETRD accommodates the highest amount of literature review research. Three out of the four meta-analysis studies are published in C&E and one of them in ETRD. The studies classified under the title of the others are mostly published in TOJET (27.6%). While explanatory design is dominant in C&E, AJET and BJET, triangulation design is more popular in TOJET, C&E and AJET.

Table 3. Distribution according to methods

Method/Journals	AJET		BJET		C&E		ET&S		ETRD		TOJET		Total	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%
<b>Quantitative</b>														
<b>Experimental</b>														
True experimental	0	0.00	2	20.00	0	0.00	0	0.00	1	10.00	7	70.00	10	1.67
Quasi-experimental	7	6.60	20	18.90	42	39.60	11	10.40	6	5.70	20	18.90	106	17.67
Weakexperimental	2	5.70	1	2.90	20	57.10	9	25.70	0	0.00	3	8.60	35	5.83
Pre-experimental	0	0.00	1	50.00	0	0.00	0	0.00	0	0.00	1	50.00	2	0.33
<b>Total</b>	<b>9</b>	<b>5.88</b>	<b>24</b>	<b>15.69</b>	<b>62</b>	<b>40.52</b>	<b>20</b>	<b>13.07</b>	<b>7</b>	<b>4.58</b>	<b>31</b>	<b>20.26</b>	<b>153</b>	<b>25.50</b>
<b>Non-experimental</b>														
Descriptive	13	12.60	11	10.70	29	28.20	14	13.60	7	6.80	29	28.20	103	17.17
Causal-Comparative	0	0.00	1	7.70	5	38.50	3	23.10	0	0.00	4	30.80	13	2.17
Correlational	2	18.20	1	9.10	5	45.50	2	18.20	0	0.00	1	9.10	11	1.83
Survey	6	10.50	3	5.30	29	50.90	4	7.00	1	1.80	14	24.60	57	9.50
ExpostFacto	0	0.00	1	33.30	0	0.00	1	33.30	1	33.30	0	0.00	3	0.50
Scale Development	1	8.30	1	8.30	5	41.70	2	16.70	0	0.00	3	25.00	12	2.00
<b>Total</b>	<b>22</b>	<b>11.06</b>	<b>18</b>	<b>9.05</b>	<b>73</b>	<b>36.68</b>	<b>26</b>	<b>13.07</b>	<b>9</b>	<b>4.52</b>	<b>51</b>	<b>25.63</b>	<b>199</b>	<b>33.17</b>
<b>TOTAL</b>	<b>31</b>	<b>8.81</b>	<b>42</b>	<b>11.93</b>	<b>135</b>	<b>38.35</b>	<b>46</b>	<b>13.07</b>	<b>16</b>	<b>4.55</b>	<b>82</b>	<b>23.30</b>	<b>352</b>	<b>58.67</b>
<b>Qualitative</b>														
Ethnography	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Phenomenology	1	25.00	2	50.00	0	0.00	0	0.00	0	0.00	1	25.00	4	0.67
Groundedtheory	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Case study	17	30.40	10	17.90	9	16.10	5	8.90	3	5.40	12	21.40	56	9.33
Action research	2	66.70	0	0.00	0	0.00	0	0.00	0	0.00	1	33.30	3	0.50
<b>Total</b>	<b>20</b>	<b>31.75</b>	<b>12</b>	<b>19.05</b>	<b>9</b>	<b>14.29</b>	<b>5</b>	<b>7.94</b>	<b>3</b>	<b>4.76</b>	<b>14</b>	<b>22.22</b>	<b>63</b>	<b>10.50</b>
<b>Mixed</b>														
Explanatory	8	14.50	8	14.50	26	47.30	0	0.00	6	10.90	7	12.70	55	9.17
Exploratory	5	20.00	2	8.00	8	32.00	6	24.00	2	8.00	2	8.00	25	4.17
Triangulation	9	18.80	4	8.30	11	22.90	7	14.60	4	8.30	13	27.10	48	8.00
<b>Total</b>	<b>22</b>	<b>17.19</b>	<b>14</b>	<b>10.94</b>	<b>45</b>	<b>35.16</b>	<b>13</b>	<b>10.16</b>	<b>12</b>	<b>9.38</b>	<b>22</b>	<b>17.19</b>	<b>128</b>	<b>21.33</b>
<b>Literature review studies</b>														
Meta-analysis	0	0.00	0	0.00	3	75.00	0	0.00	1	25.00	0	0.00	4	0.67
Literature review	4	16.70	3	12.50	4	16.70	4	16.70	5	20.80	4	16.70	24	4.00
<b>Total</b>	<b>4</b>	<b>14.29</b>	<b>3</b>	<b>10.71</b>	<b>7</b>	<b>25.00</b>	<b>4</b>	<b>14.29</b>	<b>6</b>	<b>21.43</b>	<b>4</b>	<b>14.29</b>	<b>28</b>	<b>4.67</b>
<b>Others</b>	<b>3</b>	<b>10.30</b>	<b>3</b>	<b>10.30</b>	<b>7</b>	<b>24.10</b>	<b>4</b>	<b>13.80</b>	<b>4</b>	<b>13.80</b>	<b>8</b>	<b>27.60</b>	<b>29</b>	<b>4.83</b>

The distribution of the data collection instruments used in the analyzed educational technology studies is given in Table 4. When the data collection tools used in the articles analyzed are examined, it is seen that there are totally 970 data collection tools used. The most frequently used data collection tool was found to be questionnaire (31.44%), and this is followed by achievement tests (16.29%). The least frequently preferred one was found to be document analysis (2.16%). When the rates of data collection tools are examined according to the journals, it is seen that observation is most frequently used in C&E (30.00%). Interviews (27.43%), achievement tests (37.34%) and alternative tools (37.50%) are used more in C&E than the others. Attitude, perception, personality and skill tests (38.53%) and questionnaires (39.34%) are used more in articles published in C&E. Document analysis for data collection is most commonly used in AJET (28.57%). Moreover, general sum of the data collection tools used in C&E (34.85%) and TOJET (20.00%) is more than those of the other journals. The reason for this is the higher number of articles published in these journals.

Table 4. Distribution of data collection instruments according to the journals

Data collection tools	Journals													
	AJET		BJET		C&E		ET&S		ETRD		TOJET		Total	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%
<b>Observation</b>														
Participant	5	11.90	6	14.29	13	30.95	4	9.52	1	2.38	13	30.95	42	4.33
Non-participant	3	16.67	4	22.22	5	27.78	0	0.00	2	11.11	4	22.22	18	1.86
<b>Total</b>	<b>8</b>	<b>13.33</b>	<b>10</b>	<b>16.67</b>	<b>18</b>	<b>30.00</b>	<b>4</b>	<b>6.67</b>	<b>3</b>	<b>5.00</b>	<b>17</b>	<b>28.33</b>	<b>60</b>	<b>6.19</b>
<b>Interviews</b>														
Structured	12	50.00	3	12.50	2	8.33	2	8.33	4	16.67	1	4.17	24	2.47
Unstructured	12	18.18	6	9.09	21	31.82	6	9.09	4	6.06	17	25.76	66	6.80
Semi-Structured	2	8.70	4	17.39	8	34.78	3	13.04	1	4.35	5	21.74	23	2.37
<b>Total</b>	<b>26</b>	<b>23.01</b>	<b>13</b>	<b>11.50</b>	<b>31</b>	<b>27.43</b>	<b>11</b>	<b>9.73</b>	<b>9</b>	<b>7.96</b>	<b>23</b>	<b>20.35</b>	<b>113</b>	<b>11.65</b>
<b>Achievement tests</b>														
Open ended	4	12.50	9	28.13	9	28.13	4	12.50	2	6.25	4	12.50	32	3.30
Multiple choice	8	10.39	10	12.99	29	37.66	13	16.88	5	6.49	12	15.58	77	7.94
Others	2	4.08	4	8.16	21	42.86	3	6.12	6	12.24	13	26.53	49	5.05
<b>Total</b>	<b>14</b>	<b>8.86</b>	<b>23</b>	<b>14.56</b>	<b>59</b>	<b>37.34</b>	<b>20</b>	<b>12.66</b>	<b>13</b>	<b>8.23</b>	<b>29</b>	<b>18.35</b>	<b>158</b>	<b>16.29</b>
<b>Attitude.perception. personality and skill tests</b>														
Open ended	0	0.00	0	0.00	1	50.00	0	0.00	0	0.00	1	50.00	2	0.21
Multiple choice	0	0.00	1	25.00	0	0.00	0	0.00	0	0.00	3	75.00	4	0.41
Likert	13	15.48	12	14.29	27	32.14	12	14.29	4	4.76	16	19.05	84	8.66
Others	1	5.26	2	10.53	14	73.68	0	0.00	0	0.00	2	10.53	19	1.96
<b>Total</b>	<b>14</b>	<b>12.84</b>	<b>15</b>	<b>13.76</b>	<b>42</b>	<b>38.53</b>	<b>12</b>	<b>11.01</b>	<b>4</b>	<b>3.67</b>	<b>22</b>	<b>20.18</b>	<b>109</b>	<b>11.24</b>
<b>Questionnaire</b>														
Open ended	5	14.71	3	8.82	12	35.29	4	11.76	3	8.82	7	20.59	34	3.51
Multiple choice	5	22.73	1	4.55	7	31.82	3	13.64	3	13.64	3	13.64	22	2.27
Likert	26	12.62	17	8.25	83	40.29	28	13.59	13	6.31	39	18.93	206	21.24
Others	2	4.65	6	13.95	18	41.86	3	6.98	5	11.63	9	20.93	43	4.43
<b>Total</b>	<b>38</b>	<b>12.46</b>	<b>27</b>	<b>8.85</b>	<b>120</b>	<b>39.34</b>	<b>38</b>	<b>12.46</b>	<b>24</b>	<b>7.87</b>	<b>58</b>	<b>19.02</b>	<b>305</b>	<b>31.44</b>
<b>Document</b>	<b>6</b>	<b>28.57</b>	<b>4</b>	<b>19.05</b>	<b>4</b>	<b>19.05</b>	<b>1</b>	<b>4.76</b>	<b>3</b>	<b>14.29</b>	<b>3</b>	<b>14.29</b>	<b>21</b>	<b>2.16</b>
<b>Alternative tools</b>														
Performance tests	4	12.50	5	15.63	7	21.88	2	6.25	1	3.13	13	40.63	32	3.30
System logs	14	25.00	5	8.93	26	46.43	6	10.71	3	5.36	2	3.57	56	5.77
<b>Total</b>	<b>18</b>	<b>20.45</b>	<b>10</b>	<b>11.36</b>	<b>33</b>	<b>37.50</b>	<b>8</b>	<b>9.09</b>	<b>4</b>	<b>4.55</b>	<b>15</b>	<b>17.05</b>	<b>88</b>	<b>9.07</b>
<b>Others</b>	<b>24</b>	<b>17.52</b>	<b>23</b>	<b>16.79</b>	<b>35</b>	<b>25.55</b>	<b>16</b>	<b>11.68</b>	<b>9</b>	<b>6.57</b>	<b>30</b>	<b>21.90</b>	<b>137</b>	<b>14.12</b>
<b>TOTAL</b>	<b>142</b>	<b>14.64</b>	<b>121</b>	<b>12.47</b>	<b>338</b>	<b>34.85</b>	<b>109</b>	<b>11.24</b>	<b>66</b>	<b>6.80</b>	<b>194</b>	<b>20.00</b>	<b>970</b>	<b>100.00</b>

In the studies analyzed in the field of education technologies, the distribution of data collection types used across the journals is given in Table 5.

Table 5. Data collection types according to the journals

Data Collection Types	Journals													
	AJET		BJET		C&E		ET&S		ETRD		TOJET		Total	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Unused	11	22.92	0	0.00	10	20.83	5	10.42	6	12.50	16	33.33	48	8.00
Classic	41	11.42	60	16.71	112	31.20	34	9.47	19	5.29	93	25.91	359	59.83
Online	13	9.92	12	9.16	55	41.98	22	16.79	12	9.16	17	12.98	131	21.83
Mixed	15	24.19	2	3.23	26	41.94	11	17.74	4	6.45	4	6.45	62	10.33
<b>Total</b>	<b>80</b>	<b>13.33</b>	<b>74</b>	<b>12.33</b>	<b>203</b>	<b>33.83</b>	<b>72</b>	<b>12.00</b>	<b>41</b>	<b>6.83</b>	<b>130</b>	<b>21.67</b>	<b>600</b>	<b>100.00</b>

Table 5 presents data collection types used in education technology research. The tools used are divided into three groups as classic, online, and mixed. Apart from these types, the area which is coded as “unused” includes the studies which did not use any data collection tools. It is seen that in the analyzed studies, the most frequently employed data collection tools are classic data collection tools using pen and paper (59.83%). They are followed by online (21.83%) and mixed (online and paper-pen) (10.33%). When the preferred data collection tool types are analyzed according to the journals, it is seen that the highest number of classic data collection tools are used by C&E (31.20%). In articles published in C&E, online scales are preferred more than the others (41.98%). The studies using mixed method to collect data are mostly seen in C&E (41.94%).

The distribution of the sampling methods used in educational technology research according to the journals is given in Table 6.

Table 6. Sampling methods according to the journals

Sampling methods	Journals													
	AJET		BJET		C&E		ET&S		ETRD		TOJET		Total	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Random	2	4.76	10	23.81	8	19.05	5	11.90	3	7.14	14	33.33	42	7.49
Convenience	37	9.81	43	11.41	147	38.99	50	13.26	20	5.31	80	21.22	377	67.20
Purposive	31	24.60	13	10.32	36	28.57	10	7.94	11	8.73	25	19.84	126	22.46
Population	0	0.00	0	0.00	1	100.00	0	0.00	0	0.00	0	0.00	1	0.18
Others	0	0.00	7	46.67	3	20.00	1	6.67	0	0.00	4	26.67	15	2.67
<b>Total</b>	<b>70</b>	<b>12.48</b>	<b>73</b>	<b>13.01</b>	<b>195</b>	<b>34.76</b>	<b>66</b>	<b>11.76</b>	<b>34</b>	<b>6.06</b>	<b>123</b>	<b>21.93</b>	<b>561</b>	<b>100.00</b>

When the Table 6 is examined, it is seen that the most popular sampling method in all the journals is convenience sampling (67.20%). This is followed by purposive sampling (22.46%). The ratio of the research employing random sampling selection is 7.49%. The number of the studies in which whole of the population is accessible is one.

The distribution of the level of the sample used in education technology research is presented in Table 7.

Table 7. Level of the sample according to the journals

Level of the sample	Journals													
	AJET		BJET		C&E		ET&S		ETRD		TOJET		Total	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Pre-school students	0	0.00	1	20.00	2	40.00	1	20.00	0	0.00	1	20.00	5	0.88
Elementary school students (1-5)	4	7.41	8	14.81	19	35.19	5	9.26	6	11.11	12	22.22	54	9.56
Elementary school students (6-8)	0	0.00	0	0.00	23	56.10	3	7.32	2	4.88	13	31.71	41	7.26
Secondary school students (9-12)	2	6.90	7	24.14	13	44.83	3	10.34	1	3.45	3	10.34	29	5.13
Under graduate students (Education)	7	14.00	5	10.00	10	20.00	3	6.00	1	2.00	24	48.00	50	8.85
Under graduate students (Others)	33	15.64	32	15.17	76	36.02	30	14.22	10	4.74	30	14.22	211	37.35
Graduate students	5	50.00	0	0.00	2	20.00	2	20.00	1	10.00	0	0.00	10	1.77
Teachers	6	17.14	3	8.57	12	34.29	2	5.71	3	8.57	9	25.71	35	6.19
Instructor	2	13.33	2	13.33	5	33.33	1	6.67	0	0.00	5	33.33	15	2.65
Parents	0	0.00	2	28.57	1	14.29	0	0.00	0	0.00	4	57.14	7	1.24
Directors	0	0.00	1	100.00	0	0.00	0	0.00	0	0.00	0	0.00	1	0.18
Others	15	14.02	12	11.21	32	29.91	16	14.95	10	9.35	22	20.56	107	18.94
<b>Total</b>	<b>74</b>	<b>13.10</b>	<b>73</b>	<b>12.92</b>	<b>195</b>	<b>34.51</b>	<b>66</b>	<b>11.68</b>	<b>34</b>	<b>6.02</b>	<b>123</b>	<b>21.77</b>	<b>565</b>	<b>100.00</b>

When Table 7 is examined, it is seen that in all the journals, the most frequently preferred level of sample is undergraduate students (46.20%). The studies are usually carried out with undergraduate students and they are

followed by elementary school students (21.95%). In the studies conducted in the field of educational technologies, directors (0.18%) and parents (1.24%) are less frequently preferred as sample. Moreover, the number of studies carried out with pre-school students (0.88%) is quite few. Studies carried out with graduate students are most commonly published in AJET (50.00%). The ratio of the studies carried out with elementary school students is higher in C&E than the other journals. There is no study carried out with graduate students in TOJET and BJET. The ratio of the studies conducted with directors is quite low and they are only seen in BJET.

The distribution of the sizes of sample in articles analyzed in the field of educational technologies according to the journals is presented in Table 8.

Table 8. The sizes of sample according to the journals

Sizes of sample	Journals													
	AJET		BJET		C&E		ET&S		ETRD		TOJET		TOTAL	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%
1-10	5	12.20	8	19.51	8	19.51	2	4.88	4	9.76	14	34.15	41	7.39
11-30	17	19.54	17	19.54	20	22.99	11	12.64	8	9.20	14	16.09	87	15.68
31-100	24	12.44	28	14.51	68	35.23	24	12.44	10	5.18	39	20.21	193	34.77
101-300	15	11.63	9	6.98	44	34.11	19	14.73	8	6.20	34	26.36	129	23.24
301-1000	6	8.45	9	12.68	35	49.30	7	9.86	1	1.41	13	18.31	71	12.79
More than 1000	3	8.82	1	2.94	19	55.88	2	5.88	3	8.82	6	17.65	34	6.13
<b>Total</b>	<b>70</b>	<b>12.61</b>	<b>72</b>	<b>12.97</b>	<b>194</b>	<b>34.95</b>	<b>65</b>	<b>11.71</b>	<b>34</b>	<b>6.13</b>	<b>120</b>	<b>21.62</b>	<b>555</b>	<b>100.00</b>

When Table 8 is examined, it is seen that the dominant number of participants in all the journals is between 31 and 100 (34.77%). The ratio of the studies having more than 1000 participants is 6.13%. The articles having more than 1000 participants are most commonly seen in C&E (55.88%). The number of participants in the studies published in TOJET is mostly in the range of 31-100.

The distribution of the data analysis methods used in the articles analyzed in the field of educational technologies is given in Table 9.

Table 9. Data analysis methods according to the journals

Data analysis methods	Journals													
	AJET		BJET		C&E		ET&S		ETRD		TOJET		Total	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%
<b>Descriptive analysis</b>														
Frequency / Percentage	30	11.81	20	7.87	110	43.31	32	12.60	12	4.72	50	19.68	254	21.24
Mean / Standard deviation	22	14.96	10	6.80	65	44.22	16	10.88	11	7.48	23	15.65	147	12.29
Graphical views	11	8.87	8	6.45	60	48.39	21	16.93	4	3.22	20	16.13	124	10.37
<b>Total</b>	<b>63</b>	<b>12</b>	<b>38</b>	<b>7.24</b>	<b>235</b>	<b>44.76</b>	<b>69</b>	<b>13.14</b>	<b>27</b>	<b>5.14</b>	<b>93</b>	<b>17.71</b>	<b>525</b>	<b>43.90</b>
<b>Inferential analysis</b>														
Correlation	11	14.67	5	6.67	33	44	9	12	4	5.33	13	17.33	75	6.27
T-Test	12	8.63	17	12.23	49	35.25	15	10.79	6	4.32	40	28.78	139	11.62
Anova/Ancova	6	4.8	16	12.8	51	40.8	17	13.6	7	5.6	28	22.4	125	10.45
Manova/Mancova	1	4	0	0	16	64	2	8	3	12	3	12	25	2.09
Factor Analysis	1	3.45	2	6.90	17	58.62	3	10.34	1	3.45	5	17.24	29	2.42
Regression	3	11.54	2	7.69	8	30.77	6	23.08	2	7.69	5	19.23	26	2.17
Non-Parametric	5	13.16	5	13.16	14	36.84	3	7.89	6	15.79	5	13.16	38	3.18
Structural equation model	3	21.43	1	7.14	8	57.14	2	14.28	0	0	0	0	14	1.17
Others	6	46.15	0	0	3	23.08	3	23.08	0	0	1	7.69	13	1.09
<b>Total</b>	<b>48</b>	<b>9.92</b>	<b>48</b>	<b>9.92</b>	<b>199</b>	<b>41.11</b>	<b>60</b>	<b>12.40</b>	<b>29</b>	<b>5.99</b>	<b>100</b>	<b>20.66</b>	<b>478</b>	<b>40.47</b>
<b>Qualitative analysis</b>														
Content analysis	18	22.78	7	8.86	25	31.64	7	8.86	12	15.19	10	12.66	79	6.60
Descriptive analysis	20	21.28	14	14.89	21	22.34	11	11.70	7	7.45	21	22.34	94	7.86
Others	2	14.28	3	21.43	7	50	0	0	0	0	2	14.28	14	1.17
<b>Total</b>	<b>40</b>	<b>21.39</b>	<b>24</b>	<b>12.83</b>	<b>53</b>	<b>28.34</b>	<b>18</b>	<b>9.62</b>	<b>19</b>	<b>10.16</b>	<b>33</b>	<b>17.65</b>	<b>187</b>	<b>15.63</b>
<b>TOTAL</b>	<b>151</b>	<b>12.62</b>	<b>110</b>	<b>9.20</b>	<b>487</b>	<b>40.72</b>	<b>147</b>	<b>12.29</b>	<b>75</b>	<b>6.27</b>	<b>259</b>	<b>21.65</b>	<b>1196</b>	<b>100.0</b>

It is seen that descriptive analysis method (43.90%) and inferential analysis method (40.47%) are most commonly used methods in educational technology research. While percentages and frequencies are most popular ones among the descriptive analyses (21.24%), among the inferential analyses, the most frequently used ones are t-test (11.62%), and ANOVA (10.45%). When the distribution of analysis methods is investigated according to the journals, it is seen that all statistics are mostly used in C&E (44.76 % descriptive statistics, 41.11% inferential statistics, 28.34% qualitative statistics).

#### 4. RESULTS AND SUGGESTIONS

In the present study, the articles published in 6 international journals in SSCI index were analyzed in terms of, method, data collection tools, sampling and data analysis method. The present study analyzed totally 600 articles published in AJET, BJET, C&E, ETR&D, ET&S, TOJET.

When the number of the articles published in these journals is examined, it is seen that the highest number of articles was published in C&E and it is followed by TOJET. When the methods used in the articles are analyzed, the quantitative methods seem to be used more and it is followed by mixed, qualitative, and literature review research methods. Similar studies in the literature also report that mostly quantitative methods are employed (Alper & Gülbahar, 2009; Goktas et al., 2012; Hew et al., 2007; Kurt et al., 2009; Şimşek et al., 2009). The reasons behind the preference for quantitative methods may be that they can be displayed within more visible lines, they can lead the researcher to certain causes and effects and their results can be more generalizable. When the methods are examined across the journals, it is seen that TOJET and AJET accommodate more place for qualitative studies and ETRD accommodates more place for literature review studies than the other journals. In light of these findings, it can be suggested that in future research, qualitative methods should be used to elaborate the results of studies carried out according to a quantitative design. In addition, mixed methods could also be used. Moreover, by employing mixed methods in future research, the findings can be enhanced and the methods can consolidate each other so that more comprehensive solutions can be found to problems. Of course, two basic points to be considered in the selection of research method should be research problem and research questions.

The data collection tools used in the studies are classified as observations, interviews, achievement tests, attitude-perception-personality tests, questionnaires, documents and alternative tools and totally 970 data collection tools were found to be used in all the articles. Among these tools, the most frequently used one is questionnaire and it is followed by achievement tests. It is seen that the number of the studies carried out by using documents is quite limited. In their content analysis studies, Alper and Gülbahar (2009), Göktaş et al. (2012), Hew et al. (2007), Şimşek et al. (2009) also investigated data collection tools and found that questionnaires are used more than the others. The reason why questionnaire is preferred more can be that it can be administered to big groups in different regions rapidly and cost-effectively. Moreover, as the most frequently used methods are quantitative methods in the articles, quantitative data collection instruments such as questionnaire and achievement test are preferred more. It was also found that student logs are used as an alternative data collection tools. It is believed that the studies to be carried out by using different data collection tools can bring different perspectives to the literature.

The data collection methods used in the studies are classified into three as classic, online and mixed. Among these, the classic methods are the most popular in the studies analyzed here. When the journals are examined individually, it is seen that C&E includes more studies preferring classic and mixed methods. It is thought that online data collection method will be used more in future as it makes easy to reach a lot of people, eliminates the problem of data arrangement and reduces the problems stemming from individuals and allows fast data analysis.

In the present study, the sampling methods used in education technology research were investigated from a several aspects. When the sampling method is examined in general, it is seen that the most preferred one in all the journals is convenience sampling method and the other methods are used relatively less. Some other similar studies have also elicited a similar finding (Alper & Gülbahar, 2009; Göktaş et al., 2012). In order to improve the

external validity and generalizability of a study, it seems to be better to use random sampling method. In studies using convenience sampling and purposive sampling methods, the findings should be interpreted considering the limitations resulting from the sampling methods. When the articles are analyzed in terms of the level of the sample, it is seen that mostly undergraduate students are selected as the participants in all the journals analyzed and relatively fewer studies are carried out with elementary school students, directors and parents. Similar studies in the literature also show that undergraduate students are preferred more than the others (Alper & Gülbahar, 2009). Hew et al. (2007) also points out that undergraduate students are mostly preferred as the sampling. Focusing on undergraduate students may result in ignoring some important factors of education technologies, Hence, future research can select samples consisting of pre-school students, directors and parents so that problems primarily concerning these groups can be solved more easily. The reason why undergraduate students are preferred more in the articles can be related to the popularity of easily available sampling method. As most of the studies are carried by academicians and due to convenience they prefer to work with undergraduate students, this seems to be natural.

When the number of the participants in the studies is investigated, it is seen that it generally varies from 11 to 300. The studies carried out with 1000 or more participants are generally seen in C&E. If the size of the sampling is increased in future studies, this can improve the generalizability of the researches.

The articles were analyzed in terms of the data analysis methods used and it was found that totally 1196 analyses were carried out. The analyses are classified as descriptive, inferential and qualitative. The most frequently used one among these is the descriptive statistics and in this type of analyses, percentages and frequencies are used. This is because of the fact that the data of both qualitative and quantitative research methods can be analyzed through frequencies and percentages. Among the inferential statistics, t-test is preferred more and in qualitative analyses, descriptive analysis is used more. This finding concurs with the similar studies in literature (Göktaş et al., 2012; Hew et al., 2007; Klein, 1997) .

One limitation of the present study is the analysis of 6 journals. In future research, the number of journals to be analyzed can be increased. The credible journals whether within SSCI or not can be included in future research. Such research can be repeated each year and then brought together at certain intervals to see the tendencies in the field more clearly.

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4<sup>th</sup> International Conference on New Horizons in Education

# A hierarchical-precedences model for the analysis of teaching process

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## Abstract

Mapping the learning process and its analysis are relatively complicated activities. This paper demonstrates the use of precedence for non-standard analysis. Precedential model and precedence analysis are based on a comparison of elements in the system and the search precedence in the linkages between these elements. Links are defined for the elements of the system and precedence is set for attributes of elements. Multiple precedence and consensus in precedence are examined and modeled using the identified precedence. This way we can find the critical points and critical activities in the educational process.

*Keywords:* precedence, incidence, model, learning process, schedule of teaching

## 1. INTRODUCTION

The learning process is essentially composed of a set of elements and the links between them. A good definition of these elements and links can be for modeling and analyzing to use of classical methods of systems theory, systems analysis, operational analysis and graph theory. Standard methods and optimization tasks provide a similar set of results, which is nowadays usually applied. To increase efficiency analysis and modeling is a need to find new, non-standard methods and procedures that extend the methods used previously. These new methods must fulfill several conditions:

- Universal application
- Simple applicability to existing structures
- Existing methodologies and mathematical apparatus

At the Silesian University in Opava, School of Business Administration in Karvina there are existed projects that are investigating the use of precedence for new types of modeling and analysis. Precedence analysis is based on the basic definition of the general system. The system is defined as a set of elements and links between them. Each element has assigned set of attributes. Precedence analysis compares the values of selected attributes of the elements that have defined common link. Comparison can be absolute values of the attributes or purpose defined changeover value: relative increases over, the absolute increases over time, relative increases in space, absolute increases in space, deviations from the average values, deviations from the maximum values, deviations from the minimum values, etc. By comparing these values we get between soever defined pairs of elements of the direction of flow values for a given attribute. On the basis of these flows we set precedence and a sequence of elements according to the values of the attributes in the system - and succession precedence. These precedence

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and succedence we process by existing mathematical apparatus described closer Borje (1981). These tools further developed as Diestel (2005), who described the application of chart theory and Bakshi (2008), which dealt with practical applications. In the Czech Republic followed the example Borje for example Unčovský (1991), who generalized the incidence analysis in graph theory. These theoretical foundations follows research carried out in the grant SGS 5/2013 at the Silesian University in Opava, where is examined from mainly analyzes Botlík, Botlíková (see reference for 2010-2013), currently the analyze involved Andřýsek (2013), Palová (2013), Václavíková (2012) and others.

## 2. MODEL FOR ANALYZES

The basic model is multi-level; the structure is evident from Fig. 1<sup>†</sup>. The first level consists of a set of incidence matrices. Incidence matrices are defined for different types of links. The basic set consists of matrices for transitions between years, matrices for links between sections, matrices for links between objects and other.

Incidence matrix is a square matrix that records the existence of the link. Matrix has a dimension of  $(m+i) \times (m+i)$  where  $m$  is the number of elements in the system and  $i$  is the number of the defined surrounding. For each element of the surrounding is defined by exactly one row and one column of the matrix. Matrix elements have the value "1" if the row element has linkage with columnar. It is a symmetric matrix according to the main diagonal. With the implementation of the matrices to model we change the structure of the model. Incidence matrix is easily modifiable and universal. The second level consists of the matrix of values of attributes. Matrix has a dimension of  $(m+i) \times n$ , where  $m$  is the number of elements of the system and  $i$  is the number of the surrounding of analyzed attributes. In the absence of the attribute values in the relevant surroundings attribute value is counted using a set of keys (min, max, average, etc.) from the attribute values of elements of the system. The values of one attribute are therefore described by the row vectors. Matrix of values of attribute is again easily modifiable and universal. The third level consists of a set of precedents matrix. Precedence matrix is generated for the attribute from vector of attribute values and the incidence matrix. At this level are compared values of the selected attribute between each pair of elements. Subsequently, based on the value of the element of incidence matrix it is determined whether there is between elements the appropriate type of linkage. In case of a linkage is determined by binding orientation direction from an element with a lower value to an element with a higher value of the attribute. In some cases, it is at this level performed correction of values. For example, due to ensuring of acyclic of chart are values of attributes corrected for insignificant value item which will benefit the selected elements according to some qualitative criteria (e.g. by averaging the scores of student publications by the teacher, etc.). Over the set of precedence matrices are performed basic system operations. Composition operations of the selection vector with matrix and unification of selected vectors is defined for the model. Based on these operations, we can determined a set precedents for the selected element, set precedents on the set of selected elements, existence of precedence multiple lengths between two elements, and frequency of precedence multiple length between the two elements. Turn the orientation of the links, which we will carry through the precedence matrix transposition, we get succession matrix (successor's matrix). The set of operations, then we can extend the searching set succession to set precedents and vice versa.

<sup>†</sup>  $A_1, A_2, \dots, A_k$ : incidence matrix,  $P_1, P_2, \dots, P_k$ : precedence matrix,  $k_1, k_2, k_l$ : selective vectors,  $P_j^2, P_j^3, \dots, P_j^b$ : matrix  $P_j$  raised to the b-th,  $a_1, a_2, \dots, a_m$ : system elements,  $o_1, o_2, \dots, o_i$ : around the system,  $v_1, v_2, \dots$ : element attributes

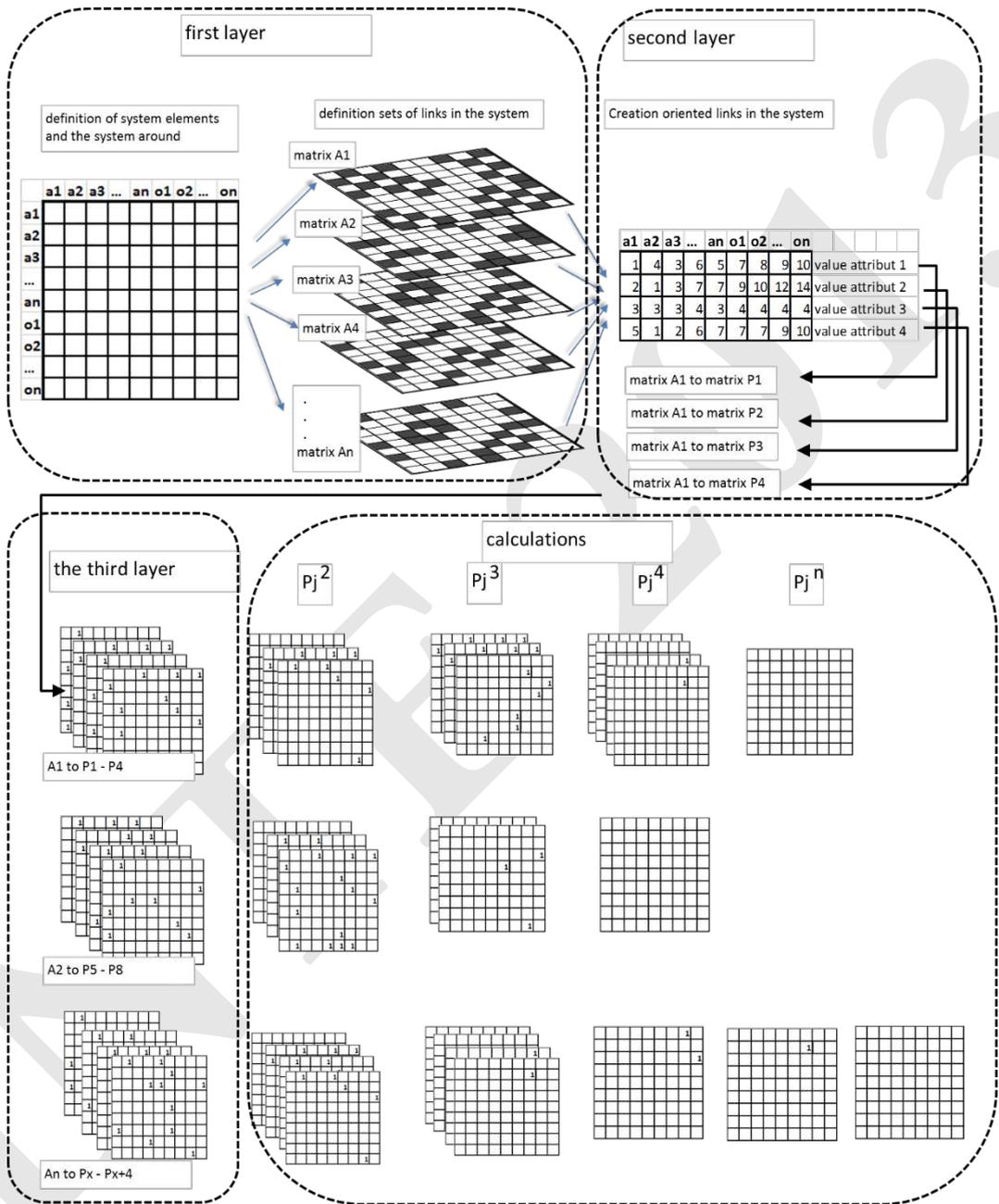


Figure 1 hierarchical model

Creating system structures is evident from Fig. 2, precedence formation is Fig. 3

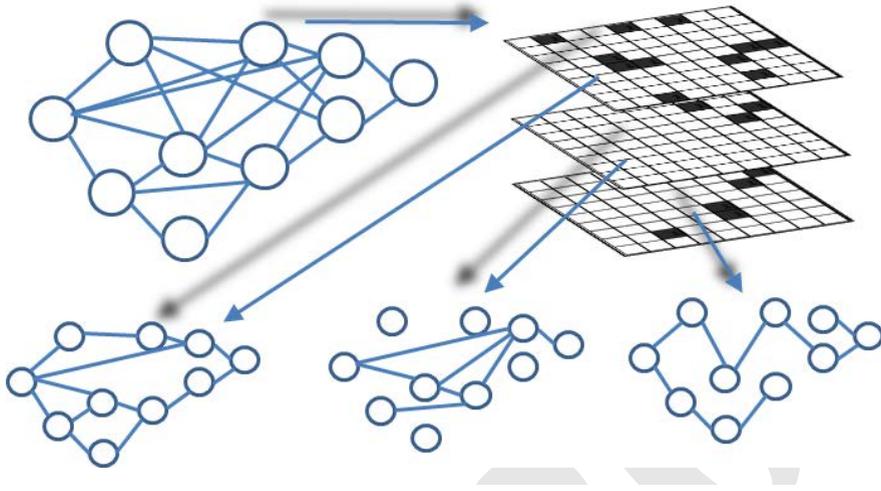


Figure 2 application incidence to the chart

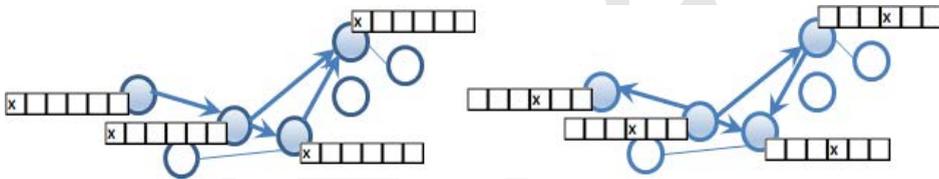


Figure 3 creating precedence using the values of attribute

### 3. ANALYSIS OF THE LEARNING PROCESS, EXAMPLES

#### 3.1. Preceding set of elements

In complicated structures is usually difficult to find the selected sets. In a learning process, we often encounter problems when we need to find a set of time-dependent objects. This is usually about the links between classes, following in the subjects in the following forms of study (Bachelor, Master, and Doctorate), following in the form of a ensure subject (the links between departments), follow the test process (credit, exam, comprehensive exam), etc. These links can be defined almost unlimited; the only criterion is the existence of quantifiable attribute. The situation shown in Fig. 4, we can imagine such as finding the set of objects which a student must complete in the selected semester (designate B) so that he can graduate immediately following semester (designate A). Apparently simple problem is in complex structures difficult to implement. In precedent model is a simple calculation of (1). The set of objects immediately follow-up of the semester we describe using a selective vector  $k$ .

$$Pk=k' \tag{1}$$

Selective vector has a dimension of the number of elements of the system. Selection we denote so that a corresponding element of vector will have a value of "1" when it is in the set of elements to choose. Operation (1), Borje (1981) indicates that matrix multiplication with the vector<sup>‡</sup>; operation consists of a selection of column vectors precedence matrix **P** that have the same indexes (corresponding to the same elements of the system) as elements of the selection vector and the subsequent unification of these vectors. The result is a vector of  $k'$ , which contains the value "1" in the elements that precede the set described by selective vector.

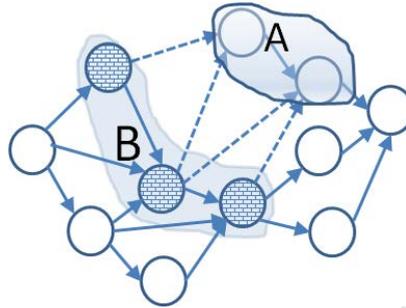


Figure 4 Previous precedences

### 3.2. Independent operations

Selective vector can be used for finding a set of independent operations. The basis of the algorithm is that the set of succedence to set of precedents of some set is another set (2). On Fig. 5 and 6 is an example where the schedule items dropped out educator. We need to find out which subjects may be taught independently of this specific educator and by which subjects we must ensure substitute teaching. The set of subjects taught a teacher is marked **A**, the set of courses that students have finished and that follow the teacher's subjects is marked **B**, set of independent activities is marked **C** and the set, which is independent but in the future will be dependent is marked as **D**. The set **B** we obtain by multiplying the selection vector  $k$  with precedence matrix **P**. The set **C** we obtain as the complement of the set **A** and set of succession of set **B**. The set **D** is obtained as the intersection of set **C** and set of succeson of set **A**.

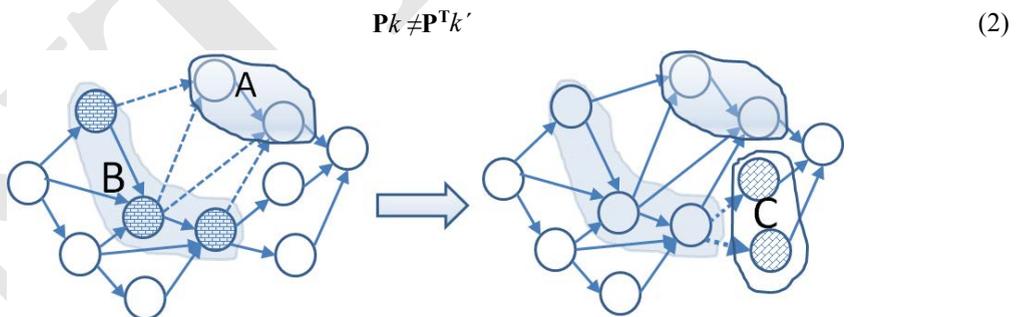


Figure 5 independent operations

<sup>‡</sup> Described in the references, Botlík, Botlíková (2010 – 2013)

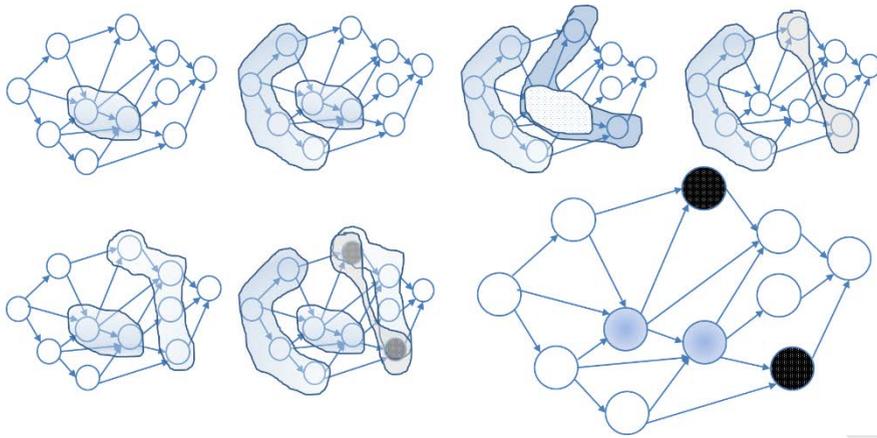


Figure 6 independent operations in future dependent, set D is shown in black

3.3. A set of multiple links, multiple precedence

A common problem is tracing existing dependencies. Dependencies can be direct, unmediated or dependence through other objects. In the case of finding of direct dependency is a finding of all precedence in the system. In the case of mediated linkages it is about finding multiple-precedence.

Fig. 7 is an example where we have described links between subjects in each semester (link shows that subjects consecutively in the next semester). Using multiple-precedence can identify groups of subjects, among which are different time intervals (2 semesters, 3 semesters, 4 semesters, etc.).

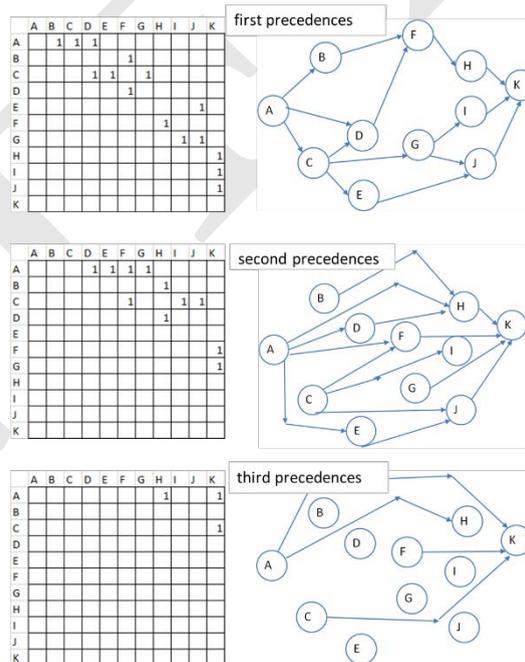


Figure 7 multiple-precedence

The solution is based on the principle of searching elements among which are multiple-precedence. As multiple-precedence is understood precedence to another existing precedence. According to Borje multiple-precedence can be calculated as the power of the precedence matrix. Appropriate level of power indicates how long (what multiples) precedence in the matrix is recorded. The highest power of nonzero matrix gives the longest precedence in the system. Borje defined determination of the existence of precedence between two elements as binary multiplication of binary matrix; in practice it is possible to use a classic multiplication of binary matrix to determine the frequency of precedence of appropriate length (see references Botlík, Botlíková).

### 3.4. Parallel operations

In some cases, we need to find in the learning process deuces in continuity for example between subjects. Continuity can again be direct or mediate. Fig. 7 shows the subjects that follow each other (for passing the subject it is necessary to have graduated another subject) and oriented edges are set directions of bonds (which item is necessary pass earlier). In some cases, it may lead to concurrence continuity, shown in Figure it is shown that the subject F can be taken subsequently after passing subjects B,C and D. Subject D can be taken subsequently after passing the subject C and C subsequently after passing the subject A. At the same time the by subject B it is stated that to complete the course it is required to pass the subject A. Finding such concurrence can be applied to task where we find such a power precedence matrices that have the same index of the non-zero elements (the value "1" occurs in the same rows and columns of the matrix with different power).

The task is easy to solve, for example with the counting the matrices, when in conformity of precedence different lengths will be in element of the resulting matrix values larger than 1.

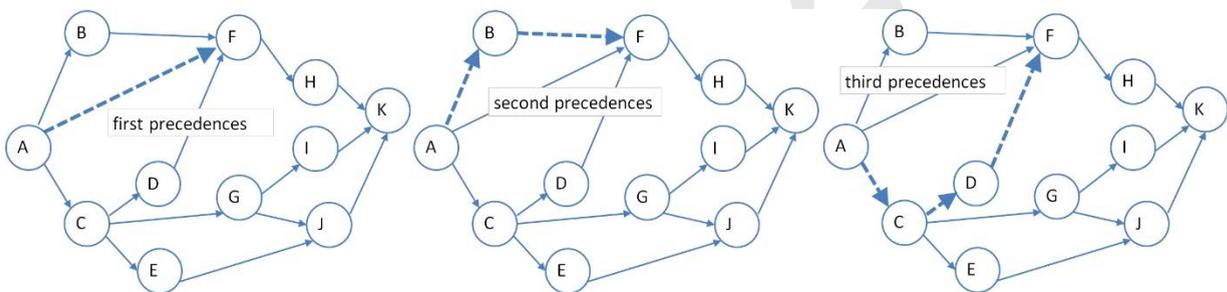


Figure 8 coexistence of the first, second and third precedence between nodes A and F

## 4. Conclusion

The paper demonstrates universal precedence model suitable for the analysis of the learning process. Forte of the model is universality when we define independently a set of elements, a set of attributes and a set of links. This independence allows creating many of independent structures and carrying out time-independent and space-independent analysis. Changing the structure is easily reached selecting the relevant incidence matrix, change the parameters of the system is realized by changing the vector of attribute values and calculating the appropriate precedence.

The model is applicable wherever where we work with disparate values (number of students, study programs, continuity on subjects etc.), furthermore, where we work simultaneously with the state variables (number of students, number on subjects etc.) and with flow values (increase the number of students, duration of study, etc.). The model allows analyzing even flow operation between the surroundings and the system, allows defining more

types surrounding (e.g. unsuccessful students after first year unsuccessful students after the second year, students who transfer to another school, students who come from another school, etc.).

The paper demonstrated on concrete examples a fraction of the model options that exceed the scope of this paper.

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# A Mathematics Intervention: The case of 4 year-old Rylan and Hilda!

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## Abstract

This paper provides an overview of a three-year study with 60 early childhood educators and approximately 240 children aged 4 to 5 years currently being conducted with 15 Australian Indigenous communities. International research provides strong evidence for investing early for improved health and wellbeing of young children (Barnett, 2011). The numeracy Intervention, *Patterns and Early Algebra Preschool (PEAP) Professional Development (PD) Program*, reported in this paper focuses on developing children's early algebraic and mathematical reasoning skills. A case study of two children in the study exemplifies how PEAP has the potential to advance young children's mathematical problem solving and thinking skills. The broader aim of the project is to work towards closing the gap in numeracy achievement for children from low socio-economic and disadvantaged backgrounds.

Keywords: Early numeracy, Patterning; Early algebra; Indigenous education

## 1. Introduction

Children's learning experiences in the early years play a critical role in setting foundations for lifelong learning (Clements & Sarama, 2007; 2011). Research shows that high quality developmentally appropriate early childhood programs produce both short and long-term effects on children's cognitive and social development (Barnett, Hustedt, Hawkinson, & Robin, 2007). In relation to mathematical development, research has demonstrated that the quality and quantity of early mathematical experiences are the main factors in determining future mathematical success. Van Tuill, Lesman and Rispens (2001), in their longitudinal study, found that the "long-lasting impact of an unfavourable start in formal education [is that] initial disadvantage seldom disappear, and there is evidence that gaps tend to widen" (p. 148, cited in Thomson, Rowe, Underwood, & Peck, 2005, p. 6). In addition, children from low socio-economic backgrounds, as well as disadvantaged backgrounds, have a lower level of achievement in mathematics than their peers when entering formal schooling (Tymms, Merrell, & Jones, 2004). "Without active intervention it seems likely that children with little mathematical knowledge at the beginning of formal schooling will remain low achievers throughout their primary years and probably beyond" (Aubrey, Dahl, & Godfrey, 2006, p. 44). This paper reports on a numeracy Intervention, *Patterns and Early Algebra Preschool (PEAP) Professional Development (PD) Program* with preschoolers (4-5 year olds) (Papic, in press), focused on developing children's problem solving and mathematical reasoning skills. PEAP PD advances young children's patterning, early algebraic and mathematical thinking skills, working towards the broader goal

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of closing the gap in numeracy achievement for children from low socio-economic and disadvantaged backgrounds.

## 2. Background

### 2.1. *Early Childhood Mathematics Curriculum*

Early childhood curriculums and frameworks world-wide are beginning to recognise the potential for children prior to formal schooling to think mathematically, solve complex problems, make connections between various concepts, abstract and generalise mathematics ideas and represent these ideas. A recent national Early Years Learning Framework [EYLF] (Department of Education, Employment and Workforce Relations [DEEWR], 2009) in Australia outlines five broad learning outcomes with two of the outcomes providing opportunities for mathematical exploration, development and learning:

1. Children are confident and involved learners.
2. Children are effective communicators.

To be confident and involved learners and effective communicators, EYLF recognizes the importance of providing children with opportunities to investigate; solve problems; represent and communicate mathematical ideas and concepts; recognise patterns and relationships; and make generalisations.

The Australian EYLF “reflects a holistic approach to learning and development, embedded within play-based environments” (Perry & Dockett, 2011, p. 624) and acknowledges the important role early childhood educators have in supporting children’s learning. However, research shows that early childhood educators are not confident in their ability to plan for and capitalize on mathematical opportunities (Clements & Sarama, 2011). “Early childhood teachers often believe they are ‘doing mathematics’ when they provide puzzles, blocks, and songs. Even when they teach mathematics, that content is usually not the main focus ... evidence suggests that such an approach is ineffective, owing to a lack of explicit attention to mathematical concepts and procedures along with a lack of intentionality to engage in mathematical practices” (Clements & Sarama, 2011, p. 968).

To enhance mathematics learning for young children, particularly children from low socio-economic and disadvantaged backgrounds, research-based interventions are required. However, the development of interventions to promote numeracy must be aligned with initiatives to support professionals. “The ability of preschool practitioners to plan developmentally appropriate experiences that foster the advancement of mathematical concepts and processes of young children is dependent on a complex combination of both mathematical subject matter and pedagogical content knowledge” (Bobis, Papic, & Mulligan, 2010).

### 2.2. *Interventions in the Early Years*

There is strong body of research that attributes quality early childhood experiences to children’s successive achievement in schooling and later life. “Early childhood is a time of rapid growth and development, faster than at any other time of life, and establishes the foundations for a child’s future development, health, learning and social well-being. These early experiences set the stage for later success in school, adolescence and adulthood. Early intervention improves outcomes across a range of physical, emotional and social (including educational) indicators that have a positive effect throughout the life span” (Maari Ma Health Aboriginal Corporation, 2009, p. 3).

International research provides strong evidence for investing early for improved health and wellbeing of young children (Barnett, 2011). A cost/benefit analysis of one of the most famous early year's programmes, the High/Scope Perry Preschool Programme (Schweinhart, Montie Xiang, Barnett, Belfield, & Nores, 2005), showed significant savings to society over time in a range of outcomes. For every dollar spent per child on the Perry Preschool Program, at 40 year follow up, \$17 is returned to society.

Educational policy and practice is being increasingly directed towards improving early childhood education with interventions designed to promote mathematics learning e.g. *Building Blocks Project* (Clements & Sarama, 2007), *Curious Minds* (van Nes & de Lange, 2007) and the *Pattern and Structure Project* (Mulligan & Mitchelmore, 2009; Mulligan, Prescott, Paptic, & Mitchelmore, 2006).

### 2.3. Indigenous Australians

Australian national statistics highlight the unacceptable levels of disadvantage faced by Indigenous Australians in living standards, life-expectancy, education, health and employment (Australian Government, 2009). Australian Indigenous children aged 0-14 years make up 39% of the Australian Indigenous population. According to the National Report on Schooling in Australia (Ministerial Council on Education, Employment, Training and Youth Affairs, MCEETYA, 2008), literacy and numeracy results for Indigenous students are consistently below the national average, especially in remote areas; only forty-seven percent of Indigenous Australian children in year 7 are achieving results at the benchmark for numeracy (p. 29). In the early childhood years Indigenous children are less likely to participate in preschool programs than non-Indigenous children and they have higher rates of absenteeism in primary/elementary school (Frigo, Corrigan, Adams, Hughes, Stephens, & Woods, 2004). Poor educational outcomes of Indigenous children in later years of schooling are indicative of inadequate educational progress in the early years of schooling (Adams, 1998, p. 8). For the first time in Australia's history, the Government has set specific targets to address Indigenous disadvantage (Australian Government, 2009). Suitable educational opportunities not just in literacy and numeracy but also in developing skills and attitudes for lifelong learning play a critical role in achieving these targets, particularly in the early years.

### 3. Current Study

A three-year study with 60 early childhood educators and approximately 240 children aged 4 to 5 years is currently being conducted with 15 Australian Indigenous communities. The project consists of a design study integrating a quasi-experimental approach and adopts a social-constructivist approach to learning. The Patterns and Early Algebra Preschool (PEAP) Professional Development (PD) Program is being implemented in Early Childhood Services (prior to formal schooling) where approximately 80% of staff and children are Indigenous.

The PEAP PD Intervention is implemented in collaboration with early childhood educators working within the services. Through on-going professional development and support educators build pedagogical content knowledge and understanding of mathematical content. Following an Early Mathematical Patterning Assessment (Paptic, in press; Paptic, Mulligan, & Mitchelmore, 2011) the project implemented an early Patterning Framework that developed young children's mathematical thinking and problem-solving skills. Follow up interviews with kindergarten teachers, supported by data from standardised Kindergarten assessment *Best Start Numeracy* (NSW Department of Education & Training, 2009), provides evidence of the potential impact of this program on children's mathematics learning. Additional information will be gained from the children's Kindergarten teachers through semi-structured interviews to identify the teachers' perceptions of the children in terms of mathematical knowledge and confidence in the classroom to engage, question, communicate and justify their thinking during mathematical experiences.

The study builds on previous studies by Paptic (Paptic, in press; Paptic & Mulligan, 2007; Paptic, Mulligan, &

Mitchelmore, 2011) and aims to:

1. Advance pedagogical content knowledge and mathematical subject knowledge of early childhood educators.
2. Support teachers to implement an early numeracy program that explicitly aims to develop mathematical thinking and reasoning.

### 3.1. *Mathematical Patterning and Early Algebraic Thinking*

“Algebra can be viewed as a symbolical language that enables us to express relationships and generalizations, usually involving numbers, and use them in order to solve problems without the extensive numerical computations that might otherwise be necessary (e.g., when using trial and error)”, (Papic, Mulligan, Mitchelmore, 2011, p. 239). The central idea here is that of a generalization, that is, a relationship that holds over an entire class of values and not only in isolated instances (Dörfler, 1991). “From this perspective, finding and using generalizations may be considered as *algebraic thinking*” (Papic, Mulligan, Mitchelmore, 2011, p. 239).

A pattern is a type of generalisation, in that it involves a relationship that is “everywhere the same”. Some researchers have claimed that early algebraic thinking develops from the ability to see and represent patterns in early childhood (Mason, Graham, & Johnson-Wilder, 2005). Others have claimed that the integration of patterning in early mathematics learning is critical to the abstraction of mathematical ideas and relationships, and the development of mathematical thinking and reasoning in young children (Mulligan & Mitchelmore, 2009; Papic, Mulligan & Mitchelmore, 2011). “Patterning is an essential skill in early mathematics learning, particularly in the development of spatial awareness, sequencing and ordering, comparison and classification. This includes the ability to identify & describe attributes of objects and similarities and differences between them” (Papic, 2007, p.8). Recent research with young children has shown that the early development of pattern and structure positively influences, mathematical development and provides a stronger foundation for algebraic thinking (Papic, in press; Papic, Mulligan, & Mitchelmore, 2011).

### 3.2. *The Patterns and Early Algebra Preschool (PEAP) Professional Development (PD) Intervention*

The PEAP PD Intervention included individual or small group sessions with each child once a week for 10 weeks. Instruction frameworks based on patterning tasks guided the sessions (Papic, Mulligan, & Mitchelmore, 2011). Children explored, copied, created and drew various patterns, identified the unit of repeat (the pattern element e.g. ABC) and the number of repetitions, were encouraged to describe similarities and differences between patterns and explain their problem solving strategies and their thinking. Children were also encouraged to identify the unit of repeat in various repeating patterns and generalize this to create other patterns using various materials, still containing the same pattern structure (e.g. ABC, ABBA, ABCD). Teachers were also supported to “Patternise” their regular preschool program over a 12 week period. They were encouraged to incorporate rich patterning and numeracy experiences within their daily planning and implementation, building on children’s interests and incorporating culturally appropriate resources and experiences. This pedagogical strategy replicated, to some extent, the approach taken by Blanton and Kaput (2003) when they “algebrafied” school mathematics. Sharing patternising experiences in an online learning community extended and promoted opportunities for numeracy development across the 15 communities. A further component of the Intervention was to document children’s mathematical thinking and patterning in free play in order to plan appropriate follow up mathematical experiences.

A critical factor of the Intervention was developing early childhood educators’ pedagogical and content knowledge. This enabled them to incorporate patterns, problem solving and mathematical language and concepts

into their teaching. Teachers received three days initial training and one day weekly support visits over the 12 week Intervention.

An interview based assessment tool *Early Mathematical Patterning Assessment (EMPA)* (Papic, in press; Papic, Mulligan, & Mitchelmore, 2011) was used at the start of the Intervention to assess children's pattern recognition and problem solving strategies. EMPA was administered by the teachers to children on a one-to-one basis, taking approximately 15 minutes to administer per child. A variety of tasks assessed children's facility with repeating and spatial patterns and included copying, drawing and continuing patterns and identifying the number of dots or objects in various spatial arrangements. Instructional Frameworks incorporating pattern-eliciting tasks guided individual teaching over the 10 week period (Papic, in press). The Frameworks provided critical opportunities for developing early algebraic and mathematical thinking through sequential problem-solving patterning activities. Table 1 shows the five development levels on the Repeating Pattern Instructional Framework (Papic in press) and the associated tasks on each level.

This paper reports on a case study of two 4 year-old's (Rylan and Hilda) progression through the Repeating Pattern Instructional Framework. While this paper does not have the scope to report on the children's development through the Spatial Patterns Instructional Framework or their engagement in mathematical explorations through daily curriculum and in free play, it does provide evidence of the potential impact of an Intervention focused on mathematical patterns and early generalization on children's mathematical learning.

#### 4. Results: The Case of Rylan and Hilda

Rylan and Hilda, 4 years of age, were from the same centre in inner Sydney, Australia. Both children were assessed using the EMPA and their strategies to solve the various tasks placed Rylan at Level 3 on the Repeating Pattern Instructional Framework (See Table 1) and Hilda at Level 2. Both children progressed through the tasks on the Framework over the 12 week Intervention period: Rylan completed Tasks 10-32 and Hilda completed Tasks 5-32. The children could solve various patterning problems and justify their thinking and solution strategies. This included creating and drawing complex towers (e.g. ABCD x 3) from memory (see Figure 1a). Both Rylan and Hilda could describe their patterns showing an understanding of unit of repeat and the concept of multiplicative thinking:

*Teacher:*            *What pattern did you make?*

*Rylan:*              *Yellow, brown, red, orange pattern, 3 times ... That's 1, 2, 3, 4, ... 11, 12 blocks.*



Fig. 1. (a) Rylan, creating and drawing ABCD x 3 pattern; (b) Hilda, pattern broken into units of repeat

Table 1. Repeating pattern Instructional Framework to guide teaching and learning

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**Level 1 - Pre-structural**

1. Copying 2-block tower with blocks
2. Copying 2 block tower
  - a) Constructing with coloured tiles
  - b) Drawing with coloured pencils
3. Designing own 2-block tower
4. Drawing 2-block tower from memory

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**Level 2 - Emergent**

5. Copying 4-block ABAB tower (2 colours x 2)
6. Drawing 4-block ABAB tower (2 colours x 2) by copying using coloured pencils
7. Designing own 4-block ABAB tower (2 colours x 2)
8. Drawing 4-block ABAB tower(2 colours x 2) from memory
9. Continuing tower pattern to make 6-block tower (2 colours x 3)

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**Level 3 - Structural**

10. Copying 6-block tower ABABAB (2 colours x 3)
11. Drawing 6-block tower ABABAB (2 colours x 3) by copying using coloured pencils
12. Designing own 6-block tower ABABAB (2 colours x 3)
13. Drawing 6-block tower ABABAB (2 colours x 3) from memory
14. Continuing tower pattern to make 8-block tower (2 colours x 4)
15. Finding the missing block or error e.g. RBRBBR RBRB\_B

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**Level 4 - Advanced structural 1**

16. Copying block towers with 3 colour repetitions (ABC) x 2 x 3 and x 4
17. Drawing by copying block towers with 3 colour repetitions (ABC) x 2 x 3 and x 4 using coloured pencils
18. Designing own block towers with 3 colour repetitions (ABC) x 2 x 3 and x 4
19. Drawing from memory block towers with 3 colour repetitions (ABC) x 2 x 3 and x 4 using coloured pencils
20. Continuing tower pattern e.g. RBGRBG\_\_\_ YBOYBOYBO\_\_\_
21. Finding the missing block or error e.g. RBGRBGRBR RBGRBG\_BG
22. Continuing various complex single variable patterns e.g. ABBABBABB\_\_\_, ABBCABBCABBC\_\_\_
23. Copying various complex single variable repetitions from memory
24. Designing various complex single variable repetitions

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25. Drawing various complex single variable repetitions from memory using coloured pencils

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**Level 5 - Advanced structural 2**

26. Designing own multi-variable repetitions
- 27-30. Recognising, continuing and creating repeating border patterns
27. Identify the various unit of repeat in border patterns
28. Continuing a given border pattern
29. Creating a border pattern around a picture
30. Identifying the missing item in the border pattern
31. Recognising, copying and drawing hopscotch patterns from different orientations
32. Creating hopscotch patterns
- 

Both children could break up their patterns to show the individual units of repeat and the number of times they were repeated (see Figure 1b).

*Teacher:* How many times have you made your pattern?

*Hilda:* Four.

*Teacher:* Can you show me?

*Hilda:* One times, two times, three times, four times.

Solving patterning problems also provided opportunities to explore the concepts of “adding”, “taking away”, “more” and “less”. In creating an AABBC tower Rylan made two units of repeat and then stated “That’s two, now I gotta make it one more time”. Rylan made the tower again with 6 repeats and the teacher asked him to compare the two towers and explain what was the same and different about them.

*Rylan:* They both have blue, blue, green, green, dark blue as the pattern. This one is three times and this one is six times.

*Teacher:* How many do you need to take away from this one (referring to the AABBC x 6 pattern) to make it the same as this one (referring to the AABBC x 3 pattern)?

*Rylan:* Three of the patterns. Rylan proceeds to demonstrate this to the teacher breaking off one unit of repeat at a time.

At Level 5 children worked with complex patterns using a variety of materials. Patterns were presented in different orientations such as cyclic patterns (see Figure 2a) and hopscotch patterns (see Figure 2b). The teddy represents the starting point of the hopscotch.

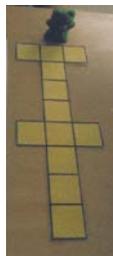


Fig. 2. (a) Cyclic pattern; (b) Hopscotch pattern

Rylan was given an 11 x 6 pattern of squares with an incomplete ABC pattern (see Figure 3a). He was asked if it could be completed. Since the border consisted of 34 squares, the task could not be completed without breaking the pattern. Rylan initially answered yes but when he explored it further he replied “No! We need blue at the end!”

Rylan used his understanding of border patterns to create his own complex pattern. Rylan was given the problem of creating a border around a picture ensuring the pattern is complete. Figure 3(b) shows Rylan’s border pattern. He successfully created a complex AABCCD border around his picture. The teacher challenged Rylan further asking him to close his eyes and she removed three random tiles. When he opened his eyes, Rylan was asked to identify the colors of the missing tiles. He could immediately identify the correct tiles using the unit of repeat as his justification e.g. “There should be a red after the two blues in the pattern”.



Fig. 3. (a) Incomplete ABB border pattern; (b) Rylan’s AABCCD border pattern

To extend Rylan’s skills further in solving problems and justifying his thinking the teacher gave Rylan another border pattern and asked him to identify the unit of repeat. She got Rylan to close his eyes and she swapped two of the picture tiles around. Rylan was asked to find what was wrong with the border pattern. Rylan identified that two of the pieces were in the incorrect place explaining that the pattern should be “turtle, hand, crab, octopus” (see Figure 4a).



Fig. 4. (a) Rylan, border pattern task; (b) Hilda, abstracting and generalizing the pattern to a border pattern

Children were encouraged to abstract the unit of repeat and generalize the pattern using other materials. Hilda created a pink, yellow, blue, red, purple tower with blocks (ABCDE x 7). She then identified an object to represent each of the colors in her pattern and recreated the same pattern structure (ABCDE x 7) as a border pattern (see Figure 4b).

Hilda went on to create an ABCDCE border pattern (rock, frog, shell, lizard, shell, bead). The teacher asked Hilda how she could draw her pattern. She said it was hard to draw a frog and a lizard. The teacher asked if she

could draw something to represent each of the objects. Together they came up with symbols to represent each of the items (see Figure 5a). Hilda went on to successfully use symbols to represent the complex border pattern (see Figure 5b).



Fig. 5. (a) Symbols to represent items in the pattern; (b) Hilda's symbolic representation of her border pattern

Hopscotch patterns (see Figure 2b) and associated problem solving tasks were included to explore patterns represented in different orientations and thus provide opportunities to enhance children's transformation skills. Children were asked to copy the various hopscotch patterns with tiles, create their own hopscotch pattern and draw the hopscotch pattern. Children were asked to do this from various perspectives. Figure 6 shows Rylan and Hilda reconstructing the given hopscotch from the perspective of the teddy (recreating the hopscotch at 180 degrees).



Fig. 6. (a) Reconstructed hopscotch at 180 degrees

## 5. Conclusions

The examples of Rylan and Hilda engaging in various patterning tasks provide empirical evidence that young children can develop sophisticated pattern concepts and skills and that children prior to formal schooling can abstract, generalize and explain patterns and pattern structures. They can view patterns from different orientations and use various materials to create complex patterns. The examples provided in this paper document episodes of young children solving problems, reasoning and generalizing their thinking. These skills are critical for long term mathematical growth and development (Papic, Mulligan & Mitchelmore, 2009; 2011). The impact of such a program on children's numeracy skills and mathematical confidence and competence will be explored when children's Kindergarten Best Start (NSW Department of Education and Communities, 2009) results are collected and analysed along with interview data collected from the Kindergarten teachers who are teaching the children the year after the PEAP Program implementation (2013). While the PEAP PD project has not been completed, the initial data shows that an Intervention with four year olds focused primarily on patterns has the potential to advance young children's mathematical problem solving and reasoning skills. This in turn has the potential to close the gap in numeracy achievement for children from low socio-economic and disadvantaged backgrounds.

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4<sup>th</sup> International Conference on New Horizons in Education

# A mixed-method approach for the assessment of fundamental movement skills in physical education.

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## Abstract

**Introduction:** Physical education may help to improve the physical activity level (PAL) and has an important role in the development of fundamental movement skills (FMS). Indeed, several studies showed that the acquisition of FMS correlate with PAL, health-related fitness and self-esteem (Stodden, Langendorfer, & Robertson, 2009; Stodden & Goodway, 2007). **Purpose of study:** In education the assessment of children's motor skills represents an interesting research issue. In this work we discuss about the results obtained during the assessment of one movement skill in 11/12-age children of an Italian school. **Methods:** Fundamental motor skill was evaluated using quantitative instruments, kinematic video-based analysis, and qualitative instruments as specific evaluation grid. The test used for the FMS assessment is "Catch" (Fundamental Motor Skills, 1996). **Discussion:** The comparison about the data show two interesting findings: 1) children don't reach the level of motor-gross abilities expected for their age; 2) evaluations of qualitative instruments sometimes don't match the ones obtained by quantitative devices.

*Keywords:* Physical Education; Fundamental Movement Skills; Video-Analysis; Physical Activity Level; Physical Activity Assessment

## 1. Introduction

The role of physical education is important for the development of fundamental motor skills and for the improvement of physical activity levels. Several researches believe that the low level of physical activity is one of the major causes of overweight and obesity in children and youth (Odgen et al., 2006). The dramatic increase in childhood obesity has been deemed one of the most serious public health issues facing nowadays society (Ebbeling, Pawlak & Ludwig, 2002; Odgen et al., 2006). Physical activity helps health and social life during our existence. The childhood represents a critical period when the practice of physical activity can improve our health level and it can help to prevent problems such as hypertension, respiratory problems and orthopaedic complications (Dietz, 1998). In Italy, the report "Osservasalute-2009" proposed by the National Health Observatory outlined that in several Italian regions the overweight phenomenon increased in last years and a third of Italian people are considered overweight.

Several guidelines produced by numerous countries promote physical activity importance in children and youth (Janssen, 2007). In the previously mentioned guidelines, with a few exceptions, authors suggest children and youth to participate at least 60 minutes of moderate-to-vigorous intensity of physical activity daily (Janssen & LeBlanc, 2010). Other researches, regrettably, proved that the indications provided by those guidelines are only partially attended by youth. Ribeiro and his colleagues, studying a sample of 210 youth of the city of

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Oporto, showed that the level of physical activity is compatible with the same proposed by the guidelines only in the weekends; moreover only the 15% of boys and the 7% of girls respect the guideline indications (2009).

Today school represents the ideal context to promote the physical activities for youth and children, especially in biggest cities where the opportunity to play with other friends is highly restricted. School, moreover, has to promote innovative learning methods for physical education, including the use of the new technologies, as the exergames, to engage students' participation and to improve the assessment method of physical activity levels (Sgrò et al., 2010).

Moving from this consideration, in this work we discuss about the results obtained using a mixed-method approach for the assessment of a motor test, "Catch" proposed as a fundamental motor skill in childhood and youth (Okely, Booth & Patterson, 2004; Cliff et al., 2009).

## 2. Physical Education

Physical education is an all-encompassing term, including fitness, skills, movement, dance, recreation, health, games and sport plus the appropriate values and knowledge of each.

Physical education (PE) in school curricula must help students to develop motor abilities. A good motor proficiency acquired during childhood is fundamental to a healthy lifestyle and a suitable level of physical activity. Unfortunately, PE is not relevant in the school system of many countries (Casolo, 2012) and it is often associated to a sport-practice time, while it would be managed as other learning subjects of school curricula, as suggested by Gardner in his studies on multiple intelligence (Gardner, 1987). Students often underestimate the importance of the concepts taught in physical education, such as BMI definition or sports rules. If PE had much relevance in the education, probably some health-problems related to the low level of physical activity could be avoided.

### 2.1. Fundamental Motor Skills in education

The fundamental motor skills (FMS) represent an important part of PE programs in pre-school and primary schools. FMS are common motor and physical activities with specific patterns. Fundamental motor skills are often divided in two domains:

- *Locomotor skills*: run, jump, hop.
- *Object-control skills*: catch, heap, throw, kick.

FMS are the building blocks for more complex motor skills and movement patterns and represent the underlying performance competency required for participation in many forms of physical activity (Payne&Isaacs, 2011). FMS proficiency influences students in many aspects of their life. For instance, sport performances are more efficient in children with good ability in FMS: several skills used in sports and physical activities represent a more complicated pattern of specific FMS.

The development of FMS proficiency is prominent in early childhood and primary school physical education curricula. The FMS competences play an important role in children's physical, cognitive and social development (Payne&Isaacs, 2011). Furthermore, several scientific researches showed the correlation of FMS with health outcome in youth; adolescents with high level of FMS have higher cardio-respiratory fitness (Okely, Booth & Patterson, 2001) and lower probabilities to be overweight (Okely & Booth, 2004) than their peers.

The assessment of FMS was carried out using the motor test. The evaluation criteria of the motor test can address performance outcomes and/or technical skills. Especially in the education environment, the FMS assessment has to examine first the moving pattern or technique, which can provide more useful information to FMS proficiency in young children (Cliff et al., 2007). Furthermore, we believe that the indication on moving pattern can be useful both to give a specific feedback to students and to upgrade, if necessary, teaching methods.

In this way physical education could share the same approaches and purposes with the notational analysis in sport, as proposed by Mango and his colleagues (Mango et al., 2010).

## 2.2. Assessment Methodologies in Physical Education

Physical activity requires multidisciplinary evaluation, but this is very difficult to realize in the educational environment. In Sport Science research field, the assessment of physical activity involves several aspects: sample size, assessment time, ethics and instruments. Assessment approaches can be divided in two domains: subjective and objective. Armstrong and Welsman stated that the assessment of young physical activity has to be contextual with the methodology used (2006). Moving from this consideration we can assume that the choice of instruments must be in according to the motor task analyzed and the objective of the assessment.

Subjective instruments used in physical education studies are: questionnaire (Sirad & Pate, 2001), self-report questionnaire (Pate et al., 2002) and examination grid (Ulrich, 2000). The last instrument requires an external observer. Subjective instruments are especially used for epidemiological studies.

The use of objective instruments to assess physical activity in young is recently growing. The reasons of this increase are: technologies development, easy-to-use interaction, feasibility, wearable characteristics and lower price. The most used devices in PE environment are: heart rate monitor (Welsman & Armstrong, 2000), step counter (Raustrup, Pangrazie & Stahle, 2004), accelerometer (Ekelund, 1999; Cliff et al., 2009), IMU - Inertial – Magnetic Unit (Marsci et al., 2012) and video-analysis technologies (Cliff et al., 2009).

As stated above, the best choice is directly linked to the aim of the assessment. The use of subjective methods is cheaper and less accurately than the objective one. In this work we use the subjective method proposed by Ulrich for the “Catch” FMS assessment, upgrading the assessment with an objective evaluation of some technique skill using video-analysis system.

## 3. Research Methods

Data were collected in a school of Sicily (Italy). Students were recruited among 11- to 13- year-olds. The following data were acquired from each student: age, height, weight and dominant limb. Trained assessors directly measured height and weight using specific devices; shoes and heavy clothing were removed before measurements. Data were collected from March to September 2012. Body Mass Index (BMI) was calculated from height and weight values, using the follow equation:  $BMI = \text{weight (kg)} / \text{height}^2 \text{ (m}^2\text{)}$ . Each student involved in the assessment sessions produced parent consent.

### 3.1. “Catch” Test

*Catch* represents one of the fundamental motor skills. The test assesses the student’s catch proficiency; each student must catch a basketball ball thrown from a distance of 8 meters. The ball trajectory must to be a parabolic. All tests were administered in the school gym during physical education hours. We decided to assess the skill performance process rather than the outcomes of performance using criteria proposed in the TGMD-2 (Ulrich, 2000). The validity and the reliability of the test in this age group had also established. In our work we assessed only *Catch* proficiency, so we used the same procedure suggested by Ulrich but using only *Catch* performance normative data.

Before testing *Catch* skill, a skilled operator produced a visual demonstration of the correct technique for all students. Participants were then called individually to produce their performance for five trials. The teacher encouraged the student during trials, but he/she didn’t give any specific feedback. Moreover, students didn’t know criteria used for their evaluation. All performances were video-recorded using Skill Capture software and

each video was labeled with the same code associated to students. In according to several researches (Cliff et al., 2009; Hardy et al., 2010), criteria used to assess the *Catch* proficiency were:

Table 1. Assessment *Catch* criteria

N. Criteria	Performance Criteria	Mastered Age (FMS,1997 - Revised)
1	Eyes are focused on the ball throughout the catch	5/6
2	Preparatory position with elbows bent and hands in front of body	6/8
3	Hands move to meet the ball	6/8
4	Hands and fingers positioned correctly to catch the ball	7/9
5	Catch and control the ball with hands only	7/9
6	Elbow bends to absorb force of the ball	8/10

The last column contains the age at which each criteria could be expected to be mastered (FMS Teacher Manual, 1997). If the student doesn't catch the ball is noted as an error.

### 3.2. Subjective Assessment Methodology

Four skilled operators were recruited for the subjective assessment of catch proficiency. Each operator was trained in the evaluation criteria used to assess FMS proficiency. Each operator analyzed the video of each student assessing three performances without errors. The operator compiled a specific record that contains a blank box for each performance criteria proposed in table 1. Every form row contained specific boxes for each student and trial. The operator inserted "1" if the child has mastered for the analyzed criteria; a "0" score indicated that the student was not skilled in assessed competence.

### 3.3. Objective Assessment Methodology

Specific methodologies and technologies often used in movement analysis are required for the objective assessment of *Catch* proficiency. In this work we propose the biomechanical approach to the movement analysis using video-analysis methodology. First of all, we identified which criteria proposed for the subjective analysis we can also assessed using objective approach. In detail we chose the criteria number 2, 3 and 6. In Fig 1a we show a snapshot of video-analysis assessment procedure. In order to assess the cited criteria, we must develop a specific biomechanical model of the upper arms. The model proposed is represented in Fig. 1b.

Specific landmarks were pointed to every student corresponding to the joint center of upper arms: shoulder, elbow and wrist. These visual references are used to build the triangle proposed in Fig. 1 and used to assess the shoulder flex-extension angle ( $\alpha$ ). We developed an algorithm to assess the amplitude of  $\alpha$  and the linear displacement of joint using the coordinates X and Y of landmarks. For the linear displacement we also used the coordinates of Hip landmarks. The coordinates of each joint were obtained using software for biomechanics analysis called SkillSpector. All the equations and conditions proposed for the objective assessment of performance were realized considering the frame of each trial started from 0.

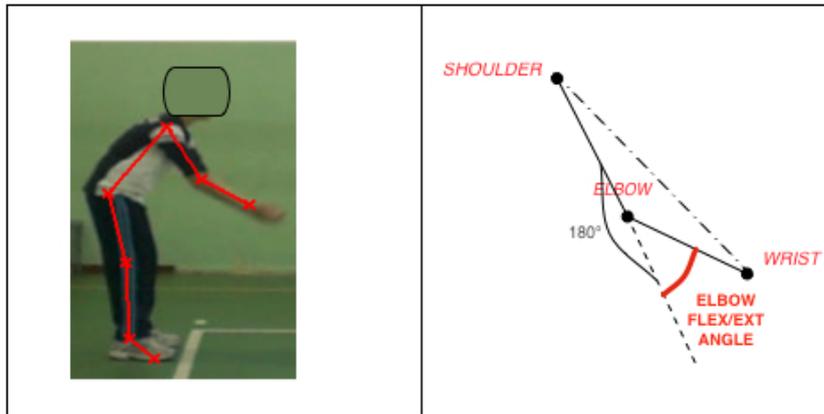


Fig 1. (a) Visual Frame realized using Skill Specter; (b) Biomechanics model of elbow

Using this approach we can propose an objective evaluation of the criteria 2, 3 and 6 described in table 2:

Table 2. Objective Assessment *Catch* criteria

N. Criteria	Objective Performance Variables	Performance Mastered Condition
2	1) Elbow Flex/Ext Angle ( $\alpha$ ) – 2) X-coordinates of Hip and Wrist	$90 < \alpha < 160$ and $X_{\text{hip}}(0) - X_{\text{wrist}}(0) < 0$
3	Displacement of Wrist from initial phase to the frame before the catch (Wrist_Displacement)	Wrist_Displacement > 50 cm
6	Elbow Flex/Ext Angle ( $\alpha$ )	$120 < \alpha < 150$

The algorithm returns “1” if the criteria expressed in the last columns of Table 3 were reached; otherwise it returned “0”. The range and the threshold used to define the mastered criteria were chose using an empirical approach.

The objective method is also proposed because a quantitative measures is less influence by the experience subjectivity and sensitivity, in according to Masci and her colleagues (2012)

### 3.4. Statistical Analysis

All analyses were conducted using SPSS version 20.0. First of all we verified the normality of the data using Kolmogorov-Smirnov test and inspecting asymmetry-kurtosis values. For normality data we calculated means and standard deviation, while for not normality data median and interquartile ranges were estimated. The gender difference was assessed using t-Test from normally distributed values, while Mann-Whitney U was used for not normally ones. A correlation analysis was also conducted between anthropometric data and total score of two types of assessment. Statistical significance was set at  $p < 0.05$  for all analyses.

## 4. Results

Initially twenty-six students composed the sample group. Unfortunately only sixteen students provided all information and documents required and completed correctly the assessment session. Three students had not

anthropometric data suitable with the parameters chose for this research. The data obtained using statistical approaches prosed in the section 3.4 are represented in the table 3.

Table 3. Demographic, anthropometric and fundamental movement skill data

Variable	Girls (n=8)	Boys (n=8)	t/z	p
<u>Demographic</u>				
Age (years), mean $\pm$ SD	11.38 $\pm$ 0.51	11.38 $\pm$ 0.51	0.00	1.00
<u>Anthropometry</u>				
Weight (Kg), mean $\pm$ SD	45.9 $\pm$ 11.09	45.76 $\pm$ 11.37	0.29	0.977
Height (m), median (IQ range)	1.54 (0.16)	1.5 (0,19)	-0.263	0.793
BMI (Kg/m <sup>2</sup> ), median (IQ range)	18.62 (1.97)	19.37 (4.02)	-0.053	0.958
<u>Catch Criteria Scores - Qualitative Assessment</u>				
Skill Criteria N. 1 (range: 0-12), mean $\pm$ SD	11.63 $\pm$ 0.5	11.88 $\pm$ 0.35	-1.128	0.278
Skill Criteria N. 2 (range: 0-12), median (IQ)	7.50 (4.00)	9.00 (2.00)	-0.917	0.359
Skill Criteria N. 3 (range: 0-12), mean $\pm$ SD	11.00 $\pm$ 1.06	10.88 $\pm$ 2.10	0.150	0.883
Skill Criteria N. 4 (range: 0-12), median (IQ)	8.00 (6.00)	3.50 (8.00)	-1.320	0.187
Skill Criteria N. 5 (range: 0-12), median (IQ)	7.00 (7.00)	2.50 (8.00)	-1.320	0.187
Skill Criteria N. 6 (range: 0-12), median (IQ)	9.00 (5.00)	11 (3.00)	-1.235	0.217
Catch total score (range: 0-72), mean $\pm$ SD	53.25 $\pm$ (9.05)	49.75 $\pm$ (9.72)	0.745	0.468
<u>Catch Criteria Scores - Quantitative Assessment</u>				
Skill Criteria N. 2 (range: 0-3), median (IQ)	2.00 (1.00)	3.00 (0.00)	-2.031	0.042
Skill Criteria N. 3 (range: 0-3), median (IQ)	3.00 (1.00)	3.00 (1.00)	-0.645	0.519
Skill Criteria N. 6 (range: 0-3), mean $\pm$ SD	1.88 $\pm$ (0.835)	1.38 $\pm$ (1.188)	0.974	0.346
Catch total score (range: 0-12), mean $\pm$ SD	6.50 $\pm$ (1.39)	7.00 $\pm$ (1.51)	-0.707	0.491

## 5. Discussion and Conclusion

In this work we discuss about results obtained in the assessment of *catch* proficiency in childhood students. In according to previous research, students involved in the research could to be mastered in each performance criteria used for their evaluation. The assessment procedures proposed are two: one is complete and following the methodological approach proposed by Ulrich, while the second addresses only the performance criteria that we try to study using objective procedure. A summary evaluation of results obtained outlines that the students aren't mastered in all the criteria assessed. In the Figure 2 we propose the comparison between a normalized scores obtained in the criteria 2, 3 and 6 using both procedure proposed in this work.

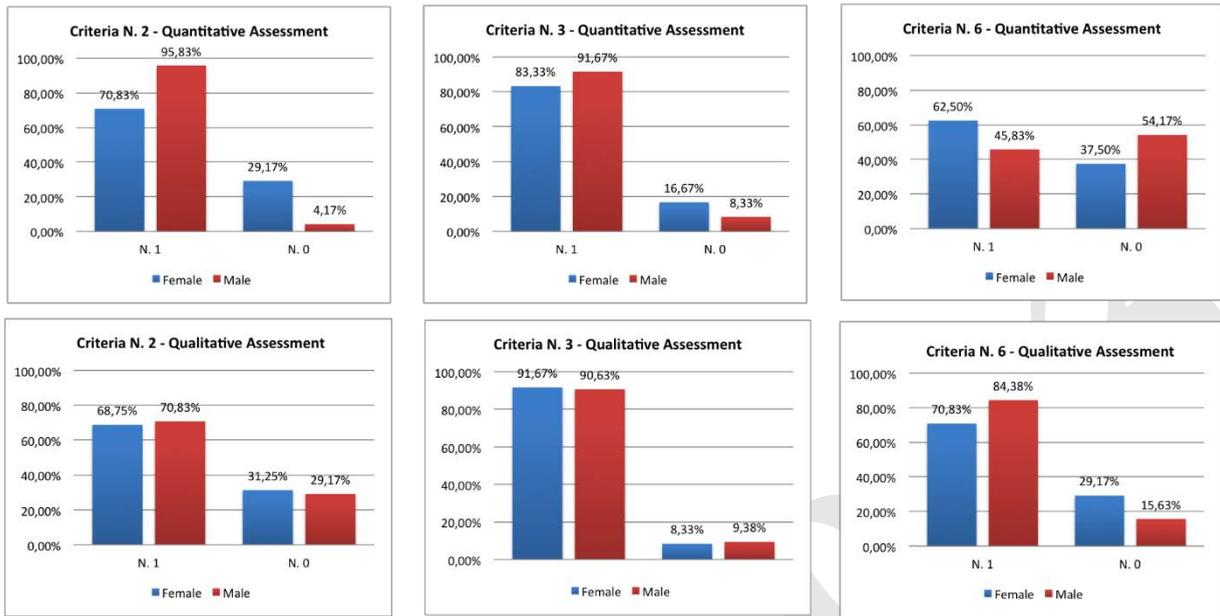


Fig. 2 – Proportion (%) of students scores obtained with objective and subjective assessment procedure

Participating boys and girls didn't differ in demographic, anthropometry and *Catch* criteria scores (all  $p > 0.005$  – Table 1). These findings were consistent with the conclusion proposed by Cliff and his colleagues (2009). No correlation was found among anthropometric data and mastered scores obtained with both procedures. Positive correlation was found between the BMI and the flex-ext angles in criteria number six. The trend of subjective and objective assessment methods was the same for the performance criteria 2 and 3. In the assessment of criteria number 6 the level of mastered and not mastered is more equal in objective assessment while in the subjective assessment boys resulted more skilled than girls.

In previous study about the *Catch* proficiency in pre-school children boys had better performance than girls. The same trend was not obtained using subjective procedure. Otherwise, boys seem to be better than girls using biomechanical approach. Teachers can acquire more interesting information about the FMS proficiency of his/her students through the objective evaluation of motor pattern than the subjective ones. The annotation of angles and linear displacement, moreover, can be useful to improve the evaluation of students' development cycle.

Limits of this study are the low number of students, especially due to the few time for the test, and the choice of threshold and range for objective assessment. We will try to define a normative data for range and threshold increasing the sample size of our students.

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## A mobile-based learning tool to improve writing skills of efl learners

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### Abstract

Recent pervasiveness of mobile computing becomes an attractive motivation for EFL learners. Korea provides an excellent environment for using mobile devices such as smartphones and tablet PCs, with easy access to wireless networks. This offers the learners a chance to practice writing on-the-move. This paper introduces a design of a mobile-based tool to assist the learners of beginning to intermediate levels in improving English writing skills. It provides two types of learning mode: 1) the learners select grammatical categories for which the tool provides a brief description and exercise questions, and 2) they choose one of the suggested Korean sentences and write a corresponding English sentence to be evaluated and provided with instructional feedback.

*Keywords:* mobile-based learning tool; writing skill improvement; EFL; instructional feedback

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## 1. Introduction

Wireless communication technology is rapidly growing and has produced advanced computing devices which are still evolving. The devices present high capabilities from which human life greatly benefits. Korea provides an excellent environment for using mobile devices such as smartphones and tablet PCs since a variety of devices is easily accessible. Those hand-held devices along with easy and widespread access to wireless networks have changed the future of e-learning (Godwin-Jones, 2011). Mobile-based language learning in particular is recognized as a potential and convenient way as extension to currently existing methods because it is spontaneous and ubiquitous. Since mobile-based language learning also offers an opportunity for learners to practice language on-the-move, it can be an ideal solution to overcome time and place related barriers for language learning process.

Enthusiasm on learning English in Korea is beyond what is considered necessary throughout the nation. In particular, the students at grade school and high school pursue intense learning process to survive from excessive competition. They are sent to a cramming school or taking private tutoring after class. Moreover, learning through internet has become very popular among English learners because it allows them to access anytime and anywhere internet connection is available. This kind of convenience together with zeal for learning English has now moved onto mobile devices which can substitute PCs in many aspects. Moreover, those devices are accessible to majority of the learners including even grade school students who are adept in using them. Using mobile devices seems greatly effective in that the learners can utilize them for language learning when they are away from PCs even with a limited amount of spare time.

In this paper, we describe a mobile-based English learning tool that is designed to assist Korean EFL learners in improving their writing skills. They can utilize two types of learning modes the tool provides: grammar review and writing practice. Adopting automated assessment including short answer grading (Mohler et al, 2009), both learning modes evaluate learners' linguistic knowledge which does not require an instructor or tutor. With grammar review mode, they can review or learn about the grammar by selecting grammar categories or features the tool offers. Each category provides with its brief explanation including relevant examples and with a set of multiple choice exercises with which their grammar knowledge is evaluated by the tool. The result is passed onto the next learning mode, writing practice, where the information of the evaluation result is used to suggest an appropriate level of exercises for the learners. With writing practice mode, they can actually compose a corresponding English sentence to a Korean sentence which is automatically suggested based on the evaluation result from the previous mode, or which they select based on their interest. Each Korean sentence is carefully prepared for the learners to be exposed to various grammatical structures and English expressions including contextual synonyms, and to study English grammar according to grammatical categories. With this module, the tool takes a learner's English sentence and checks whether it is grammatical. If it detects an error, it provides instructional feedback regarding 1) the position of the error where it has occurred in the sentence, 2) the grammatical category the error is link to, and 3) supplementary explanations including relevant examples if necessary.

## 2. Error Analysis of English Writings Created by EFL Learners

Recent trends of error analysis seem to focus on studying learners' output. Analyzing the corpus of learners' actual writing samples can provide a fairly good idea of the learners in terms of their competence and performance since it examines both erroneous and non-erroneous forms of language. The result of analyzing the errors in particular is a valuable source of information since it presents the transitional state of the learners' weakness as well as competence.

Learners' writing samples are used for identifying errors which are then classified based on grammar categories or features. The data used for this research is a collection of English sentences created by junior high

school students. For a general error analysis, the errors occurring in writing data are examined in terms of grammar and rhetoric. However, only grammatical errors are considered since the unit of writing is a sentence which is assumed to be reasonable as an input to mobile devices. The analysis results are used to write a set of error-detecting rules implemented in the tool.

### 2.1. Grammatical Category & Error Analysis

The grammatical categories that the tool provides are selected in order to assist learners for improving their English writing skills. Most of the categories were the ones described in English textbooks authorized by Ministry of Education. The rest were chosen by consulting reference grammar books popular to Korean EFL learners. A learner selects a category or feature to review or learn about its linguistic nature and its usages. Classification of grammar categories is resentence in Table 1.

Table 1. Grammatical Category

<b>Grammar Category/Feature</b>	<b>Subcategory</b>
Agreement	Subject/Verb
	Determiner/Noun
Aspect	Perfective
	Progressive
Comparison	Comparative
	Superlative
Inflection	Inflections according to POS
Mood	Types of Mood
	Types of Sentences/Clauses
Noun Plural Formation	Regular vs. Irregular
	Count vs. Non-count
Spelling	Orthography of Words
Tense	Types of Tense
Voice	Active
	Passive
Word order	SVO vs. SOV

These categories are also utilized at the writing practice mode with which the learner can actually compose an English sentence for a Korean sentence. The tool provides two options for selecting a Korean sentence. The first option is to choose a Korean sentence from a list suggested by the system which remembers the learner's choices of grammar categories from grammar review. The second is for the learner to choose a grammar category by which the system also lists Korean sentences. Each Korean sentence is prepared to imply a specific grammar category.

The grammatical categories and features presented in Table 1 are also used to capture the errors created by Korean EFL learners. The errors present the characteristics of interlanguage which refers to a learner's developing L2 knowledge (Selinker, 1972). Interlanguage reflects linguistic properties of L1, Korean in this case and the characteristics of L2, English. Among the error types found in L2, our data present overgeneralization and interference/simplification. Overgeneralization errors refer to the ones caused by a rule in which it does not fit to describe a grammatical category. This type of errors was most commonly found from our data. The following examples present the errors of this type.

- 1a) *They studys very hard.*
- 1b) *My mother buyed a nice clothes for me.*

The underlined in 1a) and 1b) indicate regular inflectional morphemes representing present and past tense, respectively. The verb in 1a) is a regular verb, but it requires an orthographic variation when the tense morpheme is attached. The verb in 1b) is an irregular verb whose inflected forms cannot be generalized by a rule. However, it is attached with a tense morpheme which is supposed to be applied to a regular verb. In both cases, the learners overly generalized the rules, which resulted in an error although they provide evidence of developing knowledge regarding a systematic aspect of English.

Interference errors show the influence of L1. Many of the errors found in our data displays linguistic properties of Korean.

- 2a) *He angry.*
- 2b) *My favorite is China food.*
- 2c) *She love her family more than anyone.*

Example 2a) presents an incomplete English sentence reflecting one of the Korean sentence structures where an adjective can form a predicate without a linking verb. The expression "*China food*" in 2b) shows an inflectional error. When the corresponding Korean word for "*China*" becomes a modifier to a noun, no additional morpheme is attached. Example 2c) presents subject-verb agreement violation which does not exist in Korean except honorific. It is not only an interference error, but also considered as an error caused by simplification which produces a verb with the same form regardless of its context, person, number or tense.

## 2.2. Error Handling

Learner's sentences are sent to the system on the server for automatic scoring. The types of grammatical errors detected by the automated system are categorized into three classes; 1) morphology, 2) syntax, and 3) content. These categories are further classified into various types of errors according to grammatical categories: 6 types for morphology, 28 types for syntax and 4 types for content. A morphological analyzer implemented in the

system detects lexical errors by checking inflected forms and orthography of each word. Syntactic errors are identified by a syntactic parser utilizing grammatical categories described in 2.1, which focuses on agreement, word order, constituency, and usage among many others. Content errors are different from what is usually used as one of evaluation criteria for essay scoring since the scopes of detecting errors are different; this research focuses on the sentence level rather than a paragraph or higher levels. These errors are identified by comparing learners' sentences with their corresponding correct answers which are provided by EFL teachers and verified by native speakers of English. The errors of this category are detected by comparing the following:

- |  |     |                               |
|--|-----|-------------------------------|
| 1)   | the | tense                         |
| implied in the answer                          |     |                               |
| 2)   | the |                               |
| expressions omitted from the learner's writing |     |                               |
| 3)   | the | expressions unnecessarily     |
| added or irrelevant to the answer              |     |                               |
| 4)   |     | contextual synonyms of a word |

The system is implemented with two types of grammar rules. One of them is to parse grammatical sentences while the other one is to analyze ungrammatical sentences including various types of errors. The latter is known as mal-rules which are designed to diagnose grammatical errors (Lee, Choi and Kim, 2011). In other words, these error detecting rules identifies not only an error but also its type according to error classification described above. The type of an error is one of the resources to produce feedback when the tool detects an error. When the error detecting process is completed, the tool provides instructional feedback regarding the error; utilizing the information in relation to where it occurs and what type it is. The feedback also includes a brief description of the error and an explanation of the grammatical category related to the error, and relevant examples when necessary. The instructional feedback is of great benefit to the learners who spare their time for improving their writing skills on-the-move.

### 3. Mobile-based English Learning Tool

The errors are divided into systematic and non-systematic errors. The systematic errors can easily be described using a set of rules whereas non-systematic ones are usually categorized as idiosyncratic and cannot be generalized. The systematic errors are described using a set of mal-rules. These error-detecting rules are designed to capture not only predictable grammatical errors, but also the errors mostly created by Korean EFL learners because of the influence of L1.

#### 3.1. System Overview

A mobile device is equipped only with a user interface. The actual system including error checking modules and the database is implemented in a server. The Fig. 1 below presents an overview of the overall processing.



Fig. 1. The overall procedure

When a learner activates the app installed in a mobile device, the server provides all the data including the information of the learner and questions and corresponding correct answers to be provided by both learning modes, grammar review and writing practice. The learner answers a question using the interface provided by the app which sends the answer to the server. The tool residing at the server evaluates the answer. The graded result including the feedback will be provided back to the learner through the app. Exchanging the data between the app and the server is performed in the format of JSON.

The system maintains three type of database containing the information on a learner and questions. Table 2 below shows the information of a learner to be stored in the database.

Table 2. Database for learner information

Category	Description
(1) UserID	
(2) Writing Level	determined based on the evaluation results
(3) A list of Question ID	assigned by grammar review & writing practice after answering the questions
(4) Scores corresponding to each grammatical categories	provided separately by grammar review & writing practice

The database including questions is divided into two according to the learning modes which utilize different types of questions. Table 2 below presents the information provided by the grammar review mode.

Table 3. Database for the information of a question offered by grammar review mode

Category
(1) Question ID
(2) Grammatical category
(3) Question
(4) Answer
(5) Explanation

---

 (6) Difficulty Level
 

---

Grammar review mode provides a question selected by learners according to their interests. The question type is a multiple choice from which the learners select a number of their choice. Each question is assigned with its ID and is specified with its relevant grammatical category and the degree of difficulty. In addition, the question is linked with its correct answer and a brief explanation. The system stores the learners' choice of questions and its evaluated score.

A different type of question is provided by writing practice mode. The information linked to a question is presented with the Table 4.

Table 4. Database for the information of a question offered by writing practice mode

Category
(1) Question ID
(2) Question
(3) A set of correct answers & a synonym list
(4) Difficulty Level

Writing practice mode offers a Korean sentence as a question assigned with its ID. The question is linked to a set of correct answers and its corresponding grammatical categories. The questions present higher degree of difficulty than those provided by grammar review mode. When the learners proceed to writing practice mode, it initially suggests a question which is assumed to be most helpful for the learners, based on the information passed from grammar review mode. The information includes the following; 1) a question which may complement the problems the learners has encountered at grammar review mode and 2) a question whose grammatical category has not been studied by the learners. When the learners complete the practice, the tool provides the automatically processed result which includes the total score, the writing level mapped to the score and instructional feedback. As the last step of the process, the database storing the information of the learner is updated with the latest result.

### 3.2. App Interface

The design of user interface for the app is completed and will be implemented with further work. When the app is activated with login, the tool provides the learners with the evaluation result stored from the previous exercises, as displayed in the image (a) below. From the same page, there is an option to choose a type of a learning mode between grammar review and writing practice. When grammar review mode is selected, they can choose a grammatical category for a review. They are also offered with a question of a multiple choice from which they select a number of their choice as an answer. The system, then, grades the answer and provides the grading result with feedback, as shown in the image (c) and (d).

If writing practice mode is selected, the tool offers a Korean sentence which is considered most beneficial to the learners based on the result passed from grammar review mode. When they complete writing a corresponding English sentence, the system scores the sentence. The learners are provided with the automatically scored result with appropriate feedback. This process is presented with the image (e) and (f). When the learners complete the practice, the tool provides their proficiency of each grammatical category they have studied. The proficiency is displayed using a graph, as shown in the image (b). The score to be stored in the database is calculated in consideration of the degree of difficulty assigned to the question.

**모바일 영어 문법 학습**

User1님 안녕하세요.

- 전치사 이해 수준 낮음
- 수동태/능동태 이해 수준 좋음

문법학습    작문학습    메뉴

(a)

**모바일 영어 문법 학습**

User1님 학습 결과

전치사 ██████████  
 수동태/능동태 ██████████  
 관사 ██████████  
 관계대명사 ██████████  
 어순 ██████████

문법학습    작문학습    메뉴

(b)

**모바일 영어 문법 학습**

능동태/수동태

텔레비전은 베어드에 의해 발명되었다.  
 A television \_\_\_\_\_ by Baird.

(1) was inventing      (2) was invented  
 (3) invented          (4) has invented

답안제출    메뉴

(c)

**모바일 영어 문법 학습**

능동태/수동태

수동태(passive voice)는 일반적으로 행위의 주체가 불특정 다수이거나 불분명해서 굳이 행위자를 언급할 필요가 없는 경우에 사용됨. 또는 능동태(active voice) 문장에서 목적어를 강조하고 싶은 경우.

Baird invented a television.  
 A television **was invented** by Baird.

다음문제    메뉴

(d)

**모바일 영어 문법 학습**

• 그 라디오는 젊은 과학자에 의해 발명되었다.

The radio is inventted by young sientist.

답안제출    메뉴

(e)

**모바일 영어 문법 학습**

• 그 라디오는 젊은 과학자에 의해 발명되었다.  
 • The radio is **invented** by young **scientist**.

더 좋은 문장:  
**The radio was invented by a young scientist.**

• 시제: is → was  
 • 관사: youngscientis → a youngscientist

다음문제    메뉴

(f)

#### 4. Conclusion

This paper has presented a mobile-base English learning tool that is designed to improve writing skills of Korean EFL learners. The tool provides two different learning modes, by each of which the learners can benefit even when they are on-the-move. These two learning modes interact each other through database where the information of learners and the results of each mode are stored. With grammar review mode, they can learn about various grammatical categories of English through answering a question related to the category of their interest.

The result is passed onto writing practice mode where the learners are suggested with a question considered most helpful for them according to the result. The answer sentence composed by the learners is automatically processed to produce the result which includes the information on the errors detected if any and instructional feedback. When they complete the practice, they are provided with the total score and the level of proficiency of each grammatical category that they have studied. Considering the popularity of mobile devices and their easy accessibility, learners can benefit greatly from utilizing the convenience provided the tool.

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# A Multidisciplinary Design Measurement: EIS method, its application and use in all form of education in college

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## Abstract

Electrical impedance spectrometry (EIS) is modern monitoring method which we used for detect anomalies in porous substances. At the Brno University of Technology, Faculty of Civil Engineering was through projects in EUREKA program developed new apparatus with unique device Z-meter, special probes for different using and user's software which was used in big spectra of application (monitoring of earthen dike, morphology of the bottom in reservoir, moisture of bricks columns, etc.). Students work on the construction of the probes, conception of monitoring and obtaining of the results through their bachelor, master or doctoral thesis. In work they need knowledge from different areas of education like physics, hydraulics, material engineering and others. Because education is also in practical form, it is interesting not only for students from Czech Republic, but also from foreign country.

*Keywords:* electrical impedance spectrometry; multidisciplinary measurement; porous substances; device Z-meter; education in all form in college; application; program EUREKA

## 1. INTRODUCTION

One ancient popular wisdom says – ‘He who does not know the past cannot create the future.’

This is not only true for the peoples and countries, but also for every human activity and society. The Faculty of Civil Engineering is the traditional and historically the oldest faculty of the Brno University of Technology (BUT) seated at Veveří 95, 602 00 Brno, Czech Republic. Its history is closely connected with the history of BUT, which falls into the year 1899 when Emperor Franz Joseph I signed the Decree of the Establishment of the Czech Technical University in Brno. This was the first Czech higher education institution in Moravia. In the course of time, it has often passed through booms and declines. Since 1900 the teaching has been extended by the study of mechanical engineering and the course of education of land surveyors (geodetic engineers). On 26 June 1911, the newly built premises were approved and opened, and since September the teaching started there, see Fig 1. The school thus moved from its leased rooms in Brno. In the basement of the right wing of the main building, a library was placed, with underground rooms designed for maintaining library materials. Women were allowed to study at the Technical University thanks to a decision made by the teaching staff on 21 October 1909 provided that they would have appropriate education.

Since the foundation of the school, the teaching of civil engineers has taken place in the studies of civil engineering (since 1989), the course of land surveying (since 1900), and cultural engineering (since 1910). Behind that idea stood up efficiently Prof. Ing. Antonín Smrček, Dr. h. c. Therefore, he became elected a deputy

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of the Moravian Land Diet and later also of the Vienna Diet where he collaborated, among others, with T. G. Masaryk. Prof. Smrček was striving to contribute as effectively as possible to the development of his school and the Czech element in Moravia. He elaborated the concept and the factual establishment of water laboratories, which is worldwide ground-breaking and he is their founder. To defend the first laboratories in the Austro-Hungarian Empire, he used both his literary talent and knowledge of both languages, Czech and German, in speeches at international congresses on dams and navigation Pařílková, Pařílek, Veselý, Zachoval, 2010).

Since 1920, the studies of civil and cultural engineering have been replaced with the study of structural engineering. This study consisted of two specializations: constructional and transportational; and water engineering and cultural. In 1927, the course of land surveying was replaced with the study of geodetic engineering. Since 1927, the study of architecture and building construction has been taught.

From 1918 to 1937, the school was named the Czech Technical University in Brno. In 1937, it was named the Dr. Edvard Beneš Technical University in Brno. In 1938, the name was changed to the original Czech Technical University in Brno.



Fig. 1. Faculty of Civil Engineering – (a) Historic Hall on Veveri Street; (b) The Present Status of the Hall

During the period of Second World War (1939–1945), the Brno technical university was closed, just as the other Czech universities. After 1945, the school was resumed under the name Dr. Edvard Beneš Technical University in Brno. Again, the key studies were opened. In 1950, the State Committee for Universities approved the establishment of 31 departments of the Technical University in Brno at the following faculties: FSE (Faculty of Structural Engineering), FABC (Faculty of Architecture and Building Construction), FMEE and ChE (Faculty of Mechanical and Electro technical Engineering and the Study of Chemical Engineering). Since that time, much has changed, but let us be grateful beyond the life and work of many professors and people who built our future and let us to do maximum for future of our children.

When it opened, the university had with four professors and forty-seven students. In the course of more than 110 years Brno University of Technology has matured into an internationally recognized institution offering a cutting-edge education based on the latest scientific and professional knowledge delivered at eight faculties and Institute of Forensic Engineering covering a broad spectrum of fields ranging from technical and scientific disciplines through economics to the arts. According to the Quacquarelli Symonds Limited (QS) prestigious world university rankings, BUT has been among the best universities of the world for several years in succession. For the period 2009–2013 the Brno University of Technology has been awarded the European Commission's prestigious ECTS and DS Label certificates, issued in recognition of quality higher education.

BUT was one of only two Czech universities to be granted the ECTS Label. This label recognizes the proper introduction of the European credit system in all Bachelor's and Master's degree programmes in line with the implementation of the aims of the Bologna Process. BUT was awarded the DS Label in recognition of the proper provision of the Diploma Supplement to all its graduates free of charge. Both certificates are proof that BUT

meets the demanding criteria of the European Union in the area of higher education; in addition, they make a major contribution towards broadening mobility and increasing the internationalization of the university. At the present time more than 24,000 students are enrolled at BUT at 8 faculties – FA (Faculty of Architecture), FECC (Faculty of Electrical Engineering and Communication), FCH (Faculty of Chemistry), FIT (Faculty of Information Technology), FBM (Faculty of Business and Management), FCE (Faculty of Civil Engineering), FME (Faculty of Mechanical Engineering), FFA (Faculty of Fine Arts) and 2 university institutes – IFE (Institute of Forensic Engineering), CESA (Centre of Sports Activities) ([www.vutbr.cz](http://www.vutbr.cz)).

The Brno University of Technology supports internationalization of studies through ECTS, participates in EU projects such as Tempus, Leonardo, Erasmus, CEEPUS, Aktion, DAAD partnership, studies for two degrees and the Euro-engineer degree, organizes lectures of visiting professors, provides courses for foreign students in English, and organizes international conferences. Research and development activities at BUT centre around non-specified research receiving funding from the state budget. Attention is also given to research projects that are clearly defined and supported by contracting authorities such as the Czech Science Foundation, grant agencies of the Czech government ministries, international grant agencies, and scientific and research programmes. A major part of applied research is initiated directly by industrial companies both domestic and international.

## 2. EUREKA program

EUREKA program ([www.eureka.be](http://www.eureka.be)) has evolved greatly over the past 21 years as it has increased from 18 members in 1985 to the current 38 members. This programme as the first European framework opened the door for cooperation with Central and Eastern European countries in the early 1990's. And this chance was fully taken by both research organizations and industry for initiating real European research and development cooperation.

Through a EUREKA project, partners develop new technologies for which they agree the Intellectual Property Rights and build partnerships to penetrate new markets. The internationally recognised EUREKA label adds value to a project and gives participants a competitive edge in their dealings with financial, technical and commercial partners. The types of the EUREKA project are clusters, umbrellas and individual projects. Each of these types of the project has specific rules and plays a key role in different areas of the market.

The goal of the programme Eureka in the Czech Republic ([www.msmt.cz](http://www.msmt.cz)) is to steadily enhance the competitiveness of the Czech economy and increase its technological potential by supporting European cooperation of enterprises and research organisations in the area of progressive technologies. The output of the project solution is new, top-quality products, technologies and services with a high degree of innovation, capable of prevailing on the world market. The programme Eureka does not pre-set thematic tasks, does not centralise financing or selection of projects. It follows the rule that proposals and initiatives must come out from bottom to top (the so-called bottom-up principle), from individual industrial enterprises and companies, research institutes and universities which are spontaneously interested in cooperation. Key criteria continue to be the innovative content, market needs and the quality of the team. Each applicant can ask the special-purpose support in Czech Republic. The special-purpose support is provided to the recipient, which is a legal entity, in the form of grants after having carried out a public tender in research and development pursuant to Act No. 130/2002 Coll. on the Support of Research and Development from Public Funds and on the Amendment to Some Related Acts (the Act on the Support of Research and Development) as subsequently amended. In projects of research and development in the programme Eureka, the portion of the special-purpose support shall not exceed 50 % of the eligible costs of research and development project solution and must meet certain conditions (Parilkova et al, 2010), ([www.eureka3838.com](http://www.eureka3838.com)). The Laboratory of water management research is active co-researcher of the third international project in the EUREKA program, No. E!3838, E!4981 and E!7614. The principal investigator is company *GEOtest, Inc.* Projects include the development and implementation of devices for monitoring porous substances.

### 3. Electrical impedance spectrometry method

The method of electrical impedance spectrometry (EIS) has become a popular analytical method for its information capability and has taken a front place in studying physical and chemical properties of materials and living tissues. It was newly applied for monitoring the boundary between saturated and unsaturated soil when being loaded with water (Gomboš, Tall, Kandra, Parilkova, 2009), for measuring changes in the electrical conductivity of soils in various areas of bodies of earth dikes, for monitoring the water/sediment boundary in water reservoirs (Parilkova, 2010), or streams and in other areas of civil engineering for monitoring of porous substances like wood, bricks etc. (Parilkova et al, 2013).

The basic principle of the method is the measurement of the frequency characteristic of impedance of the measured medium or material, as the case may be. The frequency characteristic of impedance  $Z$  can generally be expressed as the function of a complex variable in the following formula

$$Z(j\omega) = R + j\omega X. \quad (1)$$

Where  $R$  is resistance forming the real part of impedance independent of frequency,  $X$  is reactance, the imaginary component of impedance, the magnitude of which changes with frequency, and  $\omega$  is angular velocity. The complex impedance  $Z$  of the saturated and unsaturated porous material describes its properties.

- Water containing mineral salts is a conductive material. The degree of saturation of the material strongly influences the real part of the measured impedance,
- The solid part (grains) is formed by insulating materials characterized by their dielectric constants and represents the imaginary part of the measured impedance.

#### 3.1. Z-meter III device

The measuring equipment must be enabling to determine both parts of the impedance  $Z$ . To be able to determine both impedance components, the method of quadrature detection must be used. This method of the signal detection is a special type of the synchronous detection based on the multiplication of measured signals by the reference signal, the frequency of which is the same as of measured signal, and its phase is shifted between  $0^\circ$  and  $90^\circ$ . The impedance spectrometers (Z-meter of third generation) constructed for experimental purposes capable of the measurement of complex impedance in wide range of impedance, frequency and signal strength has been built, see Fig 2.



Fig. 2. Z-meter device with external multiplexer

For the implementation, a signal processor of the latest development line of impedance meters of the company “ST Microelectronics” was chosen. Its 32-bit processor enables only two-terminal measurement. The record of

measurement is solved by logging in a text file to a portable medium – a SD card, and it is also possible to connect the Z-meter III device through the USB interface to a PC. Parameters of measurement are entered directly into the device, are depicted on a LC display and, when switched to the measuring mode, the device will display the value of unknown measured impedance in the form of its real and imaginary components.

The device is battery-powered, with the assumed time of operation being 8 hours and with an option to recharge it from a 12V source. The basic parameters are given in Tab. 1.

Table 1. Parameters of Z-meter III device

Parameter	Z-meter III	Parameter	Z-meter III
Impedance range	100 $\Omega$ – 1 M $\Omega$	Communication interface	USB, SD card
Frequency range	1 kHz – 100 kHz	Number of measuring points	1, 8, 16, 32, 64, 128
Accuracy of modulus <b>Z</b> measurement	$\pm 2\%$ of the range	Switch	Internal, external
Accuracy of phase measurement	$\pm 2^\circ$	Power supply	Batteries

#### 4. Education and applications

In last years the new technology in many areas of the work goes very quickly forward. In education this trend is known in new intellectual environment which educators must prepare for their students. In laboratory work for the teaching and learning always been applied new technologies and materials.



Fig. 3. Education of students from TU Luzern, CH in the teaching course Physical modelling

#### 4.1. Teaching and learning

- At the beginning of the tests was monitoring groundwater level, which is usable for the drainage trench. This work is one of the labs work for students of all construction disciplines. Probes are easy handling, the new device from the Z-meter III is comfortable and attracted students from full-time study (teaching courses BS01 and BR05).
- With the method were also acquainted foreign students, and this group after about 20 students TU Luzern, CH in the years 2007-2012 with their teacher Prof. Ing. Francesco Valli. Furthermore students from Portugal, Spain, Belgium and Slovenia studied this monitoring method in the teaching course CR53 Physical modeling in ERASMUS program.
- Learning specialists in the field of geodesy and cartography in the teaching course HR51, upgraded in project "Innovation courses Geodesy and Cartography", CZ.1.07/2.200/15.0144 of ESF was enriched by new knowledge also EIS method, in the area of flood protection. The newly also in monitoring the saturation of the soil, but also present the possibility of documenting drought and irrigation needs of agricultural lands, parks, ecological environment where rare species of fauna and flora. Urbanism, historic towns and settlements makes it possible to monitor suffusion processes, but also the creation of caverns and disorders in which there is a risk forfeiture threats to human life and property.
- Lifelong learning, education experts Czech Chamber of Authorized Engineers and Technicians ČKAIT, specialists CzWA CR, and members cluster CREA Hydro & Energy, Public Service Company, but also on the

Faculty of Civil Engineering of the Brno Technical University in the ongoing courses University of the Third Age. Consulting and advisory center Public Service Company KPC for local government and entrepreneurs in Brno and other educational institutions, introduced the mayor and local government staff with the method EIS and its possibilities in the seminar's forms or micro regions meetings or other events.



Fig. 4. The applied research for practitioners (hydraulic model of safety spillway polder Žichlinek,  $M_1 = 10$ )

Together with all partners of EUREKA projects are continuously search new possibility of applications of monitoring system with Z-meter device.

#### *4.2. Use of field measurements carried out at different levels, educational, vocational or commercial*

To combination different levels of education from different areas of science, science education of students in research projects with the application of knowledge into the field work are very appropriate practical exercises.

- In terrain, the method was applied in program ERASMUS, measurement and processing of doctoral dissertation Spanish student Macarena Guerrero Aspizua – ERASMUS INTERSHIPS, report about my interships in Brno, which was oriented to area of soil measurement.



Fig. 5. Installing the probes into monitoring wells on the golf course together with student from Spain

- Application in practice and the need training of external operating personnel was requested in the monitoring of water resources in artificial recharge, in Basel, CH, leakage of water in dams, monitoring fishpond dikes (eg Kobeřice, Jevíčko), waste storage tank Rýzmburk in a tributary of the Sázava river originating from the preparation of drinking water for Prague (85%, i.e. up to 7 m<sup>3</sup>/s) in the treatment plant Želivka or documenting the effectiveness of remediation topped the dam Karolinka to Stanovnice river, where 4 probe with a diameter of 2.5 cm are given using devices PAGANI directly in the sealing core rockfill dam. Monitoring depth is 13 m number of sensors in each probes is 20 and installation was managed through the grant project cluster CREA.



Fig. 6. Measurement on the earthen dam of the water reservoir Karolinka together with students from Belgium and Portugal

- The system is used for monitoring landslides and functionality hydrogeological wells on the estate Bystrc in Brno, CZ. Paired probes are fitted to a depth of 11 m.
- Move drift sand respectively influence of marine waves to beach is involved on KHBO Brugge-Oostende. To check of obtained results from measurement, in this case it is possible to use EIS method. Because theme and monitoring apparatus with Z-meter was interesting for students on this topic was realized thesis 'Process of Aeolian sand transport using the EIS-method'. The work was start at KHBO and practical experiment was realized in Brno, laboratory of water structures at FCE.
- Research organization IRSA in Bari, IT looking for possibilities of application of new monitoring system through the test of a marine sedimentary rock used for the classic construction where it is necessary to prevent their saturation (Pařílková, Caputo, Masciale, De Benedictis, 2010), (Davis, Topp, Annan, 1977).
- Monitoring of masonry moisture within specific research at the Brno Technical University and also in practice at Rychvald castle. In addition to irrigation, fertilization and drainage is method EIS usable in the treatment of

wood, usually historical structures, processes thermo-remediation with monitoring the effectiveness of the cross-section. Other application area is control of specific agricultural products. The specific divided probe is possible to use for control of storage of bulk materials such as grain. To this time the measurement is realized in one layer. In the solution is interested TU Varna, BG.



Fig. 7. Work with doctoral students and with their teachers in IRSA Bari, IT and in Riga TU, LT

- Riga TU, LT verify the possibility of using the method for monitoring in a uniform system of wastewater treatment in the spa town of Jūrmala.
- A popular theme is the work of the bachelor's, master's and doctoral studies in all forms of education at Faculty of Civil Engineering, department of water construction and water management, as 'Study of pollution transport in soil using electrical impedance spectrometry method', 'Monitoring the morphology of the bottom of water reservoir using EIS method', 'Evaluation of changes in pond dam monitored by EIS Method', 'Influence of material pack of probe on the measurement of sensitivity using method EIS', 'Detection of rainwater infiltration using EIS method', 'Determination of anomalous area of homogeneous earth dike of small reservoir' and others. Further developing of applications is monitoring snow cover, snow reserves, but also the possibility of monitoring avalanches and their falling particularly dangerous for skiers and hikers. During the solution are contacted researchers from Spain and Austria, but also with the Czech Hydrometeorological Institute in Brno as a member of the cluster CREA and the Czech Hydrometeorological Institute in Hradec Králové. The theme was for master's student work 'Monitoring of the snow cover using EIS method for possibility of determining of the snow water equivalent'.
- The options list with examples showed the current state of solutions and application methods. The research team on the basis of wide interest not only in this country but also abroad, works continuously in the project E! 7614. Each year, an international conference of researchers and candidates is organized. In this year it will be in the period the October 30<sup>th</sup>, 2013 until the November 1<sup>st</sup>, 2013 in Karolinka. The conference was also attended postgraduate students involved in the solution.

## 5. Summary

Based on the findings from the measurement performed in real conditions, it can be stated that monitoring the changes in electrical impedance of the environment by the non-invasive method EIS is possible. When applying the method for sensing the course of the water level in soil, a two-electrode connection is convenient. It is sufficiently accurate, sensitive and the obtained courses are clearly reproducible. If it is necessary to know the vertical position of the monitored changes, it is suitable to apply measurement with a vertically divided system. It is recommended to perform evaluation, from the view of its unambiguousness, as relative. The education should be a natural part of everyone's life. Merging the desire for education, teaching and application of new knowledge in practical implementations is the goal of teaching at all levels of university. If it is possible to build on the

historical experience and traditions and combine them with modern and progressive teaching and application of new technological processes, it is well possible to prepare young people for their future.

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Fig. 8. Areal of Faculty of Civil Engineering BUT, CZ (photo: Miroslav Kamrla, 2008)

4<sup>th</sup> International Conference on New Horizons in Education

## A multidisciplinary design exercise: Myndos Excavation Site

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### Abstract

This paper describes a multidisciplinary educational design workshop carried out at the 4000-year old Myndos archeological site in Bodrum, Muğla, Turkey. The workshop, which was a collaboration between Architecture and Archeology Departments at Uludağ University, involved the design of a lightweight structure to be positioned on the archeological excavation site. The aim of the “Lightweight Structures, Mobile Architecture, and Archeology” workshop was to create an innovative, interdisciplinary environment for participants to creatively solve design problems in a limited time.

Instructors from the Architecture Department and the Archeology Department guided 13 architecture students, and 7 archeology students through the workshop. The hypothetical structure was to be utilitarian, and demountable. It should also not damage the ground it would touch. Decisions on scale, structural choice, the choice of materials were left to the students. Informative seminars on the excavation site itself; lightweight structures; architectural patterns, mapping, and visualization; as well as architectural representation were given during the 5-day exercise.

Among multiple benefits of the workshop some that stood out were: (1) students participated in a complex creative problem solving process, (2) students learned to work under time constraints, (3) students familiarized themselves with one another’s profession, (4) students learned to appreciate dissimilar viewpoints, (5) students were able to visualize their designs in the context of the built environment, and (6) students were able to test and share their ideas with local residents.

In addition to these benefits, suggestions for the implication of this workshop in other educational fields are discussed.

*Keywords:* architectural education; design education; design workshop.

### 1. Introduction

The “Lightweight Structures, Mobile Architecture, and Archeology Workshop” took place between 25-29 June 2012, on the archeological excavation site of the Myndos antique city. The workshop was a collaboration between Architecture and Archeology Departments of Uludağ University (Figure 1.a).

Today, Myndos is located in the vernacular, seaside town of Gümüşlük, in Bodrum, Muğla. Due to the unique historical characteristics of its built environment and mostly preserved natural habitat, its population increases during the summer months, as domestic and foreign tourists visit the touristic retreat alongside Gümüşlük’s local residents.

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Archeological excavations of the antique city have been carried out by the Archeology Department of the Uludag University since 2009 (Figure 1.b.). Historically, Myndos was one of the shore cities of the Karia region in ancient geography. In his book titled *Geographika*, Strabon of Amasya, an explorer of the 1st century B.C., described the Termerion Cape occupied by the people of Myndos, following the capes of Astypalai and Zephyrion (Strabon, 2000).



Fig. 1. (a) Myndos, Gümüslük, Workshop 2012 (Photo credit: Taneli). (b) Asar Island, Myndos, 2012 (Photo credit: Kırılı).

The earliest information about the city appears in a text by the 5<sup>th</sup> century B.C. historian Herodotus. Herodotus mentioned that Myndos provided ships to join the campaign of Nakşa under the command of Megabates in 500 B.C. While Herodotus did not mention the number of ships joining the battle, he referred to one event that occurred on a Myndos ship (Gündüz, 2008). Additionally, information about the past of Myndos can be found in the text “Histories” by Polybius. Polybius mentioned that during the Lade battle of 494 B.C., the Rhodos ships reached the shores of Myndos before arriving at Kos Island; and that they had to anchor at Myndos Harbor overnight (Polybius, 1889). The ruins of Myndos surviving through history are mostly of the once modern city constructed with the aid of Karia’s satrap (governor) Mausolos. Historically, Myndos was of importance due to its strategic location as a point of defense against enemy attacks originating from the Aegean Sea to the capital Halicarnassus. Furthermore, it was once on the route of the Mediterranean shipping trade, which today makes the site an important center for archeological underwater research (Şahin, Gündüz, Aslan, 2007).

## 2. Architectural Design Education and Workshops

The role of the workshop in architecture education cannot be overemphasized. To elaborate, a concise definition is provided by Brooks-Harris & Stock-Ward (1999, pg.6): “*A workshop is a short-term learning experience that encourages active, experiential learning and uses a variety of learning activities to meet the needs of diverse learners.*”

According to Fleming (1997, in Brooks-Harris & Stock-Ward 1999), the focus of a workshop is on developing competence, utilizing interactive learning opportunities that emphasize hands-on practice in small groups through practical and intensive interaction. Unlike typical classrooms, the workshop resembles the design studio, which according to Dutton (1991) is an ‘active site’ that calls upon analytic, synthetic, and evaluative modes of thinking since it involves activities such as drawing, model making, conversation, and debate. Much of the process described above relies on an environment that fosters creativity, while allowing participants to generate new ideas for the built environment that effectively take into account functionality and aesthetics simultaneously (Yurtkuran et al. 2010).

The goals of the “Light Structures, Mobile Architecture, and Archeology Workshop” are (1) to contribute to the skill set of architecture and archeology students to engage in group work in an interdisciplinary workshop environment, (2) to properly identify the socio-cultural and architectural problems and potentials of the historical Gümüşlük settlement in a limited time, (3) to create architecturally viable mobile objects with light structures through a collaboration of the fields of architecture and archeology, (4) to produce future-oriented, potentially applicable projects for the Myndos excavation site, and (5) to discuss the resulting designs in a jury comprising workshop coordinators, local residents, and local government officials, thus initiating communication with the participants.

A five-day program containing seminars, city walk-throughs, and design studios was scheduled to accomplish the aforementioned purposes. Twenty students enrolled in the Architecture and Archeology programs during the 2012-13 school year, participated in the workshop under the guidance of academics from both departments. Students were randomly assigned to one of two groups, each with an equal number of architecture, as well as archeology students, to collaborate during the workshop. The workshop took place on the grounds of the Excavation House of the Myndos Antique City. Participants lodged in facilities in nearby Gümüşlük.

## 3. Process of the ‘Lightweight Structures, Mobile Architecture, and Archeology Workshop’

The process of the workshop began with the arrival of the participants to the site via their own choice of transportation. Workshop facilitators made a deliberate choice of requesting participants to use individual means of access to the site. This allowed the participants to experience the site, its surroundings, and the broader geographical landscape individually, allowing for varying encounters in both mode of transportation and

direction of approach. Participants shared these experiences during subsequent group work, thus expanding the collective understanding of the area.

### *3.1. Day 1: Problems and Potentials | Seeing-Comprehending*

The purpose of the first day of the workshop is for the students to share intuitions, experiences, and observations related to the site with other participants, minus the guidance of the facilitators. This atmosphere of free communication allows for the problems and the potentials related to the area to be discussed.

Following the participants' arrival at the site, their settlement in the lodging, and registration, an amount of time was allocated for free observations. Participants initially experienced the surroundings through travel to the location, and successively through immersion into the local architectural fabric. Subsequently, the first seminar "Gümüşlük and Archeology" was presented. The presentation covered the history of the antique city, its geographical characteristics and importance, lifestyles of its residents in various eras, mechanisms of regional governance, and the reactions and approvals of the inhabitants to the existing political climate. Additionally, comprehensive information was provided regarding the city.

Seminars and informative discussions were preceded by individual immersion to the site and free communication with locals to permit untainted first impressions. Consequently, participants were able to compare their personal experiences with that of formal lectures and thereby identify contradicting positions.

Following the completion of the first seminar, participants were asked to complete a series of tasks: (1) to experience the site through sketches by taking into account the information provided during the seminar, (2) to take notes regarding their observations of the city and its inhabitants, (3) to communicate with residents regarding their perceptions of the city, and (4) to document their surroundings through snapshot photography. A relatively short time of 180 minutes was allocated to complete these tasks. This time constraint created a suitable environment for the participants from archeology and architecture disciplines to get acquainted, and for the rapid exchange of information.

Following the completion of the aforementioned tasks, students gathered at the excavation house, favored as the workshop setting. Work groups prepared short presentations describing their observations, experiences, photographs, and interviews with local residents. Student presentations created an environment for discussion. Finally, workshop facilitators clarified the concepts of "problem" and "potential" constituting the main problematic of the workshop, asking the participants to reevaluate the information they collected in light of these concepts.

### *3.2. Day 2: Multiple-perception | Comprehension*

Day 2 commenced with a studio. The goals of the program for the second day were; (1) to allow for information and ideas stemming from the experience and informative sessions of Day 1 to take shape in a studio environment, (2) to have participants perceive new problems and potentials as group members share their experiences, and (3) to allow the design to develop in a different direction, to advance, and to change.

The structure described above is analogous to Kolb's experiential learning theory (Figure 2). Kolb (1984) contends that learning is best conceived as a process, and not in terms of outcomes. The learning process allows for ideas to be "formed and re-formed through experience," and does not consider them to be absolute or indisputable (Kolb, 1984. p.26). According to Kolb, experience has a fundamental role in the learning process. The cycle involves four adaptive learning modes: concrete experience, reflective observation, abstract conceptualization, and active experimentation (ibid. p.40). Kolb (1984, p.41) further delineates learning as a 'process whereby knowledge is created through the transformation of experience.' Kolb's experiential learning theory guided the structuring of the program of the second day of the workshop to focus on comprehension.

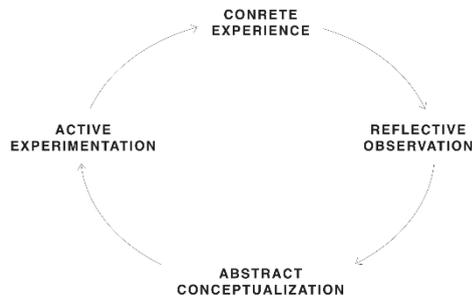


Fig. 2. Experiential Learning Theory (Based on Kolb 1984. p. 42)

Brooks-Harris & Stock-Ward (1999, p.10) identify three key tasks in developing a successful workshop; (1) “understanding workshop participants”, (2) “developing a comprehensive workshop design that addresses the topic for a particular group of participants within a particular context”, (3) “facilitating the workshop in a way that promotes active learning”. The authors (1999, p.11) further contend that Kolb’s Experiential Learning Theory can effectively aid in developing each one of the three tasks. Kolb’s learning styles assist in understanding workshop participants, and their individual learning needs and preferences. Learning processes, as described by Kolb, facilitate establishing adaptable learning activities catering to different types of learning. Finally, Kolb’s four basic learning processes can advise respective skills for workshop facilitation.

At the outset of the studio exercise, participants were asked to transform the excavation house premises into a work environment suitable for them. Following the configuration of the work environment, members of individual groups discussed the data they collected on the first day. Participants critically evaluated the data in light of the concepts of problem and potential, and subsequently determined the problem and/or potential they intended to address.

During the studio exercise, participants focused on creating products, due by the end of the day, which would convey the topics they had discussed earlier. These products can be summarized as sketches, written documents, and critically evaluated photographs. Participants of differing educational backgrounds shared their individual presentation skills to create instruments for conveying effective messages.

In the second part of the studio exercise, 90 minutes were allocated for the groups to tour and analyze the area together. This exercise differed from the excursions of Day 1, in that the focus shifted to problems and potentials discussed in the earlier studio exercise, and architecture-archeology collaboration was achieved through mixed groups.

The second seminar of the workshop was titled “Light Structures – Mobile Architecture” and was presented by Assoc. Prof. Dr. Yavuz Taneli. The seminar focused on identifying structural elements of mobile systems, as well as presenting a multitude of global examples of such structures. Participants were expected to utilize this information to solve or to draw attention to the problems, and/or to strengthen or re-consider the potentials they identified in Myndos. Examples of mobile structures were discussed between facilitators and participants, and their purposes, construction details, and technologies were examined.

The third seminar of the workshop, “Architectural Patterns-Mapping and Externalization” was presented by Instructor Dr. Selay Yurtkuran. The seminar described how an architectural pattern could be mapped experientially, and how observations and evaluations could be externalized.

The fourth seminar of the workshop titled “The Forms of Architectural Representation” was presented by Research Assistant Gözde Kırılı. The lecture introduced the concepts of communication and design message, and

informed the participants on methods for representing ideas most legibly. The presentation was supplemented with numerous examples.

Succeeding the seminars, participants and the facilitators were requested to write down and typographically express 10 words that came to their minds when the Myndos Antique City was mentioned, and to elaborate on the feelings, and perceptions of these words as they were noted, as well as identify their relative strengths. The aim of this exercise was to immediately apply the information provided by the second seminar of the day, “Architectural Patterns-Mapping and Externalization,” as well as creating an experiential map of words most used to describe Myndos and determining their relative values. The word mapping exercise concluded the second day of the workshop.

### *3.3. Day 3: Maturation and Manufacture*

The third day started with a studio. At the end of the studio session, participants presented to fellow students and facilitators, their analysis, ideas, and designs, through photographs, videos, sketches, presentation boards, and models in various scales. Subsequent to the critique, fruitful discussions led to the production of further ideas. Presentations were followed by another studio session. Instructors paid particular attention to act as facilitators rather than teachers.

### *3.4. Day 4: Last Touches*

The fourth day of the workshop commenced with student presentations. During these presentations, participants received their final critiques from each other and from facilitators, and continued to work in the open-air studio. In the following hours, students finalized their designs, and completed their models, presentation boards, and digital presentations. For the final jury, students were requested to prepare three A1 size sequential presentation boards, architectural models in various scales, and to supplement their presentations with music and videos as necessary.

### *3.5. Day 5: Final Jury*

On the final day of the workshop, a jury of fellow students, facilitators, and local administrators evaluated the end products.

## **4. Student Work**

### *4.1. Functional Shell Design*

The group comprising of two archeology, and three architecture students identified Asar Island, where the archeological excavation continues, as its focus for problems and potentials.

Group members observed that archeologists taking part in excavations during the four-month excavation period starting in June are prone to the detrimental effects of the scorching sun. Additionally, they witnessed that domestic and foreign tourists willing to visit the excavation site, unintentionally damaged the findings as they explored the unprotected area. The students proposed a “Functional Shell” over Asar Island, aiming to solve (ameliorate) the problem they identified. The student group identified three main characteristics for the functional shell. The shell is conceived as a promenade on which one can walk, with recurrent observation decks, and opportunities for working comfortably in shaded areas throughout the day.

Participants conducted a variety of analyses to determine the route that the shell would follow (Figure 3). Findings regarding historical traces, pedestrian movement, focal points, and green areas influenced the design.

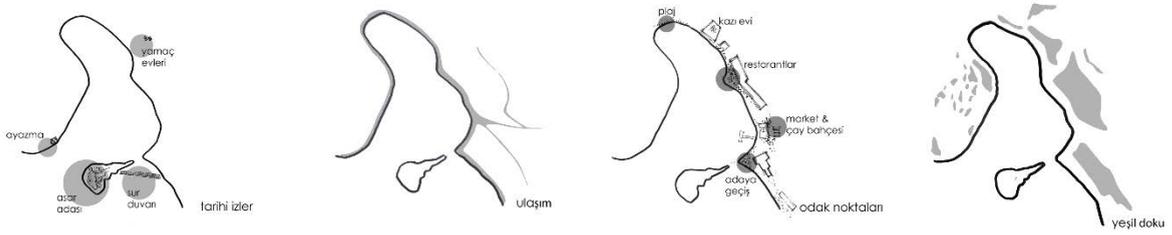


Fig. 3. Analytical diagrams of Asar Island. (a) historical traces, (b) pedestrian movement, (c) focal points, and (d) greens areas.

The work group deliberated that transportation to the island by raised sea bed had significant potential, and thus decided not to intervene in the current situation. Students positioned entrance and exit points of the shell at the location where visitors naturally approach the island on foot, and allowed it to continue its original function.

The proposed shell ascends via platforms towards the peak of the island where extensive excavations have been carried out. Each platform provides a unique perspective to visitors (Figure 4).



Fig. 4. Fonksiyonel üst örtü planı

As the terrace is repositioned over excavation openings, it is elevated considerably to allow for a view of both the Aegean Sea and Gümüşlük. The shell is raised so that archeologists working on site are shaded, yet sufficient natural light and air is available for a comfortable environment (Figure. 5).

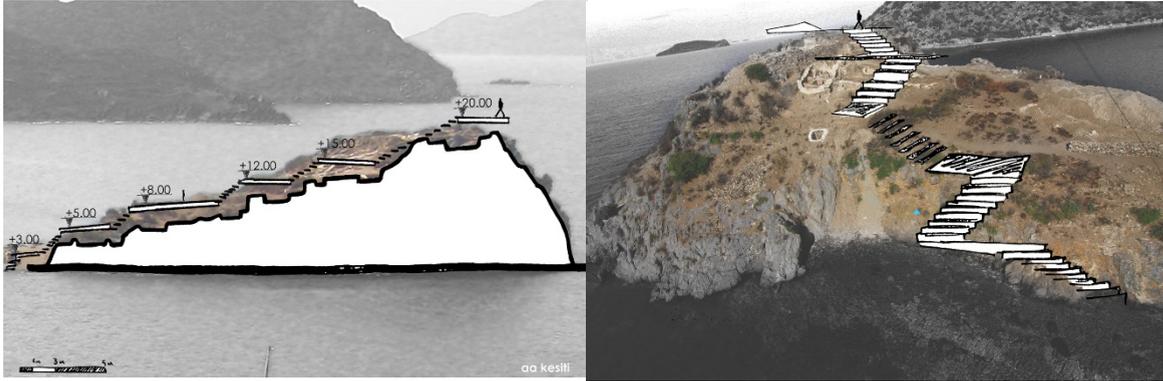


Fig. 5. Functional shell. Section a-a & Section b-b.

Students arranged their presentation boards by including 3 dimensional visuals of the island that they created by juxtaposing hand drawn sketches with photographs, as well as analyses conveyed on plan drawings, photographs they found instrumental, and various information about the island (Figure 6).

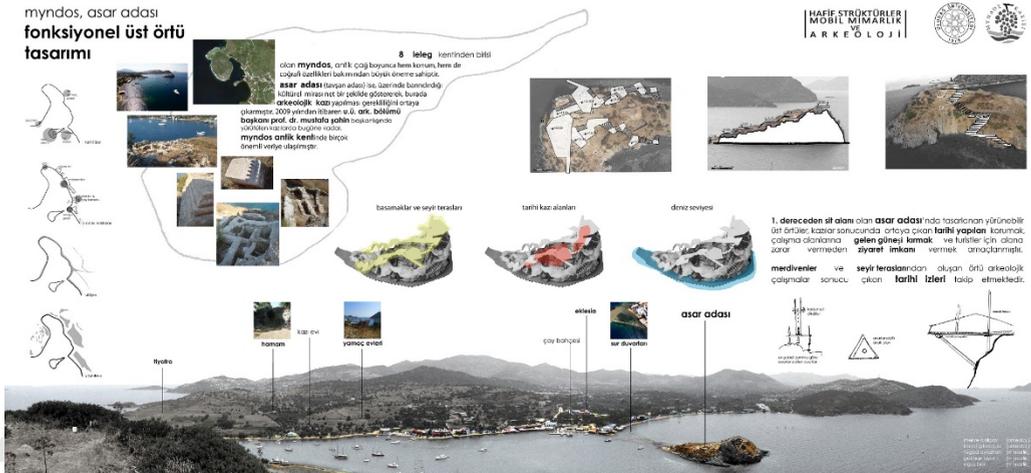


Fig. 6. Presentation boards.

Additionally, the students utilized three-dimensional representations of the island they constructed by combining their analyses with photographs of the architectural model to assess the success of their design in solving or minimizing the problems they identified at the outset (Figure 7).

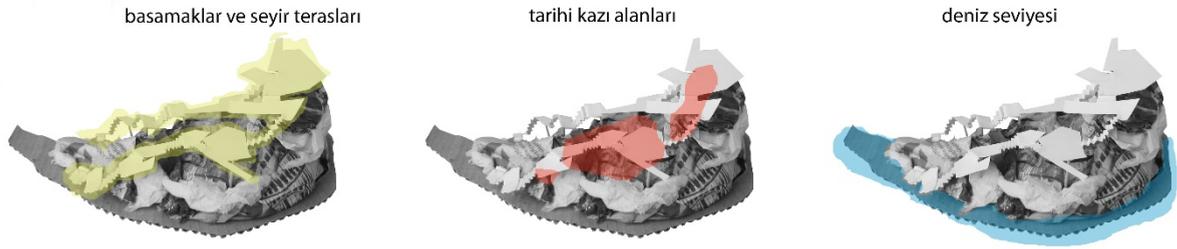


Fig. 7. Three-dimensional analyses. Left to right: Steps and observation decks, excavation sites, and sea level.

#### 4.2. Myndos Sail

Members of another group comprising of 2 archeology, and 3 architecture students observed that the harbor may have had an important role in the Myndos antique city, and that still today a considerable number of ships and yachts enter the harbor. The students proposed a design to transform the interaction between the land and the island into a controlled and enjoyable experience without damaging the fabric of the place.

The design was developed around the idea of placing posts around the existing raised sea bed that connects the mainland to the island, and proposing a new walkway with a further raised platform connected to these posts.

Participants initially analyzed vehicular and pedestrian access to Asar Island and Gümüslük, and also determined locations of archeological findings (Figure 8).

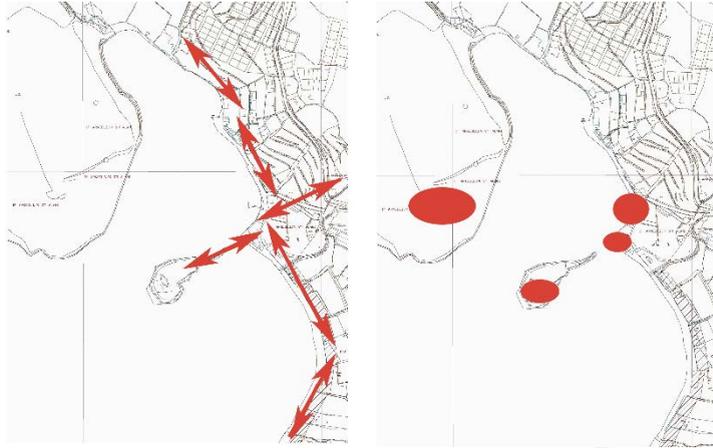


Fig. 8. (a). Analysis of pedestrian and vehicular access; (b) locations of archeological findings.

As the design progressed, the student group realized that visitors to the island may suffer from direct sun light, and consequently they modified their design to include a white fabric shade above the platform. The shade would be attached to the posts supporting the platform. The overall design with its posts, platforms, and white shades, is a reference to the masts, hulls, and sails of ships anchoring in the safety of the harbor over centuries (Figure 9).

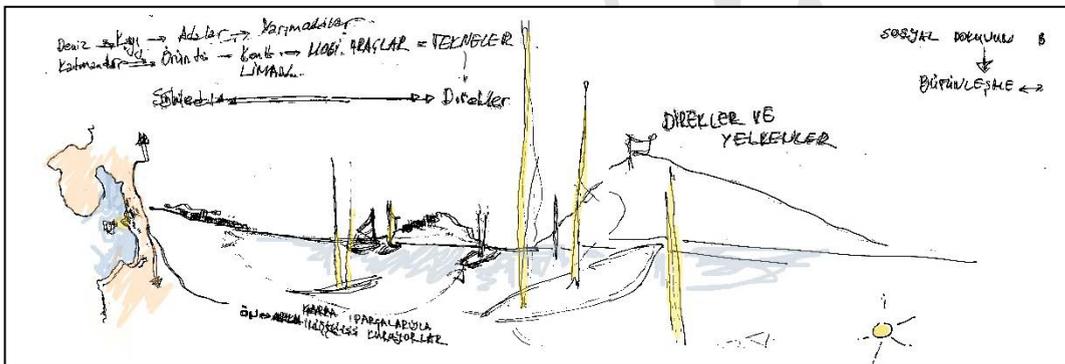


Fig. 9. "Myndos Sail" design drawings.

The student group made effective use of hand drawn sketches in their presentation boards, and supplemented these sketches with three dimensional visuals they created by combining photographs of the surroundings with photographs of their architectural model. The boards also included text detailing their design (Figure 10). Presentation boards for this group, unlike the previous group's work, included the typographical mapping exercise carried out on Day 2 of the workshop.

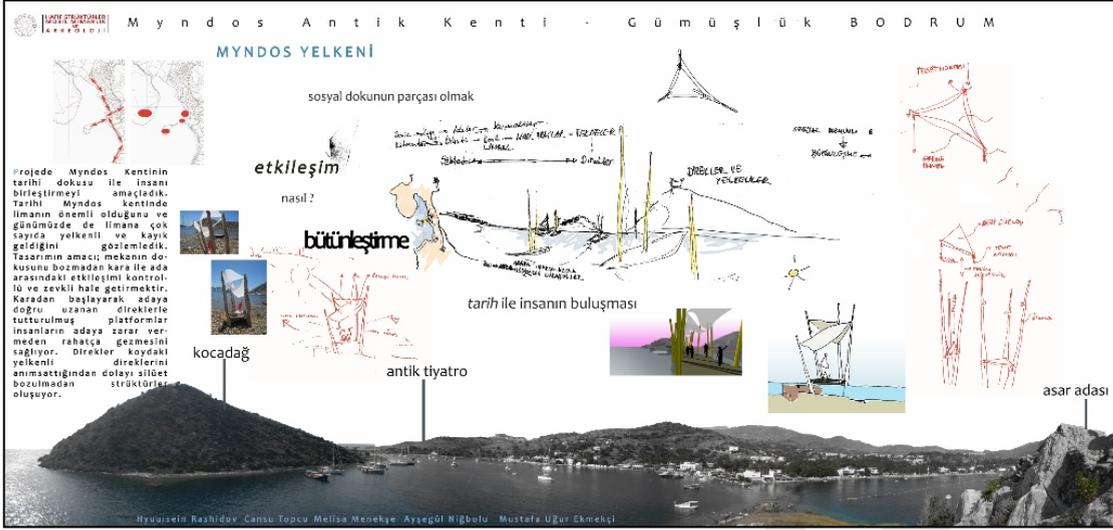


Fig. 10. "Myndos Sail" presentation boards.

## 5. Conclusion

The 'Lightweight Structures, Mobile Architecture, and Archeology Workshop' proved to be an effective exercise in experiential learning for architecture and archeology students. The location as a potential ground for the proposed structures made the studio effort engaging, and allowed an abundance of local residents to voice their thoughts. Presentation boards prepared by the student groups are vivid reflections of the creative process, and its benefits to learning. It can be postulated that similar cooperation among engineering and architecture students would yield similar results.

## Acknowledgements

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# A multidisciplinary design studio: designing an eco-house project on Burgazada, Istanbul

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## Abstract

This paper describes collaboration among Architecture, Arts, Mathematic and Ecology. A problematic of design titled *Designing an Eco-House Project on Burgazada, Istanbul* with taking references from abstract paintings of Miro and Kandisky and using the complex geometrical forms, which are formed by compositions of triangles, octagons and hexagons, etc. was given to students on the Design Studio 1 of the Department of Architecture of Yildiz Technical University. Burgazada, one of the Prince's Islands of Istanbul, with an almost 2500-years old history, was chosen as the project site. The project process has been continued during the 15 weeks long spring semester of 2012-2013 education year. The project involved designing of a lightweight structure on an ecological house design, which gives minimum damage to the ground and the ecology. The aim of the studio was to create an innovative, interdisciplinary eco-house, which takes references from selected abstract paintings of Miro and Kandisky for students to creatively solve design problems in a SPRING semester time period.

Thus, the paper will have not only the process of A Multidisciplinary Design Studio, but also different design solutions of *Designing An Eco-House Project on Burgazada, Istanbul*.

Keywords: Miro, Kandinsky, ecology, design, architecture, creative thinking, thinking creatively

## 1. Introduction

It is a common way to give some general design problems such as a design of a house or a design of a one-storey office building to first years' architecture students on design studios on a classical education point of view, till today. For the first year of the architectural education students are generally designing buildings that are having small unit spaces, which are created according to the function of that is asked to design. Generally, all of the spaces are like they are from the pages of the book of Neufert, which is used to check dimensions, ratio and proportions in architecture. So almost all of the projects of the group are so similar to each other without having any sense of creation, but with perfectly right architectural fictions on plans and sections, thus they are so good according to the "book".

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To solve this main problem, one instructor and one assistant guided 15 architecture students from Turkey, Syria and Spain on the design studio during 15 weeks long spring semester of 2012-2013, used Jeffrey and Craft's *teaching for creativity- teaching creatively theory* to ask an architectural creation of eco-houses on Burgazada to the group. Each student selected a site on Burgazada. And started to create their own *dream eco-house*.

The design of the house should have a lightweight structure, which was not only to be ecologically utilitarian, but also give less harm to the ground it would rest upon. Choosing one abstract painting of either Miro or Kandinsky was the starting point of the project in the first moment, just after a workshop had been organized on the attendance of a famous Turkish painter, Aysun Dostol. She gave 3 seminars titled, *The Information of Paintings of Mirao & Kandinsky and Their Era; Dadaism; and Making of Collages*. Then, she held a workshop of 3 dimensional modeling collages with references from the paintings of Miro and Kandinsky.

Thus, the process was including 4 pahases chronologically: 1.the creating of 3 dimensional innovative collages from the paintings of Miro or Kandisky during a workshop with a professional Turkish painter; 2.the giving decisions of having ecological point of view on the house design, 3.creating polygonal structural choice as having references from selected painting either of Miro or Kandisky, and finally 4.the design process of the project. Moreover then this, during 15 weeks long semester, informative seminars about the site were given to the students on the first 2 weeks, and from the 3<sup>rd</sup> week to 10<sup>th</sup>, not only three basic digital programs, which are chronologically photo-shop for architectural representation, sketch up for understanding 3 dimensional modeling quickly and auto-cad for drawing the design project, were touch to students on three different workshops, but also 3 seminars about eco-design, 2 about architectural patterns and geometrical form creating and 1 about light-weight structures were given to them, as well.

## 2. Methodology

On modern educational programs there are 2 main methods. One is offered by Kolb (1984) and named as an *experimental learning*, and is offered by Jeffrey and Craft (2004), which is called as a *teaching for creativity- teaching creatively*. Here, the second one was chosen and design projects were created according to the references of the paintings of Miro or Kandinsky on an artistic point of view, which is pointed out by the related theory.

According to Jeffrey and Craft (2004), the former is defined as 'using imaginative approaches to make learning more interesting and effective' (Craft, 89) and *teaching for creativity* involves *teaching creatively* (Craft, 90) and notes that, "young people's creative abilities are most likely to be developed in an atmosphere in which the teacher's creative abilities are properly engaged" (Craft, 90).

There is a great deal of research and conceptual analysis, on an architectural education parallel to the researches and developments on educational field, which has explored aspects of pedagogical approaches which foster pupil creativity around the world especially on USA. (Torrance, 1984; Shallcross, 1981; Kessler, 2000; Hubbard, 1996, Halliwell, 1993; Fryer, 1996; Edwards and Springate, 1995; Craft, 2000; Beetlestone, 1998; Balke, 1997). However, none of these studies has, examined the relationship between these two facets of creativity not only in the university, but also on architectural education.

The data, which was drawn upon by Jeffrey and Craft (2004) comes from a research of 1971 and is now internationally famous with reciprocal connections with schools in Sweden, relations with communities in Gambia and the recently retired head teacher has lectured in the United States and recently visited China.

On their example, data collection was through qualitative methods, consisting chiefly of interviews with teachers, support workers, students and families. The research focused on the learners' experience of creative teaching in general, focusing on their perspectives, recorded through extensive field notes. Relevant documentation was collected such as governors' and inspectors' reports, timetables, and test results. Photographs were used extensively as data and as stimuli for exploring children's<sup>†</sup> perspectives. At one stage, students were given cameras to select their own observations for discussion. By comparing the various different kinds of data, both within and across cases, we were able to identify prominent issues and themes connected to the major subject of creativity in education and the effect this had on the various participants.

Thus, a kind of similar method was used on first year's design studio students. Each student selected a site on Burgazada and then not only by taking the reference paintings of Miro or Kandinsky, but also with the results of the eco-researches that they made, they designed their projects.

### 3. Teaching Creatively And Teaching For Creativity

The relationship between *teaching creatively* and *teaching for creativity* can be seen by using a framework based on Woods' (1990) features of creative teaching - relevance, ownership, control and innovation.

#### 3.1. Teaching Creatively

According to NACCCE (1999) report, imaginative approaches should be used to make learning interesting and effective during the semester for teaching creatively. A major effect for students was an immediate experience of the dynamic, appreciative, captivating and caring ethos (Jeffrey and Woods, 2003). The construction of this type of ethos has many 4 objectives but in terms of teaching and learning one of the school's major aims was to make the learning experience relevant to learners, to make it interesting. According to Jeffrey and Craft for students this meant an ethos that was dynamic and active:

Learners appreciated the qualitative aspects of each focus of learning. Thus, creating is also made exciting, literacy experienced as a whole range of delights and emotional journeys through designing and architecture is developed as a passion for designing, discovery and experimentation are felt during the process of technology provided intensely focused activity involving, frustration and satisfaction and the arts were valued as opportunities for expression, as well.

During the students are formulating their curriculums, the knowledge to be investigated on the process and the contexts in which not only teaching and learning took place, but also personal creativity was tired to be pushed up to set a framework for creative engagement on their projects.

The group experienced the process between studio hours as adventures just on the example of Jeffrey and Craft. The lecture's '*hands on*' approach was a paramount feature of learning to make design relevant and encouraging ownership:

The group was told the story of how the practice of 'designing a eco-house on an island site' developed -

<sup>†</sup> The group of students are from priliminary school, which were selected as group members on Jeffrey and Craft's example).

the setting up the parish boundaries on the first year's architecture students.

The instructor and the assistant of the lecture prioritised strategies that engaged the learner<sup>‡</sup> and they acted creatively to adapt the strategies to the appropriate age range, context and individual. The focus was on the professional relevance of the design studio to the first year students as showing what was the architectural background of a design, which was to be learnt or experienced during 15 weeks long semester. This is related with the exemplified the description of teaching creatively which was given by NACCCE, in 1999.

### 3.2. Teaching For Creativity

The instructor also enacted those *teaching for creativity* principles according to (NACCCE, 1999), as follows: encouraging the group to believe in their creative identity; identifying the group creative abilities not only architecturally, but also related with art; fostering creativity by developing some of the common capacities and sensitivities of creativity such as curiosity, recognising and becoming more knowledgeable about the creative processes that help foster creativity development and providing opportunities to be creative. This was done by firstly having 4 weeks long teaching of the history of Ottoman architecture and encouraging ownership of learning and then by passing back control to the learner and encouraging by making students' own movies as innovative contributions. Control of learning by a young person is not a new experience (Pollard 1996). Being on this process is an opportunity to have ideas, which are innovative and expressive.

One of the major characteristics of creativity itself is, as craft argue on 2002 possibility thinking (Craft, 2002) and it was referred also that it was used at the education in technology-based activities on the group of upper-graduate students such as on this example, movie making to encourage the group to take control and act innovatively, as well.

According to Wood and Jeffrey (1996), the group experience and imagination would be a major part of the process of investigating knowledge using such devices as possibility knowledge (Woods and Jeffrey, 1996) and possibility thinking (Craft, 2002) and according to Lucas (2001), as well. *Teaching for creativity* could involve generating 'learner inclusive' pedagogy, according to Jeffrey and Craft where the learner is encouraged to engage in identifying and exploring knowledge. This idea is tried to develop further here, on this selected group of upper-graduate architecture students (Craft and Jeffrey, in press; Craft, 2003).

### 3. Content And Context Of The Lecture

The 15 weeks long semester had 5 different educational phases,

1. Site seeing on Burgazada;
2. Choosing of the sites of students on Burgazada;

<sup>‡</sup> Here, upper-graduate students.

3. Having 2 seminars about ecological design, landscape architecture and eco-details on the house;
4. Designing an eco-house by taking references of Miro and Kandinsky;
  - 4a. Having 3 seminars about paintings of Miro and Kandinsky and Dadaism and collage making,
  - 4b. Organising of a 3 dimensional collage workshop (taking the reference of 1 painting of either Miro or Kandinsky)<sup>§</sup>
5. Design Process:
  - 5a. Designing of plans and elevations,
  - 5b. Taking sections,
  - 5c. Designing of ecological details
  - 5d. Creating of details of interior design
  - 5e. Creating of details of landscape
6. Making presentations on the auditorium;
7. Discussions of each project on final jury.

## 5. Projects And Discussions

There were 15 submitted projects from the group: 9 took the reference of paintings of Kandinsky and 6 took the reference of paintings of Miro. **4 of the students** of the group who selected Kandinsky's paintings as references designed their spaces as some rectangular shapes that have some cross points with the other ones on different sizes on different directions. And they tried to catch all artistic sense of humour on the design of this cross points on their eco-houses. They used light weighted steel in structure and on their landscape design they again selected to use rectangular forms to have the main axes, thus their designs have an intensive harmony with the design of their *dream eco-house*.

**6 students**, who selected Miro's paintings as their designs reference points, designed their dream eco-houses as a festival of using the complex geometrical forms, which are formed by compositions of triangles, octagons and hexagons, etc. not only on plans, but also on the 3<sup>rd</sup> dimensional structure design, as well. Even the details of the interior design and furniture design of these eco-houses have the same architectural creation point of view. The landscape design of these 6 projects has complex axes, more than having straight lines, the idea of creating landscape design has a dynamic fluid structure and framework combinations.

<sup>§</sup> Each student chose his/ her reference painting & painter according to his/ her point of view.

**5 students** of the group selected to use the paintings of Kandinsky as the starting reference of the design of their *dream eco-house*. These students used a combination of complex geometrical forms with the simple rectangles, not only on their dream eco-house, but also on the design of the landscape, as well. Each of their house projects is unique in shape, not only on 2 dimensions of plans, but also on the 3<sup>rd</sup> dimension, as well. The landscape architectural point of view of these projects has harmony with the design idea as having small useful units on the gardens as daily spaces, swimming pools, romantic small draw wells, and etc. one project of this group is like a *drop of water*, very much effected with the fluidity idea of Zaha Hadid, who is a famous architect with her contemporary architectural examples on all over the world. That idea has come to actualize after having some drop like intersectional points on the 3 dimensional collage of the owner of the project, which also has a parallelism with the idea of designing an eco-house on the ecological point of view.

Three best project designs are as follows:

#### 1. *A Harmony of Triangles on Our Life*, by Muhittin Eksi

The design idea is related with the triangles that we have on our life; everything that is related with our life, such as school-family-work, love-faith-hope, eat-drink- sleep, sea-sun-sand and etc. The space organisation is resolved very creatively as a result of *thinking creatively- creative thinking* method, using different triangles on different sizes, and thus by having living spaces on their cross-sectional points, not only on plans, but also on 3<sup>rd</sup> dimension and landscape design, as well.

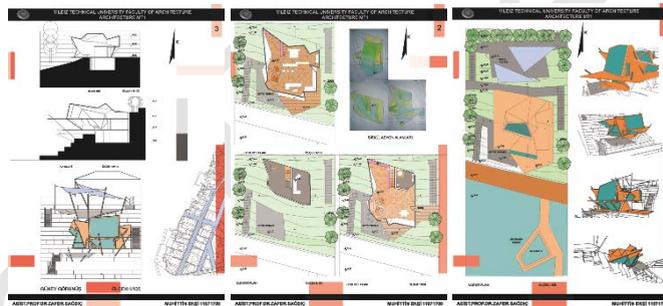


Fig.1. *A Harmony of Triangles on Our Life*, by Muhittin Eksi

#### 2. *A Drop of Water*, by Adnan Koyuncu

The design idea is focused on a creating of a drop of water. Thus, the designer student of the project has been very much affected with the fluidity idea of Zaha Hadid<sup>\*\*</sup>, after taking references on his design from a painting of Kandinsky. On a ecological point of view the house design has a lightweight steel structure and thus, it gives the less harm to the ground. All of the interior design solutions and details of furnitures and landscape details are created by the same point of view, having fluidity on each and every part of the dream eco-house.

<sup>\*\*</sup> Zaha Hadid is a famous architect with her contemporary architectural examples on all over the world.



Fig.2. *A Drop of Water*, by Adnan Koyuncu

### 3. *A Continuous Life Cycle*, by Barancan Dagistan

The design idea is related with the life-cycle of the human being, which has different stops, and thus the spaces related with them in function are created in an action-space relationship such as eat-kitchen, sleep-bedroom, stay the day long-living room, work-office room, and etc. The dream eco-house has a fluidal space usage of a daily life cycle in its' spaces and thus, its' spaces have a kind of m2 sizes according to the will and the daily usage of the owner of the house. Even the starting point of the project has a reference of painting of a Kandinsky, the facades and landscape design of the house is affected by the famous Spanish architect Gaudi's creations as artistic point of view, as well.



Fig.3. *A Continuous Life Cycle*, by Barancan Dagistan

## 6. Conclusion

Among multiple benefits of the exercise some that stand out are: (1) students participated in solving a creative design problem, (2) students learned to work on an estimated time period, (3) students familiarized themselves with creating designs on a relationship among mathematics and arts while thinking on ecology, (4) students learned to appreciate different point of views on the same project site, (5) students were able to visualize their designs in context, (6) students learned 3 important digital programs.

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4<sup>th</sup> International Conference on New Horizons in Education

# A new horizon in logopaedics: Speech therapeutic story – innovative use of a story in the therapy of children speech impediments

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## **Abstract**

A speech therapeutic story is an innovative method of working with a child, combining the plot of a therapeutic story with speech therapy. The aim of using this aid is to provide the child with a two-dimensional help, namely to teach it the correct pronunciation as well as to support it emotionally through the reduction of fear and the encouragement for verbal communication. The attractive form of a speech therapeutic story (interesting presentation, multimedia form, the use of a puppet) is to arouse positive emotions in the child: overcoming the fear and the sense of isolations, boosting its self-esteem, consequently motivating it to articulatory training, and after the achievement of the desired result – giving the feeling of self-acceptance and success.

*Keywords:* Speech Therapeutic Story; therapy of children speech impediments; logopaedics; speech therapy; verbal communication; therapeutic stories; bibliotherapy

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## 1. A New Horizon in Logopaedics – Speech Therapeutic Story

Speech therapy is often associated with immense efforts, tension, and stress. Small children, in particular, who - as a result of their speech impediments and disorders - must attend sessions with a speech therapist, get tired easily, quickly lose their concentration, withdraw into themselves in front of a therapist, sometimes even rebel and refuse to cooperate. These are very often children who feel rejected by the people around them due to their problems with verbal communication.

Such difficulties may go in tandem with two types of fear (Bełtkiewicz; 2013). First of all, it can be **fear of rejection**, expressed as anxiety and nervousness in the face of situations that threaten a child's self-esteem (Conrad and Hendl; 2005). Second of all, it is **fear of failure**, which may intensify due to a public performance, during a speech therapy session, or a casual communication situation (Bełtkiewicz; 2013).

Despite all the negative emotions that can accompany children during a speech therapy, there is a need for early diagnosis and intensive training. This is due to the fact that difficulties in verbal communication often affect a child's overall development and their functioning in a peer group. Such abnormalities should definitely be eliminated before a child starts their school education, as the improper use of the language can have a negative influence on a child's cognitive processes, literacy, and social skills. The linguistic achievements that a child already has while starting school will be invaluable when meeting the increasingly sophisticated demands made by teachers and parents (Cieszyn and Korendo; 2012).

Therefore, the optimal solution is to provide children with two kinds of support: psychological and logopaedic. To that end, an effective way is to use a tool which I have developed – a speech therapeutic story. It involves the combination of a traditional storytelling therapy, i.e. interacting with a child using a specially-designed fairy tale which carries psychological support, with a speech impediments therapy, logopaedic instruction, and exercises.

## 2. The concept of the tool

**A speech therapeutic story** is a tool that combines both psychological and speech therapy impact and is to be used while working with a child. The tool is based on interspersing a traditional plot of a therapeutic story with speech therapy instruction and training.

The method is aimed at children **over three years of age** who have been diagnosed with a speech impediment or language disorder that can be subjected to treatment at this stage of a child's development. Typically, speech difficulties take the form of dyslalia and result from the restricted mobility or abnormal arrangement of speech organs during the articulation of a given sound (Kaczmarek; 1977). In addition, a speech therapeutic story addresses such issues as a shortened frenulum or the premature loss of primary teeth; hence, it aids dental and orthodontic treatment and rehabilitation. Speech therapeutic stories are also intended for children who stutter, as the exercises such stories contain stimulate the flow of speech. The following article is dedicated to the topic of a speech therapeutic story being an adjunct to the treatment of the dyslalia speech disorder.

An important advantage of a speech therapeutic story is its capacity to increase a child's motivation. This is facilitated by narrating the story, which gives a child a sense of participation in a fairy-tale world, and also a sense of mission and being in control.

### 3. The story's composition

The proposed therapeutic tool is based on a plot of a therapeutic story, which usually serves as a secondary preventive measure (supporting a child in a situation which is emotionally difficult and generates anxiety) and whose task is early detection of undesirable phenomena and early implementation of corrective action (Woynarowska; 2005).

A therapeutic story is based on permanent, formal elements such as the main theme (an emotionally difficult situation), the main protagonist who is experiencing an emotionally difficult situation and negative emotions (including social emotions) which control his behaviour and the way he interprets various events, other fairy-tale characters that support the protagonist (they provide understanding and acceptance, and also illustrate other strategies of action and understanding), and the story's background marked by a buoyant and optimistic mood (Molicka; 2011).

In the story, the psychological and logopaedic problem refers to both the main character and his integral elements - speech organs. It is important to put an emphasis on a certain dualism here: it is not only the main character (usually a child) who is an important protagonist of a speech therapeutic story but one of his speech organs too. That speech organ (typically the tongue) causes a child to articulate sounds incorrectly and is not only animalised but even personified – it can think, feel, and take decisions (Bełtkiewicz; 2013).

The plot contains the same elements as in a traditional therapeutic story:

- 1) **Presenting the protagonist**, who initially leads a happy and peaceful life; the description of his surroundings.

- 2) **Problematic situation**, i.e. a difficult situation in which there is no correspondence between the external conditions and that which the individual is capable of (Kowalik; 1993), and which forces the protagonist - both the main character and his speech organ - to act.

- 3) **Decision to take rational action and start persistent work** on the part of the main character (usually a child) and/or a personified speech organ.

- 4) **Resolution** – occurs as a result of prudent action, perseverance, diligence, or with the help of friends. At this point in the story, the plot is interspersed with oral-motor exercises which are recommended to improve a given speech organ. The organ-protagonist, usually the tongue, is to do certain fitness and physical exercises; it has to do some cleaning in his house - the oral cavity. In addition to articulation training, these exercises, depending on a child's age and abilities, can have an impact on the child's general development, advance his semantic and syntactic system, improve his literacy, and stimulate skills such as memory, visual analysis and synthesis, categorisation, and manual dexterity.

- 5) **Happy ending**, a success, attaining the correct level of speech, free verbal communication.

#### 4. The role of the story characters

The characters in a speech therapeutic story fulfil many important functions. The main character (usually a child) is analogous to a child that is undergoing the treatment. All similarities should be abandoned. The profile of the fictitious character can coincide with the profile of a child at some points, but not to the extent which makes a child feel that the story is about them. Such revelation can have a very negative effect – it can discourage a child from continuing to work further as they may become mistrustful (Bełtkiewicz; 2013).

The role of a personified organ is not only the accurate and artistic representation of speech organs during actual speaking, but also familiarising a child with their own speech problem, impediment, or disorder. An effective way is to stimulate children's empathy, compassion, and positive attitude towards the sick organ or system, their willingness to help it improve by comparing the malfunctioning system or organ to the element of fauna and flora. Therapeutic stories used when working with children who suffered orthopaedic injuries motivate them to undergo rehabilitation by showing the injured limb as a personified crushed twig or a destroyed plant which is in pain and needs help. A similar role is played by the personification of a speech organ which causes a speech impediment, usually resulting from limited motor skills of articulatory organs (Kaczmarek; 1977).

The protagonists must evoke a child's positive emotions and inspire their trust. Characters should become children's guides or helpers during a speech therapy, which may inspire their confidence and involvement in the entire process.

#### 5. The role of positive emotions

A child who experiences various types of anxiety, has low self-esteem, and a negative attitude to all kinds of activities, must be provided with **positive emotions**. Anxiety reduces intellectual competence and has a negative impact on people's achievements in any type of work or study (Goleman; 2007). Therefore, when starting to work with a dyslalic child, it is essential to first reduce their anxiety and induce their positive emotions before a speech therapy begins.

In a speech therapeutic story, this is facilitated by **humorous elements** contained in the creation of the presented world, in descriptions of the characters, in dialogues, and in exercises. They serve to improve a child's mood, to give them a sense of relaxation, and also stimulate their positive attitude towards a speech therapist and a therapy itself (Bełtkiewicz; 2013).

A sense of humour not only brings happiness, but it is also an important tool for the development of stress resistance (Hart; 1995). In addition, Archibald Hart cites the research (by Masten, Ph.D and Garnezy, Ph.D from the University of Minnesota) which shows that children who often smiled and laughed tended to do better at school and were more popular with their peers, even when they experienced more stress than other children.

A speech therapeutic story maintained in **the atmosphere of fun and adventure** reduces anxiety, raises self-esteem and motivation, motivates for action, and reduces the rate of fatigue. In a speech therapeutic story, an

important role in evoking positive emotions is played by supporters – friends or counsellors, who, in fact, may be children’s speech therapists or teachers.

## 6. The mechanisms of interaction

The most important mechanism of therapeutic storytelling is the process of **a recipient identifying himself with the story’s main protagonist**. In a speech therapeutic story, this happens in two ways: a child compares himself to the main character, while at the same time comparing his speech organ being subject to therapy to the “organic” protagonist. Hence, the motivation to act and to cope with one’s own weaknesses and limitations is twofold.

A speech therapeutic story is designed for pre-school and older children in the case of whom making their speech adjusted to socially accepted standards has failed. The mechanisms of this method have been adapted to the stage of preoperational concepts, which is distinctive of children attending kindergarten or just starting their school education. This age is marked by visual thinking, perceiving inanimate objects as alive, and attributing different motives to them (Conrad and Hendl; 2000). A speech therapeutic story takes this developmental feature into account through personifying speech organs and presenting them as characters with the ability to reason and feel. This way of comprehending the problem provides a child with a genuine opportunity to eradicate his speech difficulties by "taming" and "training" the malfunctioning organ. Also, the atmosphere of fun and play is conducive to achieving positive therapy effects.

## 7. The presentation

The most modern and most attractive form of presenting a speech therapeutic story is by using multimedia. Dynamic animation enables the most effective presentation of the way speech organs move during articulation, and clearly shows the duality included in the story: the main character and his integral part - the “organic” protagonist. Using multimedia is also practical from the organisational point of view, as it allows for an easy and repeated playback of the animated tutorials and exercises by a speech therapist. The storyline and the logopaedic material spread on slides makes it possible for a therapist to divide the process of therapy into various stages and to choose the appropriate exercises for a particular child. If a child has not mastered the material yet, it is possible to return to the previous content in order to repeat and consolidate it (Bełkiewicz; 2013). After prior instruction given to a child’s legal guardians, the tool can be used outside a speech therapy office in order to increase the regularity of speech training, which, in turn, contributes to the achievement of intended results at a quicker pace.

Additionally, a multimedia form allows to create a specific interaction between a speech therapeutic story’s protagonist and a child. The animated character can ask a child questions about their well-being or the level of satisfaction with the task they have just completed. Above all, the character can praise the child if they complete a task correctly, which is an important engaging and motivating factor. The characters of literary works and animated films often become very close to children. They are extremely memorable to them. Naturally, this

"friend-guide" cannot, at any stage of a therapy, replace a speech therapist or a parent, who should control the actions performed by a child using the tool.

A speech therapeutic story can also be presented in a traditional form. A speech therapist may narrate a story freely, or read it and demonstrate activities using his own speech organs. He can perform general development exercises using authentic aids, such as toys, puzzle pieces, children's short stories, or jigsaws. This form undoubtedly stimulates a child's imagination, but there is a risk that not every child, especially not a young one, will understand the analogy and the relationship between the main character and the "organic" protagonist. A traditional version can be used, as instructed, by a child's parents; however, the level of motivation of both children and their parents may be much lower than in the case of a multimedia form.

A multimedia form available on mobile devices provides a child with permanent access to the tool, regardless of the circumstances. Apart from the device and the application, such form does not require any additional therapeutic or educational materials.

## **8. Aid materials and other therapeutic forms**

Along with a speech therapeutic story, it is possible to complement your work with children with a wide array of teaching aids as well as elements from other forms of therapy that stimulate their overall development. I have developed a number of speech therapy materials whose aim is to diversify the use of a speech therapeutic story and make the comparison between the "organic" character and a speech organ more apparent.

The most faithful representation of the "organic" protagonist (the tongue) in its "natural habitat" (the oral cavity) is provided by a silicone tongue cover (hypoallergenic, does not restrict movement). The cover represents the story's main character (it has his characteristic facial features and colours) living in a cave. While performing oral-motor exercises, a child identifies himself/herself with the main character, and his/her tongue ceases to be merely an organ, taking on the nature of a person and a friend (Bełtkiewicz; 2013). This solution is especially beneficial for children to whom the analogy presented in a speech therapeutic story - for various reasons - is not entirely clear, but also for children who find it challenging to organise the structure of their own body and to imitate a sequence of movements and routines. Pre-school and early school children are open to new, experimental solutions and curious about aids which they have not seen before; therefore, they consider such innovative teaching aids extremely attractive and appealing, which increases their motivation and may accelerate the desired therapeutic effect.

A finger puppet, made of soft and adhesive material, may constitute another representation of the "organic" protagonist. A puppet performs movements which are analogous to those of the "organic" story character, who is at his home (a fist-sized small dome). Using a puppet, a speech therapist is able to present a child with a routine shown in a story. Next, he can ask a child to repeat the routine with a puppet and then a child's own speech organs. Similarly, a puppet (the "organic" protagonist, the tongue) may be slightly bigger, cover the whole hand, take the form of a "glove," and be presented in a sliding dome - the cave (the oral cavity) with a proportionally bigger capacity. Presenting the "organic" protagonist with a puppet is particularly recommended with children with impaired manual dexterity and impaired imitation skills. A puppet can also serve as a "buffer" during the evaluation of a child's work by a therapist, especially in the case of children who are shy and have a high level of anxiety. Puppets used in tandem with a speech therapeutic story make it possible to intersperse a therapy programme with other forms of therapeutic treatment, including theatre, drama, or poem recitation - all with the use of a puppet (Bełtkiewicz; 2013).

It is also possible to involve a child's entire body by dressing them up as the "organic" character and putting them in a house which resembles a sliding cave. A child's task is to perform the movements relative to the "room" they are in which are the same as the movements the "organic" character has to perform in a speech therapeutic story. This exercise aims to improve a child's spatial orientation and motor skills. Such training can be completed with physical exercises or music therapy. A good solution is to expand the activities with choreotherapy, which evokes additional aesthetic and emotional experiences. Dance therapy has a positive effect on sensory perception, improves a child's motor coordination, and also their sense of rhythm, time, and space (Szulc; 2013). This method is an excellent way to add variety to the treatment of ADHD children, as it allows them to give vent to their energy in a creative way and to fulfil their desire for a change (Hallowell and Ratey; 2004).

All forms of drama accompanying a *speech therapeutic story* and engaging different parts of the body - whether partially or totally - bring multi-dimensional benefits to a child's development. A fairy tale presented to a child via puppet theatre has the additional asset of evoking aesthetic impressions. The beauty of the characters' moral integrity can be greatly enhanced by their appealing appearance, their charming words, or attractive setting. Moreover, it means educating and preparing a child for the future moral and social life, as well as developing their aesthetic experiences (Dyk; 1998).

A speech therapeutic story used while working with a child may be accompanied by melotherapy. Another brilliant idea is to encourage a child to draw their emotions after the speech therapy exercises are completed. An emotional drawing is an excellent picture of the emotional state of a child and an indicator of progress that takes place in a child's psyche as a result of a series of encounters with a speech therapeutic story.

## 9. An example of a speech therapeutic story

To provide an example of a speech therapeutic story, I will present excerpts from a multimedia book entitled "Rrromek and Rrradek" (Dbajki Publishing House; Warsaw, 2013). The book has been written by me and is the first publication of this kind on the Polish book market, to be premiered soon. This book aims to stimulate children's correct pronunciation of the "r" sound.

The storyline is as follows: in the mouth of a several-year-old girl named Rózia (using a name with the "r" sound in the word initial position is intended), the main character, lives the tongue-dinosaur GADajek (a Polish wordplay with the words "gadać" (*to chat*) and "gad" (*a reptile*), which suggests that children can imagine a talkative dinosaur or dragon); his name is Romek (using a name with the "r" sound in the word initial position is intended).

1) The plot starts as in a speech therapeutic story – from **presenting the main protagonist**, who is leading a carefree, peaceful, and happy life.

**Example** – introduction, the description of a happy protagonist – the tongue, GADajek, and his natural environment.

*“Romek was a pink tongue-GADajek, living in a clean and warm cave - the mouth of little playful Rózia. (...)*

*He was growing healthy and happy. He really liked it when the girl was eating sweets, because he loved their sweet taste. Of all the sweets in the world, chocolate was his favourite. It melted quickly in Rózia’s mouth and flooded GADajek’s little house with its smooth sweetness.*

*(...)*

*Lollipops were the sweets which caused Romek the biggest difficulty. He didn’t know how to skilfully slide on their sweet surface, how to go up and down and up and down again. He was too fat and heavy. Each time he tried, he ended up really tired.”*

2) The joyful mood is interrupted by a **problematic situation**, forcing the protagonist - both the main character and her speech organ - to act. **Example** - the emergence of a problem situation (firstly, children in kindergarten laugh at Rózia because she cannot pronounce the “r” sound correctly, a speech therapist diagnoses an abnormality; secondly, a dentist draws attention to the girl’s heavy and unenergetic tongue).

*“In the kindergarten, a lot of children were waiting to meet Rózia. The teacher greeted the girl solemnly and asked her to introduce herself to the whole group.*

*‘I am Lózia... I am five yeals old. I have an oldel blotel. I like to dlaw and play the piano’,<sup>†</sup> she introduced herself. The children giggled and started whispering something to one another. The teacher silenced them, but Rózia was very sad. So was Romek.”*

*(...)*

*‘My dear Rózia,’ Mr Dentist sighed. ‘From now on you are allowed to eat only one chocolate square a day...’*

*‘How come?!,’ GADajek thought with horror.*

*‘You eat too many sweets and your teeth are starting to decay! Please, brush your teeth after each meal. I can see that you have a very lazy tongue, which can’t pull out the remains of the food you eat from every nook and cranny...,’ Mr Dentist continued.*

*‘Thele! Yet anothel pelson who doesn’t know me but dales to cliticise me,’ Romek sighed to himself with anger.*

Before the therapy, Rózia wrongly uses the „r” sound instead of the „l” sound; it’s a standard form of dyslalia called *rhotacyzmus*

3) The protagonist - the main character and the personified speech organ - **decides to take action.**

**Example** – initiative, the will to act (Rózia and GADajek-Romek decide to start systematic work)

*‘This has to stop!,’ Romek thought. ‘I’m getting down to some selious wolk!’*

4) The next step is to **solve the problem through rational activity and persistent work**, with the help of friends. At this point, the story is interspersed with oral-motor exercises which are recommended for improving a given speech organ. The protagonist – the organ, usually the tongue – is to do fitness and physical exercises, and has to do some cleaning in his house – the oral cavity.

**Examples** - making a rational decision to start regular and persistent work (Rózia and Romek decide to start systematic work)

a) GADajek Romek has a task to clean the “door frame” of the cave – Rózia and the reader/listener are licking their upper lip.



Fig. 1. (a) Rózia – a child protagonist; (b) GADajek – the “organic” protagonist, the tongue conceptualised as a dinosaur

b) GADajek Romek has a task to clean the “doorstep” of the cave – Rózia and the reader/listener are licking their lower lip.



Fig. 2. (c) Rózia – a child protagonist; (d) GADajek – the “organic” protagonist, the tongue conceptualised as a dinosaur

c) GADajek Romek has a task to paint the walls of his little house – Rózia and the reader/listener are “massaging” their cheeks with vertical movements from the inside.



Fig. 3. (e) Rózia – a child protagonist; (f) GADajek – the “organic” protagonist, the tongue conceptualised as a dinosaur

d) GADajek Romek has a task to paint the ceiling – Rózia and the reader/listener are “massaging” their palate with back-and-forth movements.

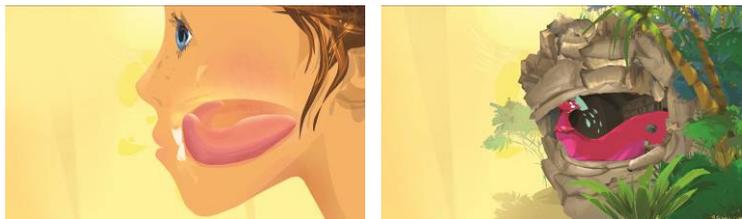


Fig. 4. (g) Rózia – a child protagonist; (h) GADajek – the “organic” protagonist, the tongue conceptualised as a dinosaur

Once the efficiency of a speech organs is achieved, the story is interspersed with pronunciation exercises in the order which corresponds to the logopaedic process of evoking sounds. When a child is able to produce a given sound in isolation, the therapist introduces other exercises which train the pronunciation of sounds in configuration with other sounds - as funny sound or songs - and then in words in correct positions. These exercises, depending on the age of a child, may be of a general development nature. In addition to providing training in proper pronunciation, they can develop a child’s semantic and syntactic system, improve literacy, and stimulate other skills such as memory, visual analysis and synthesis, categorisation, and manual dexterity.

**Examples** – Rózia and Romek are training persistently and solving puzzles.

a) GADajek has to put into the basket only those fruits whose names contain the “r” sound – speech training, phonemic hearing training, categorisation.



Fig. 5. Training in articulation and phonemic hearing.

b) GADajek has to read the text, replacing pictures with words - training in the pronunciation of the “r” sound, training in reading and choosing grammatical forms.



Fig. 6. Training in articulation, reading, and grammar.

5) After a happy ending occurs – i.e. the elimination of a child's speech impediment - a child develops a sense of self-acceptance and pride. An important theme in the storyline is **praise and recognition**, which strengthens the main character's (usually a child's) and a speech organ's self-satisfaction. This feeling can be fueled when there occurs an opportunity to demonstrate new skills to someone else. A good trick is to introduce a new character coping with a speech impediment, whom the "already-cured" protagonist can offer advice and with whom he can share his experience. This particular element raises a child's empathy, reinforces their sense of achievement, and boosts their self-esteem.

## Conclusions

Speech impediments of a dyslalic type are common in pre-school and early school children. Therefore, an early diagnosis and intensive speech therapy are essential. A speech impediment is often not the only problem a child has to tackle, as it entails other difficulties, such as low self-esteem, a sense of rejection, chronic anxiety, or stress related to speaking in public. These factors can thwart even the most meticulously designed and carefully executed speech therapy process. It is therefore important to support a child in two ways: psychologically and logopaedically. Strong motivation, boosted self-esteem, and reducing a child's anxiety are the key foundations of starting any speech therapy. To this end, I have developed a new tool – a speech therapeutic story - which, by becoming very close to a child, teaches and entertains them. Not only does the tool make verbal communication better and easier, but it has the same positive effect on a child's life.

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4<sup>th</sup> International Conference on New Horizons in Education

# A new paradigm: correlation between laboratory and field tests of Coordination

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## Abstract

The study aimed to compare the coordination tests in the study and those used in the laboratory and field. Thus coordination tests used in the field and in the lab were applied to individuals in pursuit of these aims and the relation between the results was investigated. It was thus aimed to demonstrate the utilitarian value of the measurement methods in the field in contrast to the high cost laboratory coordination tests. 69 Individuals (male:49: female 20) between the ages of 18-30 participated in the study on volunteer basis. In order to determine the coordination skills of the study participants, Throwing a Ball at the Target Test, Dart Test from the field tests and Double Hand Eye Coordination Test and the Flamingo Balance Test from amongst the laboratory protocols was applied. In conclusion there was a correlation between the double hand eye coordination test and the dart test ( $r=0,245$ ;  $p=0,43$ ). As a result it was decided that the dart test was adequate in measurement of the coordination skills and taking them into account its usability in the field, it was decided that it could be used in place of the expensive laboratory tests.

Keywords: Coordination, Laboratory Tests, Field Tests.

## INTRODUCTION

Coordination; this is the harmonized interaction between the skeletal muscles and the central nervous system during a purposeful act (1). The utilization of these systems for a goal-oriented act is only possible through coordination of the intramuscular muscle-nerve systems. Intramuscular coordination; on the hand is the harmonized working of the different muscle groups towards execution of a goal-oriented act; (2). A muscle cannot work alone in any type of act to carry out an act, when executing an act more than one muscle group participates in the act (3).

Coordination is an important factor that determines the technique. Sports efficiency coordination cannot be attributed solely to conditional or metabolic processes; it also involves psycho-neurological processes as well. **Coordination exercises**, ensure that the acts are carried out in a rapid, high efficiency, safe, aesthetic and goal-oriented manner (4,5). An individual with coordination attributes may produce act of longer duration. Their muscles tire less when carrying out the act thus they are able to sustain the act for a longer period (6,7,8).

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Therefore in order to be able to understand the athlete's condition and development during sports workouts and in order to be able to assign the suitable training and to organize the training as efficient as possible, providing the coaches with coordination exercises and measurement tests would be beneficial.

The test concept has a different definition in sports. Test is specific to the individual and is a behaviour sample obtained from the individual that determines the repetitive behavioural invariants. Motor sports tests are affected by many factors such as; technical, tactical, psychological factors. For example the long jump distances are not achieved through only jumping power. The distance achieved is a result of the combination of factors such as, jumping power the ability to apply speed technique, ability to learn, compliance and the competitive environment (9). Scientific sports research allows acquiring new information on workout methodology.

The study examines the relationship between the coordination test between the field tests and the laboratory test by comparing the two classes. Therefore the aim was to determine the usability of field coordination measurement tools in place of the more expensive laboratory measurement tools. Amongst the tests included in the study is the test to measure balance ability. Because balance is perceived as a component of acquired coordination skills. Also as activities requiring skills such as hand to foot, hand to eye coordination, ball throwing and catching skills, are perfect training for motor development in adolescent boys (10) the laboratory test for measuring of hand to eye coordination and ball throwing to a target and the dart test from the field tests were in field tests were included.

## 2. Material and Methods

### 2.1. Subjects:

A total of 69 individuals from students at the Physical Education Higher College, with ages between  $22,57 \pm 2,14$  (years), with heights of  $175,03$  (cm) with weights of  $68,10 \pm 10,34$  participated in the study on a volunteer basis. The sport ages of the participants in the study are  $5,27 \pm 3,81$ (years). All the tests specified below were applied to all the participants during the same day in the sequence given.

### 2.2. Laboratory Tests

#### 2.2.1. Double Hand - Eye Coordination Test

This test measures the motor coordination and learning capacity of both hands working together. The subject holds the two arms of the test device in both hands and moves the pencil. The object is to trace a six pointed star with the pencil. When the pencil strays outside the star, the duration between two full traces of the star is recorded. The subjects take the test standing up in front of the table in a comfortable position so that they can grasp the both arms of the device (11).

#### 2.2.2. Balance Test (Flamingo)

The aim in this test is to measure the balance skills. Flamingo balance device is 4 cm high and 3 cm wide. In order to prevent the balance device from slipping on the floor it is supported by two feet that are 15 cm long and 2 cm wide. The subject is requested to stand on the device with his dominant floor and to hold the other foot

with his opposite hand behind his back. When the subject loses his balance and touches the ground with his feet or when he lets go off the other foot, the chronograph is stopped. The person applying the test helps the subject to regain their balance. When the balance is restored chronometer is started again. Test is repeated until a 60 second interval is completed successfully. Every fall is counted and recorded (12).

### 2.3. Field Tests

#### 2.3.1. Throwing a Ball at a Target Test

The object of this test is to measure hand to eye coordination. The test uses, tape measure, tennis ball, packing tape and three different coloured cardboard. The subject stands behind a line that has been drawn at 3 meters distance from the wall. The wall has a target, whose lowest point is placed at a height of 1,5 meters from the floor. The smallest square in the middle of the target is 10x10 cm, the one outside of that is 30x30 cm and the outer one is 60x60 cm. The subject makes 10 throws at the target. When they hit bulls eye that counts as 3 points than 2 points is awarded for the next square and 1 point for the outer square. No hitting the target is given 0 point. Test is repeated twice and the best score is recorded (13).

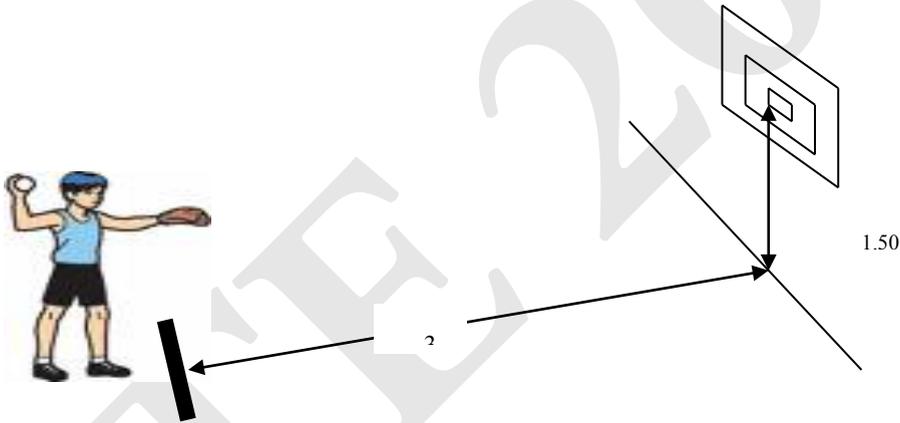


Diagram 1: Throwing a Ball at a Target Test.

#### 2.3.2. Dart Test

Dart board is divided into 20 parts that emanate from the center with 3 sections with different scores. Each section is numbered and the numbers are spread randomly around the circumference. Each sections score corresponds to the number on the outside. The first bounded section is on the outside and any score here counts as double of the number and the inner bounded section counts as triple and sections in between the count as a single score. There is double ringed bulls eye in the middle outer ring counts as 25 points and the inner one as 50. International standards were used in the preparation of the dart performance test environment.

Dart board has been hung at a height of 173 cm from the floor taking its center point as a reference. The throwing line is marked out at a distance of 237 cm from the center. Thus the straight line from the central point to the throwing line is 293 cm long. Before starting the dart performance evaluation, the subject group was warmed up. In order to ensure a standard warming up process a protocol was prepared, and all the subjects were

subjected 5 minutes of hand, wrist, arm and shoulder warming up exercises and stretching exercises. In the second part of the warm up exercises all the subjects threw between 180 darts to 200 darts. In the evaluation of the dart performance evaluation, the total score from 30 darts was recorded. The subjects were separated into groups and the throwing was organized as a series of 10 with 2 throws per series, to give a total of 20 darts, at the same time for all the groups. At the end of each series the 2 day scores were recorded by the researchers or their assistants. This test was repeated twice and the highest score obtained by the subjects was onto a form as their dart performance value (14).

*Statistical Analysis:* For statistical analysis the Windows based SPSS 18.0 statistical analysis software was used. As a result of the analysis (Shapiro-Wilk Test) carried out, it was determined that all the parameters conformed to a normal distribution. Pearson correlation analysis was used to determine the direction and the strength of the correlation between the parameters.

#### 4. Results

Table 1: Balance, Double Hand Eye Coordination, Throwing A Ball at the Target and Dart Test points.

n=69	Balance (point)	DHECE (point)	DHECD (sec)	TB (point)	DP (point)
Min	0	0	30	13.00	284
Maks	11	20	99	24.00	532
Mean	1,60	3,66	62,84	16,93	391,60
Std. Dev.	1,92	4,00	18,02	2.77	60.97

**DHECE:** Double Hand, Eye Coordination Error, **DHECD:** Double Hand Eye Duration, **TB:** Throwing A Ball at the Target score.  
**DP:** Dart Point.

Table 2: Correlation between the Field and the Laboratory Tests.

n=69		TB (point)	DP (point)	Balance (point)	DHECE (sec)	DHECD (point)
DP	(r)	,306*				
	(p)	,011				
Balance	(r)	-,213	,083			
	(p)	,080	,498			
DHECE	(r)	-,065	,245*	,153		
	(p)	,595	,043	,209		
DHECD	(r)	,162	,232	-,031	-,171	
	(p)	182	,055	,803	,160	

There is an highly significant correlation between the dart test in the field test and the throwing a ball at the target test ( $r=0,31$ ;  $p=0,01$ ). Also there is a significant correlation between the laboratory tests, double hand eye coordination test (duration) and the dart test scores ( $r=0,25$ ;  $p=0,04$ ).

#### 4. Discussion

Due to the excessive cost of the laboratory tests and the absence of laboratories in many places that train athletes, prevents the conducting of these tests. In this study the aim was to determine the correlation between coordination measuring laboratory tests and the field tests that are easier and more economically implemented.

There was a significant correlation between the field test dart test score and the laboratory test double hand eye test duration score. Although there was a high correlation between error points and the dart test, this was not considered as significant ( $p=0,05$ ). During the application of these tests the student is standing up and applies the coordination skill without shifting their weight. This is why there may be a correlation between the two measurements. Again there was a significant correlation between the dart test and the throwing a ball at a target field test. Because the movements are the same in both tests such as the targeting, throwing, arm strength parameters, these tests can be used interchangeably. It can be said that the throwing a ball at the target field test can be deemed as a test that measures the required skill at the level required level while being economical as well.

A significant correlation between the balance test and other parameters was not found. Because balance is related to the control of the center of gravity and relative positioning of the body. This control is achieved through the coordination of the elements that assist contraction and this coordination is activated by the stimuli emanating from the primary motor cortex (15). In order to maintain a good balance, the right and left side extensor and flexor muscles, medial and lateral rotators and upper body must work equally in unison (16). This may be the reason why there isn't a correlation between the balance test and tests requiring hand to eye coordination. It can be said that in sports branches that require hand skills, the joint use of balance and hand to eye coordination measuring test is advisable.

Coaches or sports trainers can be advised that using the throwing a ball at the target test provides a similar result to laboratory measurements and the darts test, it can be uses to measure hand to eye coordination as a simpler and a more economical alternative.

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4<sup>th</sup> International Conference on New Horizons in Education

# A new type of phonetic alphabet and its applications in language teaching: From practical phonetics to morphology

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## Abstract

This paper introduces a new articulatory alphabet, Artalph, invented by the author using innovative, computer-generated phonetic pictograms to aid in pronunciation and in the explication of language grammar rules and conventions. The essay highlights a variety of practical applications for the new system, from practical phonetics to morphology, and differentiates it from the IPA.

Keywords: Innovative phonetic pictograms; articulatory awareness; novel approach to teaching morphology, grammar and pronunciation

## 1. Main text

### 1. IPA anyone?

In the nineteenth century, the phonetician Henry Sweet, the real-life model behind Henry Higgins in George Bernard Shaw's *Pygmalion* (Allott, 2001, 115–145) created one of the most detailed systems of phonetic signs ever. When the International Phonetic Association was established in 1886, it adopted Sweet's Broad Romic alphabet “with only a few minor modifications” (Singh & Singh, 2006, 26), and it became an excellent tool for studying phonetics and phonology—the International Phonetic Alphabet (IPA).

The IPA is a very precise system based on a model phonetic principal: one sign for one sound. I use it whenever I start learning a new language, and I would not have been able to learn English without it. I would also not be able to teach French phonetics and phonology without it. And even this article could not have come into existence without it: as it is customary in linguistic work, I use the IPA signs within this text in square brackets to distinguish them from ordinary letters. To describe the sounds, I will use both the IPA signs and the phonetic terminology found on the International Phonetic Association's website (<http://www.langsci.ucl.ac.uk/ipa/fullchart.html>).

While my use of the IPA will provide firm linguistic grounds to the paper, I will also offer descriptions in simpler terms—descriptions that use pictograms and can be easily understood by any student not familiar with linguistic terminology. My experience of language learning and teaching has taught me that despite its precision,

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the IPA is rarely used by teachers and never appreciated by students. When I delved into the question of why, I understood that the IPA's unpopularity results from its encoding complexity: to use it efficiently, both students and teachers need to learn a fair number of new alphabetic signs and corresponding linguistic concepts, which can be daunting. So, although a precise linguistic tool exists to help with pronunciation, many teachers either opt for approximations (if similar sounds are known to students) or struggle to find ways to show an unusual articulation (if comparable sounds are not known to students or finer distinctions are required).

Moreover, in many academic programs and in whole areas of linguistic research the IPA is not used at all. Instead, for example, there exist special traditional conventions for transcribing in Latin letters with diacritical signs languages that do not themselves use the Latin alphabet. These conventions are different for each field, and as such they complicate comparative studies and hinder communication among scholars. For example, in Slavic studies the letter "c" transcribes the dental affricate [ts], but in Sanskrit studies the same letter is used for a palatal affricate [tʃ]. The use of diacritics also differs in both fields.

Quite clearly, then, there is a need for an additional phonetic alphabet: one simpler than the IPA yet also one more universal than conventional transcriptions in Latin letters with diacritics. To help students master the IPA and to facilitate my own language studies, I developed a system of pictographic representations that, with the help of computer graphics, have led to a new type of alphabet. I call this system Artalph—to abbreviate the full name, Articulatory Phonetic Alphabet, but also to emphasize the word "art," indicating the system's potential creative use.

In this paper, I will share my experiences in the practical application of this alphabet when teaching language at different levels. The current article seeks to advertise the usefulness of this new type of alphabet for teaching practice, rather than present the system as a whole. I will therefore only explain the features that are necessary to achieve my practical goal—to offer a few concrete and instructive examples from the classroom. A more complete description of the alphabet is available on my forthcoming Artalph webpage ([www.artalph.com](http://www.artalph.com)).

## 2. What about Artalph?

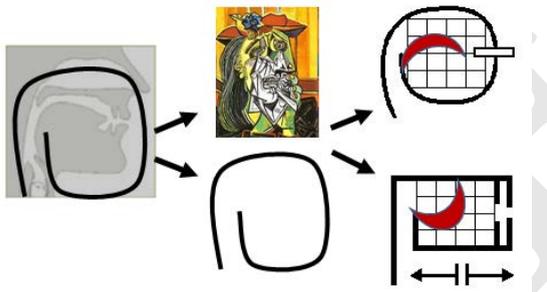
From a semiotic point of view, Artalph is a system of non-arbitrary signs that depict sounds based on their articulation. The idea of representing sound articulation systematically is, of course, not new. Sweet's alphabet that led to the IPA, for example, was based on the articulatory system of his teacher Alexander Bell—the father of Alexander Graham Bell, who together with Thomas Edison invented the telephone. Bell's system was based on representations of articulatory positions required to produce sounds, but it was so complicated that it proved difficult to use: "It seems inescapable that many of the signs in an iconic alphabet look much too much alike" (Abercrombie, 1990, 100).

The novelty of Artalph consists in its visual representation: neither Bell nor Sweet had computer graphics as creative tools, but nowadays it is possible to produce quite distinguishable iconic signs representing the articulation of human speech. Artalph characters comprise a set of symbols, schematic representations of the articulatory organs—the tongue, the lips, etc.—that serve to portray main phonological characteristics. Hence

from a didactic point of view, they are easy **to interpret, to remember and to recreate** thanks to their pictographic nature.

Each character in Artalph is composed of a frame representing the mouth cavity, but I chose different frame shapes for vowels and consonants to visually distinguish them: the frame is rounded and fluid for vowels, but rectangular and solid for consonants. The fluid, freely flowing shape of the vowel frame symbolizes the main distinctive feature of vowel articulation: “It is produced without any kind of obstruction of the outgoing breath” (Ladefoged, 2005, 26). Unlike vowels, consonants in the alphabet are represented as angular and endowed with “teeth,” two additional lines slightly to the left of the mouth opening in the frame, because teeth can be important in consonant articulation. The mouth opening is always graphically represented on the right-hand side of the frame, and the throat opening consequently at the bottom of the left side. Not all graphics reflect mouth physiology closely; sometimes they mix surfaces and symbols in the manner of Picasso drawings of the cubist period, like the rectangle representing the unrounded lips in the vowel character in Fig.1. As a result, each pictogram is able to manifest clearly all main articulatory features of the sound it represents, sidelining unimportant ones. The arrangement of this alphabet thus allows the omission of non-pertinent symbols, or, instead, the use of a “faded” version of the signs that are not relevant for a particular issue in question.

Mouth cavity > Picasso > vowel and consonant



Long and short rimes in Latin poetry



Fig.1 Vowel and consonant shapes; Fig. 2 Dactylic hexameter in Virgil

Such flexibility is also valuable for didactic purposes. For example, in a study of meter in poetry, the exact pronunciation of each sound is not important, but the distinction between vowel and consonant is. Artalph therefore makes it possible to use only the basic shapes for these two types of sounds: this lightens the whole picture and reveals the pattern of alternation of long and short syllables as shown in Fig. 2. The syllable pattern becomes even more visible when the characters are linked with lines at the bottom, and when the characters for long sounds are themselves graphically lengthened, like the last “o” in *cano*. In the textbook *Pronunciation for Clear Communication*, Linda Grant (2010) uses pictures of cars, buses and motorcycles to demonstrate the difference between short and long sounds in English. The characters of the Artalph can themselves be lengthened and are just as visually effective.

### 3. Practical phonetics

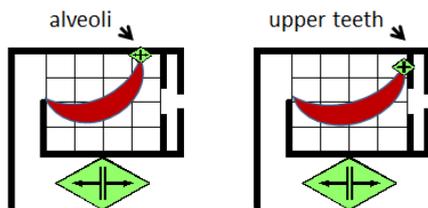
Since the signs of the Artalph represent articulation, their pictographic nature speaks for itself and helps students perceive fine distinctions in the pronunciation of different sounds within one language, as well as in the articulation of similar sounds in different languages. In my experiments while teaching French pronunciation to Anglophones, this system has facilitated phonetic explanations and sharpened students' articulatory awareness.

It is relatively easy to explain the difference between the English alveolar [t] and [d] sounds and the similar dentals in French if both the Francophone teacher and the Anglophone students are familiar with this terminology and aware of the sounds' articulation. If not, which is most often the case, the difference is either ignored or learned through multiple repetitions of trial and error. I once took an English phonetics course at the Ontario Institute for Studies in Education (OISE) and vividly remember our teacher struggling to explain this and several other differences in articulation to native speakers of French, Spanish and Hindu: "I wish I had a 3D mouth model to be able to show you where the tongue is!"

A mouth model—that is exactly what Artalph pictograms offer. They may not be three-dimensional, but thanks to their "cubist" composition, they are able to represent all the pertinent characteristics of any given articulation in one pictogram: the equivalent of a 3D mouth model is available in each character. The pictograms for alveolar and dental [t] in Fig. 3 show the difference in the place of articulation for these two sounds. Fig. 4 represents the difference between two French vowel sounds: [y] as in *tu* and [u] as in *tout*.

#### English alveolar [t] and French dental [t]

Place of articulation:



#### French vowels [y] (*tu*) and [u] (*tout*)

Position of the tongue:

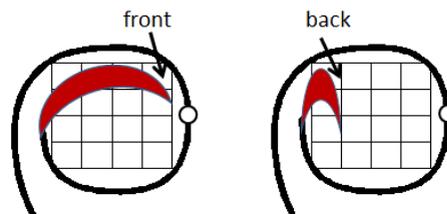


Fig. 3 English alveolar [t] and French dental [t]; Fig. 4 French vowels [y] (as in *tu*) and [u] (as in *tout*)

Unlike the realistic pictures often used in textbooks dealing with phonetics, these pictograms contain only pertinent features, express the nature of the sound through their basic shape (square for consonants and rounded for vowels), and efficiently represent all necessary phonological information in one image. To represent the articulation of a vowel in another system, at least two realistic pictures are required—one for the position of the tongue, another for the configuration of the lips. Moreover, realistic pictures rarely prove helpful in displaying the articulation of consonants, because they cannot show the mode of articulation that is displayed in the enlarged version of the green lozenge that marks the place of articulation at the bottom of the diagram.

The plosive consonant [t] is articulated by a sudden separation of two surfaces: of the tongue and alveoli in English, but of the tongue and the upper teeth in French. To represent this mode of articulation, the lozenge

features two lines symbolising surfaces and two arrows depicting the movement of these surfaces from one another.

To make it even simpler, I just say to the students:

- Look at the pictures in Fig. 3
- Pronounce the sound [t] in English while paying attention to the position of the tongue
- Identify the place of articulation of the English [t] and the corresponding pictogram
- Change it intentionally to the French sound by changing the position of the tongue according to the pictogram
- Listen to the difference in the sound
- Work in pairs: pronounce English or French [t] and ask your partner to tell you which one it was
- Repeat until you get it right

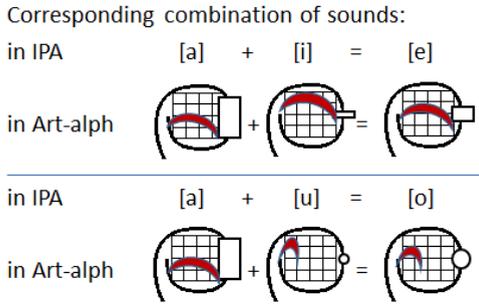
The pictograms shown in Fig. 4 help learners see and sense the difference between two French vowels that constitute a pronunciation challenge for most non-Francophones. Both vowels are closed, which means that the tongue is at its highest point in the mouth, and both are rounded, which means that the lips round during articulation. Yet the sounds differ in the position of the tongue in relation to the front or the back of the mouth. The pictograms clearly show this distinction and assist with the proper articulation of these sounds.

Artalph proves useful in explaining practical phonetics not only to language students. Some years ago I was coaching a singer who needed to perform a few songs in Russian, a language she did not know at all. Pronunciation was crucial for her work, and the pictograms helped greatly in this regard. I imagine that the same would hold true for TV and radio commentators who strive to pronounce foreign names properly.

#### 4. Reading rules

Artalph has further applications. For example, it can prove quite helpful in teaching rules for reading, especially in languages for which they are strict but also complicated, such as Sanskrit. To demonstrate my alphabet's helpfulness for understanding of the phonetic laws behind letters, I will use two common vowel combinations in French: the combination "au" that reads like [o] and the combination "ai," which may read as either an open or a closed [e]. Since phonetic laws have universal application, the same logic will hold in Sanskrit vowel coalescences and its system of vowel strength. Artalph, which also applies universally, can easily assist in otherwise complicated challenges.

### French reading rules: a+i=[e] & a+u=[o] in IPA and Art-alph



### Sanskrit : grades of vowel strength

in Sanskrit, IPA, and Art-alph (ऋ [ɹ̥] & ॠ [ɹ̥̄] not included)

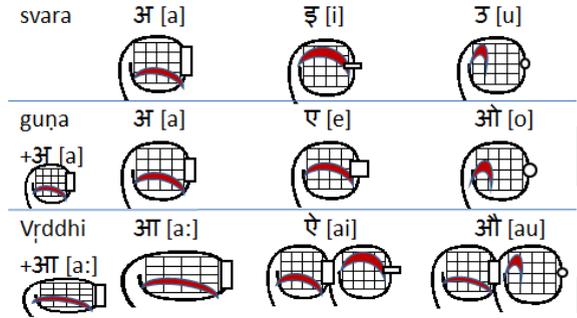


Fig. 5 French reading rules for [a/i/u]; Fig. 6 Sanskrit grades of vowel strength for [a/i/u]

The pictograms of Fig. 5 clearly demonstrate that the sound [e] is, in terms of articulation, the middle way between the sounds [a] and [i]: all three sounds are pronounced with the tongue in the front of the mouth and without rounding the lips. However, the [a] sound is open, while the [i] sound is closed, which is represented on the corresponding pictograms by the lower and higher position of the “tongue” and by a bigger or smaller opening of the “mouth” in the diagram—both in accordance with actual articulation. On the pictogram representing the resulting sound [e], the position of the “tongue” and the opening of the “mouth” represent the average of the previous two. It is just as obvious that [o] is a hybrid between [a] and [u].

Although this fact is common knowledge in phonology and historical linguistics, language students are generally not aware of it; they just learn these combinations of letters by heart without paying attention to the articulation, which would help them understand why this is so. To my knowledge, there is no French textbook that explains the articulatory logic of these reading rules.

Again, to put it more simply, as I would do for my students in the classroom:

- Pronounce the French [a] with the tongue at the front of the mouth, pressed to the lower teeth, and notice how wide open your mouth is
- While pronouncing [a], slowly start closing the mouth and lifting the back of your tongue, striving to reproduce the [i] pictogram of Fig. 5
- Listen to the intermediate sound
- Pronounce all three sounds in this sequence [a] - [e] - [i] - [e] - [a] while paying attention to the position of the tongue

Artalph can be even more useful in the teaching of Sanskrit at universities, where students frequently face the need to learn, in a short period of time, many new sounds, letters, and especially the rules of their combination,

known as *sandhi*. An understanding of the phonetic, or rather articulatory, logic behind these combinations helps with memorization. Using Artalph, I managed to summarize and fit onto one page all sixty-one rules of *sandhi* listed in the *Devavanipravesika* textbook (Goldman & Goldman, 2011). My *sandhi* page helps me find the right rule quickly thanks to the clear pictographic nature of the symbols.

Fig. 6 depicts the strength grades of three Sanskrit vowels, [a], [i] and [u], and it shows the same regularities as Fig. 5, because vowels are “strengthened” through the addition of an [a] sound. However, when a long [a:] is added, both sounds retain their properties and combine into a diphthong without fusing into one sound with average characteristics. According to Goldman and Goldman (2011), “this series of changes is extremely important, ... and must be learned immediately and thoroughly.” The understanding of articulation processes responsible for these changes gained through Artalph helps in this task by showing the mechanism of these combinations. Moreover, the long [a:], lengthened as the whole character, is visually stronger, which helps explain why the sound does not mix in this case: a stronger sound can resist the influence of the following vowel better, and the strong visual representation of it helps learners remember this rule.

And this is not to mention that the Sanskrit alphabet itself is constructed according to phonetic features based on articulation. The representation of its sounds in Artalph thus improves the understanding and articulatory awareness of students who struggle to learn by rote an alphabet that is much easier understood by paying close attention to articulation.

## 5. Vowel harmony and grammar

Artalph is also an excellent tool to explain the rules of vowel harmony typical of most agglutinative languages like Turkish or Hungarian. Generally speaking, the main point of vowel harmony is that the vowel sounds of one word should all agree according to one of their phonetic features. For example, they should all be rounded vowels, or all back vowels, or all front vowels. Since the notion of phonetic feature forms the basis of the Artalph inventory, vowel harmony is extremely easy to represent and perceive when a word is written in the new alphabet: each Artalph symbol, which is used to construct its characters, corresponds to a phonetic feature.

The grammar of agglutinative languages uses numerous suffixes that carry syntactic meaning and usually come in at least two phonetic forms differing in one of its vowel characteristics. For example, the Turkish locative suffix that means “in” has two forms, *-de/-da*, whose vowels differ according to the feature [front/back]. In Fig. 7, all the graphic representations of the suffix *-de/-da* are circled, and the Artalph representation displays that distinctive feature clearly: the “tongue” of the front vowel in *-de* is at the front of the “mouth,” while the “tongue” of the back vowel in *-da* is at the back of the “mouth.”

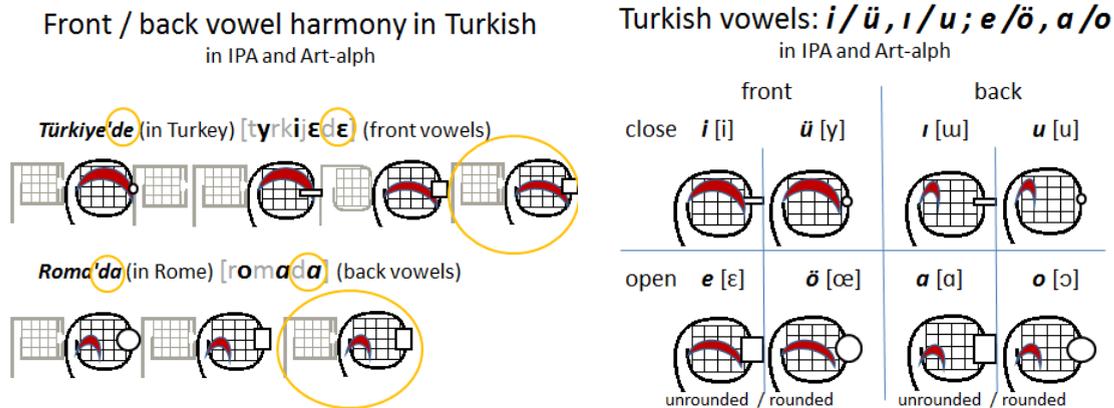


Fig. 7 Vowel harmony in Turkish; Fig. 8 Vowel system in Turkish

In the words in Fig. 7, the consonants, irrelevant to the issue at hand, are represented in “faded” consonant frames, thereby highlighting clearly that all the vowels in the whole word *Türkiye'de* are front vowels, while the ones in *Roma'da* are back vowels: the position of the “tongue” in all of them visually indicates as much.

In simpler terms:

- Look at the pictograms and notice the position of the tongue in the two words
- Notice that Turkish [a] is a back vowel
- Pronounce each vowel in the first word while paying attention to the position of the tongue and experience the front vowel harmony
- Pronounce each vowel in the second word and experience the back vowel harmony

Neither conventional letters nor realistic drawings would ever offer such a direct and simultaneous view, but Artalph allows seeing and comparing the phonetic features in several sounds at the same time. The table depicting Turkish vowels in Fig. 8 offers a perfect example of Artalph’s visual and synthesizing potency.

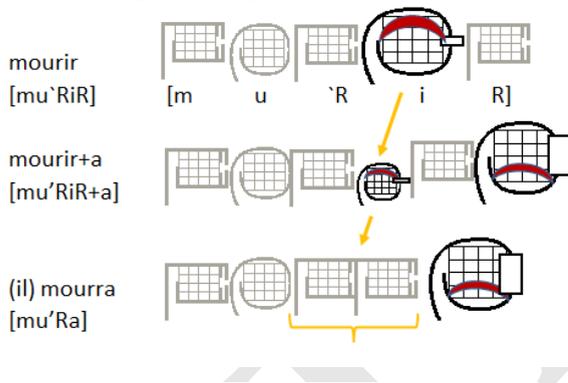
## 6. Grammar and morphology

Vowel harmony is an extreme case of a sound’s dependence on its environment, but it also represents a universal rule: in all languages, sounds influence each other and these influences lead to phonetic changes. Many grammar rules can be explained through historical changes based on phonetic laws, yet they are rarely taught from this point of view, instead being learned by repetition as inexplicable irregularities. In modern Romance languages, for example, textbooks generally simply list the irregular stems for the future tense, and students then mechanically memorize them. The grammar textbooks (Renaud & Hoof, 2007, 315–316; Vercollier, Vercollier, & Bourlier, 2004, 213–214) used in the French program at the University of Toronto at Scarborough (UTSC) do

not even mention that the future tense of modern French was historically formed through the combination of the given verb's infinitive and the verb *avoir*, although understanding this history and the phonetic changes it involved could significantly reduce the amount of learning by rote.

For quite a few verbs, the irregularities are easy to explain, and Artalph helps illustrate the abstract phonetic concepts involved: stress and vowel reduction. I used to simplify complex explanations by saying that once the conjugated *avoir* is added to the infinitive, it robs the infinitive's ending of its stress and makes the vowel in front of the final *-r* so weak that it disappears if the verb is often used. This is a rule for regular verbs: their *-e-* in the ending *-er* is never pronounced in the future forms (*étudier* > *étudierai* [etydje] > [etydiRe]). This is also true in the case of the irregular verbs whose stem ends in *-r* because two sounds of the same nature—like the [R] of the stem and the [R] of the ending in this case—always strive to join. A weakened vowel cannot resist this striving, so we get the “irregular” forms *courir* > *courrai* and *mourir* > *mourrai*, which in fact only reflect phonological regularity. There are always students who confirm that this reasoning helps them. However, I noticed that for quite a few other verbs, this kind of explanation was difficult to follow, even though the examples of these verbs were displayed on the screen with marks for stress and with the disappearing vowels crossed out.

### mourir [mu`RiR] in the future tense



### Articulatory similarity [v] – [w] – [u]

- back rounded vowel [u]
- labial velar approximant [w]
- labiodental voiced fricative [v]

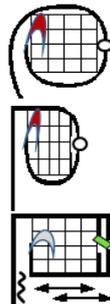


Fig. 9 French verb *mourir*: infinitive and future tense; Fig. 10 Articulation of French sounds [v/w/u]

So Artalph helps explain this in simpler terms:

- Look at the pictograms for the infinitive of the verb *mourir* in Fig. 9
- Pronounce it so that the stressed vowel is louder and **longer** (its pictogram is bigger and longer)
- Pronounce the infinitive with the following “a” so that the final [a] is louder and **longer** but the [i],  
which is now in the weak position, is softer and eventually drops off
- Pronounce the future form “il mourra,” making sure that the two [R] are fused into one sound. Find  
other verbs that form their “irregular” future by dropping the vowel in their infinitive ending

Students themselves usually recognize that the same rule also holds true for many irregular verbs ending in *-voir*, and if they are interested, it is possible to continue exploring this method. Even the forms of *avoir* and *savoir* can be explained, but the explanation requires an understanding of the similar nature of the participating sounds. Romans used only one letter, “V” for [v] and [u] because they knew that these sounds corresponded to variations of one sound that acquires slightly different qualities depending on its environment: in front of a consonant, it becomes a vowel (GAIVS IVLIVS); in front of a vowel, it becomes a consonant (VICTOR). However, our students today need to see the Artalph pictograms and try to pronounce the sounds while paying close attention to their articulation to comprehend this. In Fig. 10, the similarities between the vowel [u] and the approximant [w] are quite obvious—both sounds are closed and require the same rounded position of the lips, as well as the tongue at the back of the mouth. The only difference is that the semi-vowel is twice shorter, which is shown by its narrower shape. As a result, it is a little noisier too, and therefore it is sometimes referred to as a semi-vowel or a semi-consonant.

As for the consonant sound [v], it might look more complicated at first glance, but one can see that the tongue is inactive and rather at the back of the mouth, and that the lips play an important role in the sound’s articulation. The wavy line along the “throat” in the diagram stands for the vibration of the vocal cords and denotes that, unlike its unvoiced counterpart [f], the sound [v] is pronounced—with the participation of the voice. Thus, whenever this sound is followed by a consonant, it has a tendency to lose its consonant qualities when pronounced quickly and without care: when the lip and the teeth do not come into contact, the resulting sound is [w] or [u] because the lips are still tensed and rather closed.

In simpler terms:

- Look at the pictograms in Fig. 10
- Pronounce the sound [u]
- Pronounce the same sound in combination with [a]: [ua]. Pronounce it faster and you will get the semi-consonant [wa]
- Pronounce the sound [v] in combination with [R]: [vRa]. Pronounce it faster and you will get the semi-

consonant [wR]

- Pronounce *avoir* and *aura*. What happened to the *-oi-* part of the ending? (Dropped) What happened to the *-v-* part of the stem? (Became *-u-*)

Clearly, even if teachers or textbook authors are aware of the phonetic reasons for these changes, there is no way to explain the details to students without teaching them all the linguistic terminology first. I once tried to shorten the explanations of alternations *-al/-aux* (*cheval-chevaux, oral-oraux*, etc.) by saying, “Just believe me: phonetically [u] is just an unfinished [I],” but in response I saw only a sea of surprised and confused faces. Students do not really understand such statements if they cannot experience the articulation of these sounds. To experience it, they need to observe their sensations properly, and to do so, they need to see the points of interest in the pictograms of Artalph.

Similar regularities are explained and used as examples in theoretical phonology and language history, but such explanations rarely reach the majority of language students simply because there is so much to explain—from too many new phonetic signs to complicated theoretical concepts like “phonological feature.” Artalph makes the articulation so obvious that there is no need to explain: a pictogram is worth a thousand words. Through the enhancement of articulatory awareness, Artalph thus helps bring linguistics, and especially comparative and historical studies, closer to the level of language practice classes, which in my experiences increase students’ understanding and interest.

### 7. Conclusion: What is useful about Artalph?

Although there are even more applications for Artalph in higher-level linguistics courses, in this article I limited the examples to its use in beginner and intermediate language classes. To conclude, let me mention a few more possible applications related to the features demonstrated above.

In the domain of practical phonetics, my examples of teaching the difference in the pronunciation of dental and alveolar consonants, as well as in that of front and back vowels, demonstrated how Artalph characters combine both articulatory precision and simplicity of interpretation. This same quality makes them extremely valuable in the explanation of complex concepts in theoretical phonology, because they can clearly illustrate articulatory phenomena.

Yet Artalph is not a mere collection of illustrations for IPA phonetic signs. On the one hand, the visual transparency of its characters, iconic signs by nature, evokes an immediate psychological connection between the character and the sound articulation, which the IPA signs could never provide. On the other hand, Artalph’s inventory of symbols lends itself to creative use by students and teachers: in a phonology course, one can ask students to create a representation of an *archi-phoneme* of two phonemes or to represent a phonological rule in Artalph characters. Students love this type of creative task, and it allows the teacher to better judge their understanding of the material than from their use of IPA signs: a mistake in an Artalph character shows precisely and visually what kind of misunderstanding led to it.

Thus Artalph can be used in a range of testing activities, from fun quizzes to final exams. Moreover, even in a practical phonetic course, where the ultimate test takes the form of a sound recording of a student's pronunciation, Artalph can be used for intermediate testing and to check students' comprehension of phonetic differences between sounds and their awareness of sound articulation.

In the same way, Artalph characters can test students' knowledge of reading rules, and marking this type of test will take significantly less time than listening to all students' recordings. I could even imagine a multiple-choice exam: "Choose and circle the Artalph character corresponding to the following letter combinations." The whole point in using this system is to teach reading rules through understanding and articulatory awareness, instead of through rote repetition. The IPA signs do help the study of reading rules, but only because they are precise—one sign for one sound. They do not facilitate articulation, because this system uses the same encoding principle for words and sentences as it does for individual letters: IPA employs symbols representing certain sounds, while Artalph characters are icons reflecting articulation.

The few examples I provided explaining the rules of vowel harmony or irregularities in the formation of the future tense through articulation showed how Artalph helps demonstrate the logic behind these phenomena through the practical study of sounds involved in morphological changes. Such practical explanations increase students' deep understanding of grammar and morphology. They can also facilitate the study of lexical clusters with stem alternations, and, most important, the recognition of cognates in other languages.

The overall didactic utility of Artalph lies in its transparent form: all its signs—the characters, which represent sounds, and the symbols, of which the characters are composed—are easy to interpret and reproduce. This transparency results from Artalph's higher level of phonological abstraction in comparison to the IPA: it is based on a new principle—one sign for one phonological feature. Since most symbols representing the features are, in fact, transparent icons, all characters formed by them are easily graspable. Certainly, this new principle and the visibility of phonological features within the character are only possible when the characters are graphically displayed on a relatively large scale. The whole Artalph system would be impossible without computer technologies: when the IPA was created, teachers did not use PowerPoint presentations and students did not read on the iPad tablets that allow for all sorts of enlargement.

But since most of us are currently using these electronic devices in our teaching and learning, it made sense for me to create and now make available to my colleagues the Artalph signs. The whole system is explained and available online (<http://www.etudes-francaises.net/dossiers/sonina.artalph.pdf>), and by the beginning of the new academic year, I will have a new, fully operational website ([www.artalph.com](http://www.artalph.com)) with the complete system of signs available to be copied and used as they are or to be modified according to specific teaching needs. I am sure that many colleagues will find ever more creative applications for this articulatory alphabet, and I look forward to seeing them.

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## A paths of success in administration of feminine administrator.

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### Abstract

The purposes of this research were summarized as follows that a path of success in administration of feminine administrators has started and been gradually developed through their working life. This can be concluded that a path of success in administration of feminine administrators was resulted from 2 main factors: internal factors and external factors. The internal factors included good personality, commitment, and self-development affecting subordinates, students and academy to succeed in a sequence. Moreover, the family life needed to help support and motivate them to work successfully. External factors are the process of cooperative administration engaged in its success and their experience to help develop schools from the small, medium and large, respectively. Supportive factors are likely to be appropriate. Problems and their solution together with the explanation to the solution under the law and the administration of the school administrators were brought as a role model and a mentor with the administration. As a result of the success of the school administrators, it was found that the academy became reliable and faithful among community. Parents have confidence in the management of schools for looking after their children. Also, subordinates trusted in administrations resulting in the strong teamwork of school staff. They were happy for their working system and enthusiastic in providing learning activities that would help develop the ability of the learners.

Keyword: A paths of success,administration,feminine administrator

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## Background and Importance of the Problem

Since the past two decades, it can be seen that this world has been changing continuously especially on feminine who has started to take roles in this society increasingly. As a whole image, feminine have educational level higher than men. Therefore, the participation rate of work on feminine has been increasing. In Thailand, when compared the quantity of 100 male, there are 80 women who are working. The Grant Thornton Research Center (2012) revealed the survey results from 39 countries all over the world, the Thai feminine were the first level of holding the executives position or at the average of 45%, and this was the first level of Asia. For the reason that feminine were at the first level in this position, this is because at the present time, Thai society open the opportunity to women and gives them reliability more than in the past because both feminine and men are considered as equal in ability. Moreover, some caused from accepting the cultures from foreign countries to Thailand which opens the opportunity for Thai feminine more. This is the one of the reasons that the Thai feminine are able to step up to the high position as well (Ajchara Boonyahansa, 2012). From now on, feminine will step up to be the leaders of organization in every level from local to nation level, business and politic sectors, politics and government. In the past, feminine who ever sat behind have been starting to absorb and substitute majority areas which are occupied by men since the past time by knowledges, ability, natural delicacy of women, efforts and self-development by patient mind, strength, morality as motherhood nature ( Jinda Wangworawong, 2011).

**The researches studied about the success in occupation by focusing on the influence of variables in terms of situation and private variables towards the success in career revealed that there were several elements affecting the success in career of both genders, however, there were some elements which had the variables inserted in the middle which would affect the training and development and this could lead to the administrative progress in the future. It could be seen that the elements mentioned above could be the ways to lead to the success differently between women and men (Tharenou, Conroy & Latimer, 1994). Moreover, the research about the ways affecting the feminine administrators was successful in their life identified that the feminine brought the Buddhism morality to apply to their administration.** Most of the feminine were calm and conscious in controlling their emotions; they were willing to listen to the reasons of personnel in school. They were the persons who convey the policies from the original affiliation very well which made the works they carried out successful. Whereas the factors supporting the success of profession included marital status, educational level, support from family, leadership, and emotional intelligence, support from commanders and subordinates, calmness, consciousness in controlling various emotions, willing to listen to the reasons of the personnel in school, as well as being the persons who convey the policies from the original affiliation very well (Walaiporn Siriprom, 2008).

This can be seen that the feminine administrators have the ability and can be successful in their operation of educational administration as well. In order to step up to the administration position to become the women administrators are worthwhile to be studied. This is because the research results suggested that the administrators really took important roles in the organizations and they are acceptable that the success of organizations depended on the abilities of management by the personal group at the administrative level that how much the effectiveness they could manage. Most of the women administrators usually pay attention to the details of operation in every aspect; therefore the women likely become to be successful in the organizations increasingly. With this reason, the researcher is interested to study about the ways of the feminine administrators to reach success in terms of educational administration in the educational institutes under the Secondary Educational in Thailand. However, this research did not focus on the success comparison between women and men administrators, it emphasized the management of women administrators which made the results of success in the educational institutes in order to be the basic information and affect the success in administration of educational institutes of women administrators.

## Objectives of the Study

- 1) to study a paths of success in administration of feminine administrator under the office of secondary educational.
- 2) to study the administrative success results of feminine administrators under the office of secondary educational.

## Methodology

### 4.1 Stages of research methodology

- 1) Study the literatures and researches related to the administration to the success of feminine administrators in order to apply to be the conceptual framework of instruments construction;
- 2) Select to case study by having the criteria of considering the success;
- 3) Create the instruments under the framework and present them to the advisor for investigating and improving. Then get 3 experts to examine the instruments for getting advice and to take in consideration about the quality in terms of the content validity.
- 4) Improve the instruments and do the complete volume for the data collection. Moreover, there will have the information examination by using the Data Triangulation technique.
- 5) Analyze and conclude the research results, this is the analysis in terms of analytic induction. The typological analysis is used in terms of theory to create the subjectivity conclusion, analyze and interpret the data, conclude the research results, discussion, and recommendation;
- 6) Present the research results by using the analysis method to describe as the main, and present the Tables and data related to the research;

### 4.2 Population used in the research

Due to the case study type, therefore the researcher selected only one feminine administrator successful in the administration on educational institutes and collected the data all-around in terms of work, family life, and colleagues. The study focused on the steps and processes to the administration on educational institutes to be successful for the administration of the women administrators. Therefore the criteria of case study were selected.

### 4.3 Research Instruments

This research is about the case study focusing on the qualitative data. There were 3 types of instruments for data collection which consisted of In-depth Interview, Field Notes, and Documentary.

### 4.4 Statistics used in the analysis

This research was about the case study type using the analysis type of qualitative data. The descriptive analysis was used to be the main.

## Conclusion

The purpose of this research was to study the ways to be successful in the study of ways to success in the administration on educational institutes of women administrators of Sodsai School, Khon Khan province. The research process in type of qualitative research was used to emphasize the case study by using the time period for the field of research, total time period was 3 months. The instruments used for collecting data were divided into 3 types as follows: 1) In-depth Interview, 2) Field Notes, and 3) Documentary. The ways to be successful in the administration on educational institutes of Mrs. Saui Sodsai consisted of 2 major factors including the internal factors and external factors. The internal factors included the personality, family life, and the external factors included the work process, work experiences, support factors, and problems and ways to solve problems. The results caused by the success in the administration on educational institutes to become the self-contributions, contributions of subordinates, students, and communities. All mentioned above affected the success of the educational institute.

## Discussion

Internal factors in terms of personality, it was found that Mrs. Suay Sodsai had good personality, dressed in clean suits, tidy and appropriate to the occasions, good manners, punctual, and wide vision, knowledgeable and intelligent, be able to make decisions well, good human relations, high responsibility, wide heart, and be ready to listen to others' opinions. In term of family life, it was found that the lifestyle was sufficient economy type, loved family, loved the work, and upheld the concept of life in accordance with the philosophy of sufficient economy by following the Po-Luang traces.

External factors; in terms of the work process, it was found that she was good at the planner and was able to use the plan to be the instruments for administration effectively, she was able to make a decision and analyze as well as having good commandments and administrate by using the modern information, excellent in communication, realized to give authorities and responsibilities to the appropriate persons, and for the work experiences, it was found that to originate and develop the schools since the beginning was equal to collecting experiences of administration all-around. This caused strength, confident, brave for the administration on educational institutes by rearranging from small school to middle size school. At the present time, for the administration of big size schools, the administrators have to bring the change to the educational institutes to be successful by participating in activities, various projects in order to get a lot of rewards. For support factors, it was found that for the administration on educational institutes, not only the administrator who makes school successful but also external cooperation, such as the cooperation from other organizations, special ability, technique, strategies of administrators in order to acquire the success by using the good governance. The most important to be successful include the cooperation network both from the administrators, teachers, and the personnel in school, students, and alumni. All mentioned above are the parts to push the administration of the administrators be successful.

For problems and obstructions caused by the administration, Mrs. Suay would use the experiences she ever administrate to help solving problems by informing, making understanding briefly and justice in accordance with the legal principles and standard of administration of the educational administrators. However, the problems were too difficult to the existed abilities, she would have the consultants whom she admired her to be the model, who was her husband. Her husband was considered as leading administrator at the province level who had experiences. This can be considered as her luck for Mrs. Suay who has the successful partner in administration on educational institutes as well.

2. The results of administration on educational institutes to the success of Mrs. Suay Sodsai according to the contributions or successful results of the administration, standard criteria of the educational

administrators of The Teachers' Council of Thailand B.E. 2540, as she was assigned to hold the position of B. school chief by finding the funds of constructing the temporary building without the budgets of government sectors. Moreover, she takes the roles of developing the profession of educational administration. She used her efforts, intention, hard-working to study and seek for knowledges as well as sent the contributions for the contest until she was accepted and successful in administrating school. This helped her to step up to be the experts for investigating and evaluating the contributions until she could get the promotion to be the special professionals

In terms of administration on educational institutes, she used the framework of plan to determine the roles of person who were responsible of plan, project work, and activities. Moreover, she stimulated to rush the work of activities project, conducted according to the policies in order that the work could continue by determining the time and still followed and inform, supervised, made a decision, and had commandments for the subordinates to maintain the rules and regulations of the government sectors every time, then participated to the conference or requested for the opinions from the school committees. Moreover, because she had had experiences in the administrative for a long time, this helped her be able to use the commandment correctly and quickly till she could be acceptable by subordinates and this always affected the benefits to the government sectors.

Moreover, there were contributions of learning and teaching management, supplemental activities of educational management, people trusted and admired the educational management of school, and other related works both internal and external educational institutes in order to enhance and develop the community to be strong and admired the school and originated the network between school and community which made a result that there were resources from community to be back or return to develop the school sustainably.

## **Recommendations**

### **1. Recommendations for application of the findings**

#### **1.1 Recommendations for research application**

1.1.1 The research results revealed the administration on educational institutes of the case study school, the results originated by the success in the administration on educational institutes by considering the contributions from the standard criteria of administration on educational institutes B.E. 2540. The results of success were originated by both contributions of oneself and subordinates, students, community. All of these would affect the results to the educational institute. The researcher proposed that if this research had to be applied to be successful in the school or organization, it should be compared the context of administrators and school as well as cultures in school or organization carefully.

1.1.2 The research results revealed that the external factors in terms of support factors can be seen as the wide image but it takes important roles in every administrative process in order to reach the success. Hence the enhancement or development of oneself to get the support factors to enhance the administrative process to success, get effectiveness and efficiency.

#### **1.2 Recommendations for further research**

The research results revealed that the ways to be successful in the administration on educational institutes of women administrators, the Secondary Educational Service Area Office 25, Thailand should study the research related to other factors affecting the success in administration on educational institutes of women administrators, the Secondary Educational Service Area Office 25, Thailand in order to find the ways and methods to help the women administrators have progress in the administration on educational institutes increasingly. And the results originated by the success in administration on educational institutes by considering the contributions from standard criteria of administration on educational institutes B.E. 2540, therefore this could

consider the successful results from other criteria or analyze the results which cause success from various researches further.

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# A pilot study on the role of emotions through the body in the educational context

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## Abstract

The main objective of this study is to make a descriptive analysis in order to investigate the possible relationships between the consciousness of body's development and the comprehension of emotions' development in primary school.

Besides, a study has been made on a sample of 43 pupils aged between six and seven years, divided into two groups: an experimental group and a control one, in a Primary School of Mugnano del Cardinale. The first group has made some psychomotor activities in a four months' period; the second hasn't taken part at the school education path projected for this study.

The two groups have been put together casually and are quite alike from a socio-cultural point of view.

At the end of the psychomotor activities the sample group has made the TEC, a Test of Emotion Comprehension .

From the research we have seen that there is a correlation between corporeity and emotions. The experimental group has reached a much bigger consciousness of the body language right from the investigated emotions. The control sample, instead, even if it has a basic knowledge of the fundamental human emotions, has had difficulties to associate the mimic face to the corresponding emotion, this way it mixes up the different emotions. This demonstrates that corporeity and emotions go at the same pace.

**Key words:** emotions; actions; consciousness; face mimic; psychomotor;

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## 1. Introduction

In our study we have tried to underline the union between corporeity and emotions, considering the close connection between emotion and action. Frijda defines emotion as “preparation to action”, Arnold, following the same footsteps, talks about emotion as a “tendency to action”. “Emotion is the energy that directs, organizes, amplifies and modulates our cognitive activity and, in turn constitutes the experience and the expression of this

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activity.” (Dodge, 1991) We can't consider the emotional experience as a pure corporeal phenomenon, as James conceived it or a merely psychic phenomenon, as Cannon stated.

Overcoming what is called Cartesio's error, that is this dichotomy mind and body, we aim at enhancing an individual's global education noting the unity of a human being and seeing in the emotional experience the union between the corporeal and the psicho-affective dimension, as stated by Damasio, emotions represent the synergetic convergence between mind and body, because they are certainly a mental process but their “stage” is the body. Neuroscience has demonstrated that we have motional centers in our brain, such as amygdala and hippocampus responsible for emotions' and memory regulating that favor a different type of learning rather than the cognitive one. We must combine cognitive, emotional and physical development. Psychomotility pursues such an objective, considering physical education as a sub-layer of the psicho-affective development.

The term is often associated with other psychomotor skills such as: whole, whole, integration because it is a discipline, born in France in the 60s, which has the objective of reconciling two opposite terms, the two Cartesian duality: the body and the mind, reaffirming the unity of the human being. The locomotion is concerned with the totality of the child wishes to emphasize the inseparable interconnection between processes and events engines and sensory-motor on one side and processes and events affective, emotional, cognitive and other .

The psychomotor culture has spread in Italy in the early '70s, at the center of psychomotor practice there are three basic thoughts, into three main areas:

- the centrality of the body as a manufacturer and builder of sense;
- the action as primary manifestation of subjectivity and the construction of reality;
- interaction, and at the same time as the founding instrument of any evolutionary process, cognitive and affective.

In the implementation of any action the emotions play a fundamental role in the motivational aspect, evaluation, performance. The action and emotion feeding, however, only in the presence of the other and it does not matter if this presence is real or just evoked.

The emotion is the means by which we determine what is important for us, allow us to go in search of well-being and to escape the malaise, warning us to guarantee our survival in the event of situations: warning, threat, submission, alliance, attachment, protection.

Through the practice psychomotor is possible to interpret the action as an expression of emotion proven and socialize their own "feel" with each other.

The discovery of mirror neurons is precisely the biological roots of intersubjectivity that allows us to understand the meaning of the action and emotion of the other. The intentional state of a person is primarily emotional even when apparently has only informative, communicative.

The movement of the body is communication, and language is an important vehicle for the cognitive maturation and integration psicho-affective.

When we speak of didactic character psychomotor to take care of the child by asking the objective of strengthening its motor development by attaching it to the cognitive, we aim to achieve an education that enhances the psicho-affective and emotional level of the child, education being in addition to education of knowledge.

It is in the body that is the way of access and processing of emotional world and psychomotor education, which is said and global demands, must take into account the emotions of the child, his individuality, his growing needs .

The link between body and emotion is still very little in the planning of the school's academic, but should be of primary importance to observe the child in the way he expressed himself, in his way to appear and do things.

The child, in fact, favors the body and movement, use of space, time, objects, actions, games, of posture, muscle tone, tone of voice, gaze and facial expression to know and be known, to experience the world and the things of the world.

We should not limit the use of educational planning body but changing the programming perspective considering the alphabet of body language as a symbol of the emotions of the child. In this way, it facilitates the construction of meanings to be assigned to the world and themselves.

In the implementation of a program of psychomotor skills is through play and through play activities motor that allows the child to proceed in the stages of its evolution and in a continuum according to its emotional maturation.

## 2. Objective

Our work is aimed at achieving the emotional awareness. Awareness that starts and plasma through the ability to recognize, understand and know how to manage emotions through the body. The body is understood as a tool to convey meanings affective and emotional. The study aims to verify if, as some scholars believe, through the achievement of a greater awareness of our sensations grows even greater awareness of our thoughts.

## 3. Methods

We have structured play activities of motor and psychomotor character in cooperative games, to support the children increasing acknowledgment of their own body's awareness and the feelings that emerge when one perceives a particular emotional state.

The sample of children examined consists of two groups: an experimental group class 1 B, consisting of 25 students (15 M-10 F), from the primary school of Mugnano del Cardinale and class 1 A, composed of 18 pupils (11 F-7 M) of the same institute.

The experimental class took part at the psychomotor activity, distributed in six lessons, divided in six phases: an introductory phase activities, a static phase, a subjective phase, a movement phase, an interpersonal relationship phase and final circle time.

An introduction to the nature, the causes of emotions, about why you perceive and how you perceive, a static phase, which involved most of the time the analysis of facial expressions of the face and body expressiveness, a subjective phase, which went to investigate the ability of the child to become familiar with your body, a movement phase, which has been useful to the cash flow of emotional energy accumulated by children, increase, at the same time, the ability to improve ambulation, balance, posture, muscle tension, alternating tension and relaxation phases, one phase of the interpersonal relationship, designed to promote socialization, the growth of empathy, ability to collaborate, negotiate and improve self-esteem: the feeling of being an integral part a group that can't benefit from the improvement of self-esteem.

Let's see in detail the activities proposed and carried out within the primary school.

### 3.1. Lesson I (Divided into two meetings)

1) Introduction: Brainstorming on the basic knowledge of basic emotions: anger, joy, fear and sadness. When and why you experience such emotions, to arouse the attention of children through the story of short stories.

2) Stage static: Emotions: The coordinator suggests different emotions and each member of the group tries to show them the way you prefer: through facial expression, body movement, imitation of an animal. Children will capture and reflect on how they feel when they experience the emotion mimicked. The emotions mimed were, therefore, joy, anger, sadness, fear.

Game of mirrors: The children mimicked different emotions: joy, sadness, anger, fear, through the movement of the hands, arms, around the body, through the expression of the face.

The children imitated the coordinators and, subsequently, their companions.

3) Subjective phase: Snowmen in the sun: Players have imagined to be snowmen freshly made and therefore must stand still in an upright position with your arms at your sides and all their muscles; imagining, then, to see the sun rise and the temperature increase more and more. With the heat, the snowmen have melted to become a puddle of water. Children, therefore, you are lying on the floor and have all the muscles loose.

We repeated the exercise several times imagining that the snow has reformed the snowmen, the sun has them loose again, and so on. For children to have "shaken" arms, hands and legs to get rid of the snow.

4) Movement phase: If the emotions have colors: the coordinator explains how we can think about the different emotions as if they were the colors, we placed four colored circles on the floor:

- red: anger;
- Blue: sadness;
- Yellow: happiness;
- green: neutral condition.

Then, running from the starting line, reached the circle, who had chosen according to the mood of the moment.

5) Phase of interpersonal relationship: Find the leader: We have placed the children in a circle, chose two leaders and two detectives. The detectives, however, were out of the gym when they were chosen leaders. The leaders had to make the movements of the body (free) and all the other children had to imitate them, the detectives had to identify the leaders and understood by those who were leaving the movements that were making all the children.

6) Circle time: How to show your emotions? Was it easy or difficult to imitate companions? What kind of capacity is needed to track the movements of someone else? How did you feel when someone could not follow your movements? How does it feel to have all the muscles in tension? And be totally relaxed? How did the "leaders" to make sure the attention of other players? Reflections on the mood of the day and on the choice of the color of the circle.

### 3.2. Lesson II

1) Introduction: Take awareness of the way in which we perceive and manifest the main basic emotions, how to recognize them in our face and in that of another? and in the body?

2) Stage static: Masks of emotions: The players sit in a circle. One of the children of the circle makes a face that expresses a strong emotion, and then removes it with his hands as if he was taking away from his face a mask that passes close to the player, the player sitting to his left, wearing the mask of the partner and imitates his grimace, then removes it and mimics a new emotion and so on all in turn. The emotions mimed will be: happiness, sadness and anger, and the players choose which mimic.

3) Subjective phase: Puppets: The children will pretend to be puppets. To start, should stand upright with your feet firmly on the ground, his arms up and fingers extended upward, as if they were hanging resistant wires. So, they have to imagine that these wires are loose very slowly, in such a way that their body starts to fall. Therefore, they must begin to move the fingers, then the hands, arms, head and chest, and finally, bend your knees slightly. So they have to repeat the same movements in reverse until they find themselves again standing with his arms stretched out as much as possible to the top. Children must repeat these movements several times, varying the speed of execution.

4) Movement phase: The children mimicked with their whole body the stages of birth and growth of a tree. They envisioned to be with their branches reaching towards the summer sun to lose their leaves in autumn, to cope with lightning, storms and blizzards of winter, enjoy the sadness of being bare and naked and flourish with the beautiful spring. Their entire bodies participated in the miracle of life and the passing of seasons that have evoked different emotions and moods.

5) Phase of interpersonal relationship: Hide and seek like wildfire: The game starts out as a normal hide and seek. The player who is "under" runs behind the rest of the group. When you can touch the other participant, the

two go hand in hand and together they try to tap a third and a fourth player, who will also join them. When you reach the four units, the group was split into two pairs, which start in the hunt for the other two participants, and so on until only one person not to be touched. If the game goes on, this will be chasing the other.

6) Circle time: How do we show different emotions? (For example, through the movement of the body, through facial expression, posture, etc. ...) As it moves our body? You are able to tell when your muscles are relaxed and when, instead, are tense?

### 3.3. Lesson III

1) Introduction: brainstorming based on the emotion of negative anger: what are the external factors triggering such emotion? Emotions come and go, what to do to not be angry?

2) Stage static: Remove off her back: compiling a list of situations in which you feel the emotion anger. To brainstorm with the kids, trying to bring out some ideas on how to address them. Have the children complete the sentence "I get angry when ...". At the end of the arms and legs to unstick the children to come unstuck from off the accumulated tension.

3) Subjective phase: Do that feeling that: Standing players sit in a circle. In turn, a volunteer goes a step further and show how they feel through facial expressions and body movement. So says his name in a way that reflects the same emotion and returns to his seat. At this point the rest of the group takes a step forward and repeats the action and the name of the person who performed it, and so on all the other volunteers. (To mimic emotions can be chosen from among the main ones: anger, sadness, joy, fear).

4) Movement phase: Run like the wind: you have to explain to children that the coordinator is the head of the jungle, which has the responsibility to watch over them while they play. The participants represent a group of extremely noisy children running fast like the wind through the forest, screaming and laughing. The only danger in the jungle are the lions. Children should not lose sight of the coordinator because when the coordinator sits down and puts his hand over her mouth all need to sit down and shut up immediately. Only silence and their immobility may mislead the lions, causing them to move away. As a signal that the danger has passed, the coordinator yells, "run like the wind." All children are raised and resume to run as before.

5) Phase of interpersonal relationship: Walk the blind: the children are divided into two groups. Half the players will act as protectors, the other half by explorers, eyes closed. It will be built an obstacle course and in pairs, a protector, and a scout will have to cross the path. The explorer will have to get their hands on the shoulders of patrons and be guided. The coordinator may give verbal instructions to help patrons in guiding explorers.

6) Circle time: Logging into the causes of negative emotions, how they manifest in the body and what to do to overcome them. Do you ever not be able to decipher emotion? Does not understand why you try it? Happy to show you even when you are sad and / or angry? How do you feel after a long run in the forest? The explorers trusted companion who guided them? Who was driving the companions was able to do it?

### 3.4. Lesson IV

1) Introduction: what are the events and external causes that trigger the anger? Our partner feels anger for the same reasons? On his way to feel anger is equal to or different from mine?

2) Stage static: Living links: The players sit in a circle, standing. The coordinator chooses one to initiate a "living link". This shouts something that makes him angry. Who is angry for the same reason cries another event that makes him angry. If several players are angry for the same reason, the last of the chain cries another event that makes him angry. This continues until all players are not related to each other. At the end of the circle is broken and all the children shrug their arms, legs, shoulders, hands.

3) Subjective phase: Important names: all children are in a circle, in turn rise, say their name and an adjective to indicate the mood of the day, following the mime through facial expression and movement of the body of the emotion experienced. The emotion can be chosen from: anger, sadness, joy, or neutral emotion.

4) Movement phase: Walk in this way: the coordinator asks a "leader" to run for the gym walking in a particular way that reflects a certain emotion (choice of anger, sadness, joy, fear, neutral emotion), the others imitate the leader until the coordinator does not say "stop". All become immobilized in the position in which they find themselves for five seconds. In turn, the other children will assume the role of leader, the leader leads the group in a different walk.

5) Phase of interpersonal relationship: Silent greetings: All players run around the room greeting each other in a friendly non-verbally. The coordinator can make suggestions. The aim is to encourage eye contact, smile and see how many different ways players use to greet each other.

6) Circle time: Anger causes problems or, sometimes, it is useful to "solve a problem"? Discuss the similarities and differences between the various types of walking. How does it feel to imitate and to "step into the shoes of the other"?

### 3.5. Lesson V

1) Introduction: When we are angry we need to vent our anger ... how we do it?

2) Stage static: Hands up: You have to show the children how you can shake your arms freely in the air, shaking hands with ease. When all the children shake their arms, the teacher shouts a word that reflects a certain degree of anger. The players respond starting a "mock fight" between their hands. After 30 seconds it screams: "Hands up" and the children must raise their hands and arms as high as possible. Repeat the exercise, with different levels of anger. It ends with a "conversation" between your hands and quiet with a handshake.

2) Phase subjective: This and that: The coordinator shows players that need to imitate simple movements (eg, standing on one leg, touching the ear, jump, clap). When they receive the statement "Do this" players copy the movement. When the display is "Do what", no one has to move. The game must be repeated several times. If a player commits a fault must lie still for two rounds.

3) Movement phase: Sleeping monsters: the children pretend to be monsters. The "monsters" running through the forest (the gym) until a sudden tiredness not forcing them to lie down and close your eyes. At that point, the coordinator begins to wander calmly to the gym to check if the "monsters" are really asleep. Who moves checks to see if the others are asleep or not.

4) Phase of interpersonal relationship: Come to the giggles: the children sit in pairs opposite one another and decide who is A and who is B. must keep eye contact and strive to remain impassive. When they're all sitting quietly, the coordinator says, "giggles" and all players A must try in every way to make people laugh players B (without touching). When the coordinator says, "giggles" (which can happen at any time) the players switch roles.

6) Circle time: We are able to control our movements and block us when we are asked to do so? What is the difference in our breath when we are calm and when, instead, we are "asleep"?

At the end of the activity the entire sample made the TEC Test of Comprehension Emotions, F. Pons and P. Harris, 2000.

The TEC is composed of 23 numbered cardboard tables, in two versions, male and female.

The first five panels depict four different emotional expressions each, randomly altering. For each of them we ask the child to identify facial expressions that characterize that specific emotion. The emotions investigated were: joy, sadness, fear, anger and neutral condition.

The remaining tables are divided into two parts: the first part is a little story with emotional content, where the face of the protagonist is left blank, while the lower part represents four different emotional expressions and asks the child to choose the one that corresponds to story's main character's experience.

The questions were increasingly difficult because the test had to investigate the development of understanding of the emotions on the basis of nine members, ranging from the simple recognition of emotion (labeling), to morality.

#### 4. Results

During the administration of the test, all the children's answers were marked on special coding sheets, the raw score (relative to 19 items) achieved by the individual performance of each individual child was calculated and the percentile score was obtained, crossing the raw score with the children's age (calculated on the child's month of birth) and subsequently organized the data into excel environment.

**Table 1.** Standardized scores on the italian sample (percentiles). To get the weighted score of a child of a certain age, one compares the raw score value (the total score of the coding folio) with the age related column. For example a 3 years old child that gets a 4 score is placed at the ninety-third percentile, while the same score obtained from a 7 years old child is placed at the eight percentile.

RAW SCORE	3 YEARS	4 YEARS	5 YEARS	6 YEARS	7 YEARS	8 YEARS	9 YEARS	10 YEARS	11 YEARS
0	6	2	5						
1	21	11	13						
2	48	27	23	1	1			1	
3	77	50	39	6	2				
4	93	71	64	17	8	3	1		1
5		84	83	33	21	9	4	3	2
6	99	92	92	56	41	21	9	10	7
7	100	98	98	81	65	46	26	23	15
8			100	97	89	74	54	46	43
9					100	94	85	81	82

Table 3. Related to data experimental class 1 B.

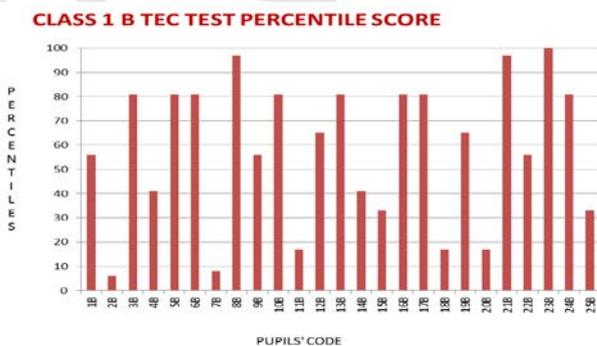
CODE	RAW SCORE	YEARS	PERCENTILE S
1 B	6	6	56
2 B	3	6	6
3 B	7	6	81
4 B	6	7	41
5 B	7	6	81
6 B	7	6	81
7 B	4	7	8
8 B	8	6	97
9 B	6	6	56
10 B	7	6	81
11 B	4	6	17
12 B	7	7	65
13 B	7	6	81
14 B	6	7	41
15 B	5	6	33
16 B	7	6	81
17 B	7	6	81
18 B	4	6	17
19 B	7	7	65
20 B	4	6	17
21 B	8	6	97
22 B	6	6	56
23 B	9	6	100
24 B	7	6	81
25 B	5	6	33

Table 2. Related to data control class 1 A.

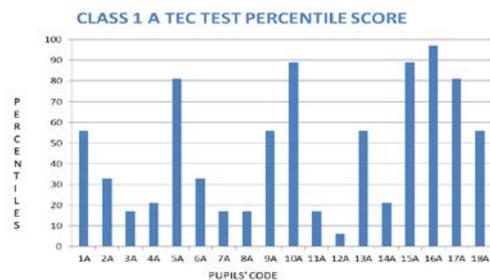
CODE	RAW SCORE	YEARS	PERCENTILES
1 A	6	6	56
2 A	5	6	33
3 A	4	6	17
4 A	5	7	21
5 A	7	6	81
6 A	5	6	33
7 A	4	6	17
8 A	4	6	17
9 A	6	6	56
10 A	8	7	89
11 A	4	6	17
12 A	3	6	6
13 A	6	6	56
14 A	5	7	21
15 A	8	7	89
16 A	8	6	97
17 A	7	6	81
18 A	6	6	56

From the graphs it is clear that the experimental class has reached percentile scores much higher, compared to those obtained from the control class.

Fig. 1: A) Class 1 B Tec test percentile score

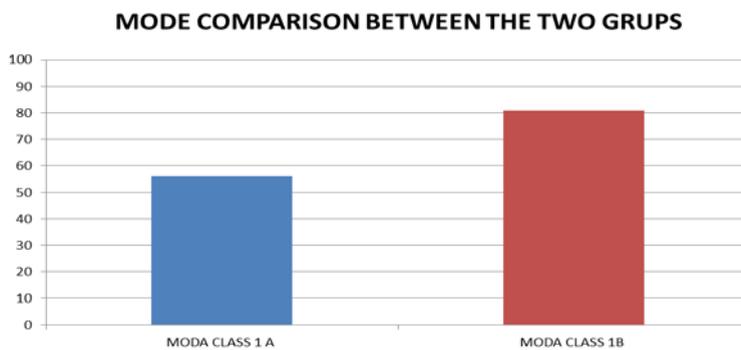


B) Class 1 A Tec test percentile score.



Once the mode was calculated, we compared the two groups: the control group achieved a mode equal to 56 percentiles (this shows a basic understanding of the emotions), while the experimental group is at a percentile score of 81.

Fig. 2: Moda comparison between the two groups



## 5. Discussion/Conclusion

As it can be seen from the graphs N. 1 and N. 2, above, points percentiles of the experimental class are much higher than those obtained from the control class. According to the results obtained from the study conducted by the authors of Italian standardization of the TEC, the children of six years should achieve a raw score of 6, reasoning in percentile equal to 56. The children in the class sample obtained as modal response in just 56 percentile, while those who have conducted activities that have a psychomotor, reached percentile scores, so high, as to have exceeded the average of the scores of the Italian champion, having obtained a fashion percentile equal to 81. This is shown in the graph N. 3.

From the results of the TEC test, it was demonstrated that, thanks to our intervention, the capacity of recognizing the facial expressions of the investigated emotions, has produced excellent results.

The children had a greater development of the understanding of emotions. This confirms our starting hypothesis: from the body and through the body, it is also possible to develop the psycho-affective dimension.

From the survey carried out we have realized that there is a considerable correlation between emotional literacy and motor literacy. Our study presents some strengths and weaknesses, of course: our strength is to detect the close connection between physicality and emotions, the point of weakness we have found is the more limited scope of the survey which goes to show that every emotional state is regulated in the body. We could not redo to previous research carried out in this context.

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4<sup>th</sup> International Conference on New Horizons in Education

## A possible interaction between mind, corporeality and language

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### Abstract

Our team recognizes the value of the bodily entity and movement emerged among the new research in the field of psychology to understand, build and adopt new models of teaching intermediation of bodily activities in education. The stress on the only predominance of mind can lead to neglect the role played by the body / brain in the learning process. In the last years has emerged a new perspective, the 'embodied cognition, which helps to overcome the traditional dualism between body and mind, because the cognitive processes are based on sensorimotor processes. Based on these assumptions, the 'physical education is used here to promote teaching laboratory activities, the gym becomes a more funner setting for children in which to propose activities in different school subjects. With our work we focused on learning of English in the gym, using physical activities as a means for learning cognitive and psychosocial, because the sport's language is universal, it is an instrument of growth of a person in a context of sharing rules. Our work has been developed through lessons given at the gym, during which the teacher described the deliveries, using English language. We called for a reflection on the coalition between corporeality, mind and language to valorise the child actively involving him in the learning process and not forcing him to reproduce the language according to the old-fashioned grammar. This approach urges in pupil, in a natural way, the desire to communicate and express demands, needs and requirements according to a conversational approach in English language.

**Keywords:** *embodied cognition; language; mind; disciplines; learning.*

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## Introduction

"If you want to create a new world, education must also be renewed." Mahatma Gandhi

It is at this stage of the history of ideas and educational systems that the discourse on teaching and the role of teachers in a renewed school, acquires a social and cultural insight, never known before. Through a more sensitive school to the whole of the subject-individual-person is important a pedagogy that puts at the center of school life a non-intellectualized person, but a subject socialized through bodily experience. What does this mean? Rethinking the teaching and change the relationships, activities, curricula. In the teaching process is necessary to activate more engaging languages, able to assign to the word the body thick that can actually makes it communicative. The school, therefore, must look to both to the operation of multiple forms of expression, peculiar to the various channels of communication, and to the transfer of contents to release processes of self-reflection, otherwise compromise. The knowledge about the body and mind that are transmitted at school are mostly related to a body and a mind made immediately objects. Instead, you must find a way to use a body and a mind as living, subjective, lived. For these reasons, it becomes necessary to think of an engaging teaching, able to put students in conditions allowing them to experience the bodily experience, as we are first of all corporeality and we represent ourselves through our body. The body is the center of gravity of the educational relationship and of a didactic able to bend the knowledge in their interdisciplinary dimension and according to a perspective that takes into account the interaction between body, mind, and language through a playful approach (Caon, Rutkas, 2004) .

The authors, Caon and Rutkas, capture the sense that our study intends to pursue to eradicate the logical-abstract concept that today's society has about the mind and learning, which focuses on the " mind language" and its incorporeal aspects and much less on the reality and motor actions, in spite of actions and movements have a central role in the processes of training and mental representation.

### *1.1 The 'man "three-dimensional" mind, body and language.*

In general, when we think about the mind we focus on the perceptions and "ideas", not on the move: but actions and movements play a central role in the processes of mental representation starting from the embryonic stages, when the embryo begins to make a series of movements that constitute the building blocks of future motor behaviours.

The movements are not a pure mechanism, a means to get something: motor actions play an important role in the formation of the mind, condition the 'learning and are the basis of language.

According to Denicolò the child never separates the hands from the thought, learns with the body and this happens in every moment of his life.

In the contemporary psychoanalytical reflection, they often recognized a secondary role to the body, although the clear information given by Freud on the close connection between the 'I and body, between psychic representations and somatic functions.

A consequence of this exclusion was the creation of a concept of mind increasingly detached and independent of underlying biological aspects and an inevitable distancing of psychoanalysis by the disciplines that deal with the body as biology, medicine, psychiatry, pharmacology, neuroscience, etc.

Even the bravest attempts like those of psychosomatics have never abandoned the assumption of a central role and the omnipotence of the mind which is the true subject of the existence acts, offering in this way a fundamental dualism and a preeminence of psychic aspects on the physical ones.

Recent studies show, however, as the brain is only a part of the "mind": learning, adaptation, thoughts, experiences, creativity, language are processes that might not be possible without a body, The body has an integral role in our mental development. (Popper, 1996)

It is the body, through its senses, which nourishes the brain with information that it can get from outside and allows us to build new opportunities for our development.

### *1.2 The role of the school between body, mind, and language. Empirical analysis of an educational research in an Italian school.*

Our team proposes a not self-referential school, but open to society, to the processes of change that can improve its educational effectiveness in terms of outcomes of training. A school that expresses its educational curricular offering and taking into account a possible coalition between body, mind, and language by taking a playful approach (Caon, Rutka, 2004). This new perspective comes to life from the theories of authors such as P. Dennison "movement is the door of learning, McLuhan" there is no learning without fun and there is no fun without learning", A. Damasio "research has convinced me that emotion is an integrated part of learning.", A. Einstein " learning means experience, anything else is just information."

The research project was born from the need to promote innovative methodologies in the school for the learning of a foreign language through the body, assuming that sensations, movements, emotions and integrative functions of the brain also live in the body and thanks to the body.

The study group, in fact, through an examination of the scientific literature supporting the interactive dialogue between mind, body and language, has built a supplement to a scientific background on which to build the proposal.

Then he fostered an operational project in a school to launch an empirical investigation to verify the relapse.

In the proposed route is developed a playful learning environment in which every child has fun learning. We have used, in addition, verification tools for reading and understanding and observational checklist to analyze the psycho-relational aspects that have determined the operating setting.

## **4. Objectives**

The objectives that have guided our research were to determine whether thinking and learning are processes that do not occur only with the head, but with the whole body, if the brain is closely related to the "mechanisms" of our body and designed to grow along with the movement and whether in view of an interaction between mind, body and language we can lay the basis for an innovative teaching that makes the body the main vehicle for cognitive and psychosocial learning.

## **5. Method**

The research is empirical. The sample examined is a fourth grade of primary school, composed of 19 students, including 10 males and 9 females. We haven't used no control group, as a descriptive analysis was based on what

was detected before and after the implementation of the methodology. To measure this gap has been used a multiple-choice test consisting of ten questions that explored the skills of the students on how to receive / writing, for each of which the child had to choose the correct answer from three possible options, having a total of 30 minutes of time. This test was administered before the implementation of the methodology to detect the starting level of the students and after to check the possible improvements related to the new approach.

To check listening comprehension we have used unstructured tests, including mini-dialogues, after which the teacher attributed to pupil a rating from 1 to 10. To measure the social and relational skills of students have been implemented initial, ongoing and final observations of test samples, making use of check-lists.

The protocol, whose activities have had a period of 12 hours over three weeks, involved the use of different methodologies:

- embodied cognition, for which they are proposed games exercises in which the teacher makes deliveries using mostly English language;
- role playing and mimicry;
- cooperative learning and circle time;
- playful language teaching based on the game and movement.

Inspiring by the theoretical assumptions of Giovanni Freddi we have supported the basic principles on which to base playful methodology, such as:

1. the senses: in learning the student must be able to use all the sensory channels;
2. motor skills: the language is a pragmatic and functional means of communication;
3. the semiotics: the foreign language is part of the verbal language that is just one of the many languages that the student has at its disposal;
4. interpersonal relationship: the playful language teaching should foster relationships between the students and the teacher;
5. pragmatism: with boys is crucial that the language is presented as a useful and practical tool to do things;
6. emotion: you can learn the language best if it is associated with positive emotions;
7. authenticity in the game you create a real situation on a psychological level.

## 6. Results

The results were listed in excel and shown through the graphs n. 1 and n. 2. In red you can see the increase in oral and written skills, monitored following the protocol, in blue are represented, instead, the skills measured at the input.

Fig. 1 - Increase oral skills

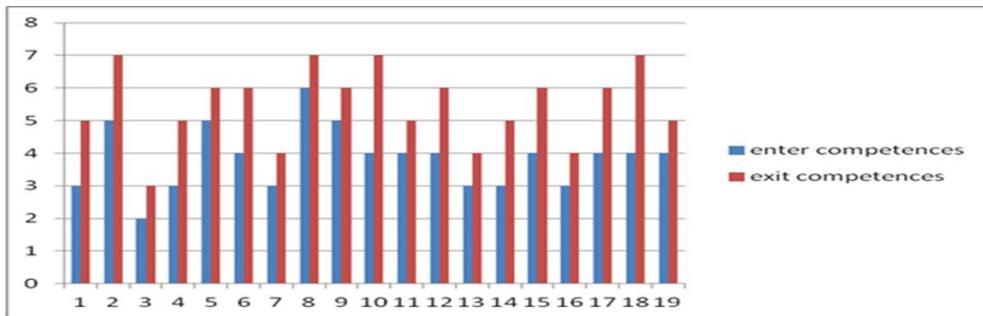
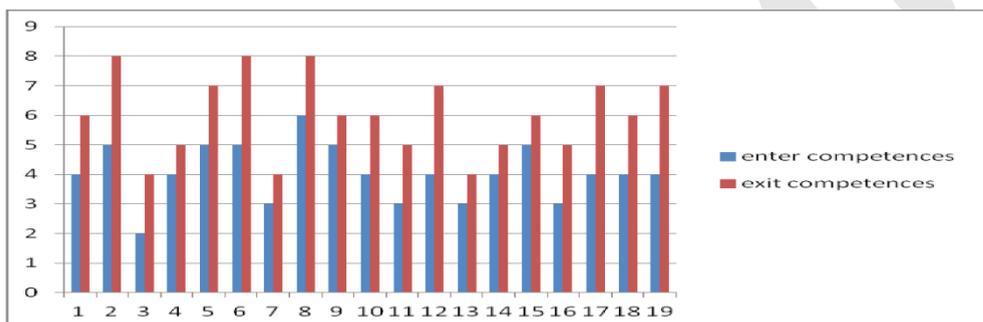


Fig. 2 - Increase writing skills



## 7. Discussion

As shown in the graph there has been a considerable increase in the oral and written production and reception's skills of a foreign language passage.

The subject number 3 is affected by DSA, and even if he starts from a lower level of its ability than the average, showed, however, a light improvement in the output test. Basing on the data collected in the classroom through observations and in relation to disciplinary knowledge and skills, considered as indicators of learning in regular assessments, it appears that there is an improvement on both the attentional capacity of the pupil, as well as an improvement closely linked to learning the language. We arrived at these results by reference to specific indicators of learning such as:

- oral reception: Understand oral texts in known contexts and for different purposes related to 'personal experience and interpersonal relationships;
- speaking: to respond in a relevant way to personal questions and interact with classmates and teacher through guided dialogues;
- receive written: read and understand several types of simple texts for specific purposes and uses;
- writing: write simple messages according to a given model and produce simple texts following a track.

Referring to these indicators we were able to estimate, as regard to language learning, an improvement in the performance of reading and understanding the text. From a psycho-social point of view we have monitored a light increase of self-esteem, a little improvement in the relationship between pupil and teacher, pupil and class,

pupil and family. There were positive results not only in the students involved in the project, but also in the teachers themselves because the methodology used does not foresee complex procedures and so it is easily applicable.

## 8. Conclusion

In conclusion, we can say that despite living in an abstract culture often makes us forget that the concreteness is a very important aspect of learning, because children need tangible examples, to manipulate reality, to do active games and movement the modern school is trying to respond to this new three-dimensional view of the subject-person. (Gamelli, 2001)

The schools are trying to break with this piecemeal, notional and mnemonic approach of knowledge, ushering a season that does school with the body (Balduzzi, 2002), which clearly expresses the need for a do-education taking care of the subjectivity fully considered. These innovations give the start to a teaching that makes its own instances acquired by the movement of so-called "active pedagogy", developed between the last decade of the nineteenth century and the first half of the twentieth century, in opposition to the traditional humanistic education. From Dewey to Bovet, from Decroly to Claparede, from the Montessori Ferrière, it was argued that the school would have exercised the intelligence on the concrete experience of reality. In the wave of these illustrious theorists our team recognizes the value of an innovative teaching method that foresees the link between the activities of study and reflection on the experience of life, making use of three-dimensional human mind, body and language, to allow learning and child development (P. Bourdieu, 1988). And this is the goal of our research: the meeting of the world of education with the world of life, rather than with an abstract world. A "full contact" with the experience of knowing.

"Tell me and I will forget, show me and maybe I will remember, involve me and then I will understand!"(Confucio)

The Confucius's thought holds the value of our research, because through our experience we have demonstrated that an interaction between body, mind and language is possible, this coalition has established itself as a new frontier for teaching, because it breaks with the traditional lecture's patterns and the rote learning. The connection between these three elements is the winning agreement for the future school and for teaching that breaks the mold with the classical tradition of the lectures and the rote learning. The combination of these three elements, appears to be the winning meant to get out of an abstract culture that often makes us forget how the reality is a very important aspect of learning.

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4<sup>th</sup> International Conference on New Horizons in Education

# A proposal of design education assistance system with design process visualization reflecting competitive evaluation

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## Abstract

Global warming has been raised as a key issue recently. The carbon emission is considerably affected by the energy consumption of daily life among plenty of causes, and the need of changing people's behavior formed a consensus for reducing the energy consumption. Because people's lifestyle can be affected by those who create the built environment to a great extent, designers' awareness about sustainable lifestyle facilitates people's behavior change into sustainable one. The basic assumption is that, if some information insinuating eco-friendly design is provided in an ambient way to the designers during the design education, the awareness about sustainable design can be significantly improved. In this paper, we identify the effects on the design process when the eco-friendly design information is provided to students together with visual information of comparative evaluation. A game theory-based scenario was utilized to stimulate the competitive design activities among students. We propose a design education assistance system that reflects the outcomes of the experiment. In conclusion, providing the competitive evaluation comparison with ambient information about sustainable design helps develop the design awareness on sustainability with better outputs.

Keywords: design process; design education; visualization system; competitive evaluation; Education Assistance System

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## 1. Background

Global warming caused by carbon emissions has become a key issue, and is considerably affected by the energy consumption of daily life (Bin & Dowlatabadi 2005, Wei *et al.* 2007). In order to reduce the energy consumption it is necessary to change the people's behavior (Pierce *et al.* 2008, Makonin *et al.* 2012). The lifestyle is inherent to some extent, but most parts are formed by the interactions with environment (Thaler & Sunstein 2008). The probability is high that the surrounding environments are generally created by architect and urban planners. Changing environment where people live is more influential to environment issues caused by the carbon from buildings and cities. This environment is generally built by designers who plan the buildings and cities. So, it is important to change the designer's awareness into sustainable one. Since providing specific information through visualization is effective to the recognizing about information and changes in people's awareness (Holmes 2007), the various information of eco-friendly design and urban conditions are provided continuously in an ambient way to the designers during the design education for increasing the awareness about sustainability. Therefore designers can be induced to make future cities and buildings sustainable.

## 2. Research Objective

Architectural design is a process of deriving the design solution through the physical and cognitive stages that resolves multiple design requirements and constraints. The design process is characterized by designer's individual peculiarities (Gough 1981) but a significant portion can be affected by learning and teaching (Akin 1996, Oxman 2001). In particular, there are various interactions between the designer's cognitive behavior and acquired information on the process for solving the design problems (Kim & Kim 2007). Thus, acquisition of information during the course of the designing carries a lot of clout. The architecture students learn the knowledge of designing through the professor's lectures or acquire the data for oneself from the precedents with similar conditions. In this paper, we experiment on educational approaches about the effective delivery of information that induce the students to make sustainable design outputs. We identify the effects on the design output, when eco-friendly design information is provided to students with visual information of competitive evaluation of other student's design. In addition we propose a design education assistance system that competitive evaluation and ambient information helped to improve the sustainability of student's design outputs through the visualization of design processes integrated with the competitive evaluation.

## 3. Research Method

A pilot study was conducted to achieve the purpose of the research that the ambient information is influence on awareness changing and then reflection on the design output. Participants were limited to 4 or 5 graders of the Department of Architecture in order to confirm the design outputs within short time. We had given a house design problem of different site-condition everyday of three-day experiment. Each site has a relatively small area (about 80m<sup>2</sup>, 127m<sup>2</sup>, 135m<sup>2</sup>) comparing the number of family (a family of 6 or 7, and 3families). And the design problems emphasize the natural light which is generally regarded as important and is one of the environmental elements (Figure 1).

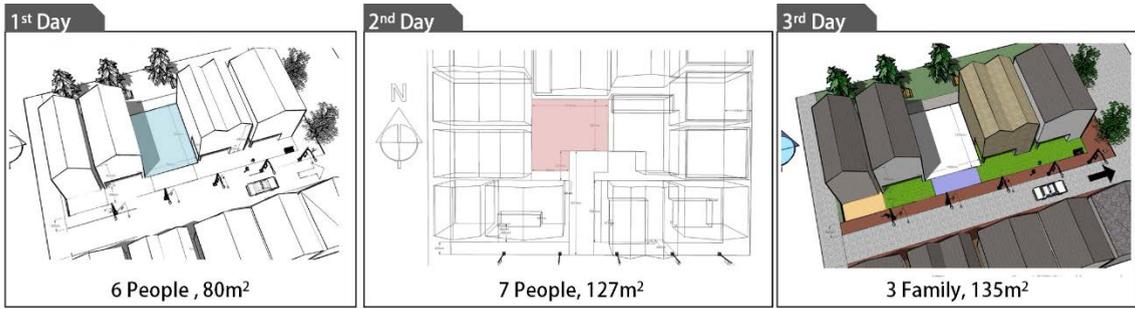


Fig. 1. Site conditions: The building codes are followed in the codes of Seoul in Korea. There is limitation on the building height (about 10m).

Eight students were divided four teams. Each team was consisted of two students and designed during two hours per a day. The design outputs was assessed and scored, and the evaluation result was notified to each team before the next experiment. Process and the outputs of the design were recorded by the video, image and voice for the evaluation. Each team worked in separate room, so couldn't check the contents of other teams. Teams were divided into two groups by providing information about environmentally friendly building. And they were subdivided according to the specific conditions. This grouping creates 'competitive-only atmosphere' or 'competitive and cooperative atmosphere' which requires more time to exchange information with other team members(Figure 2).

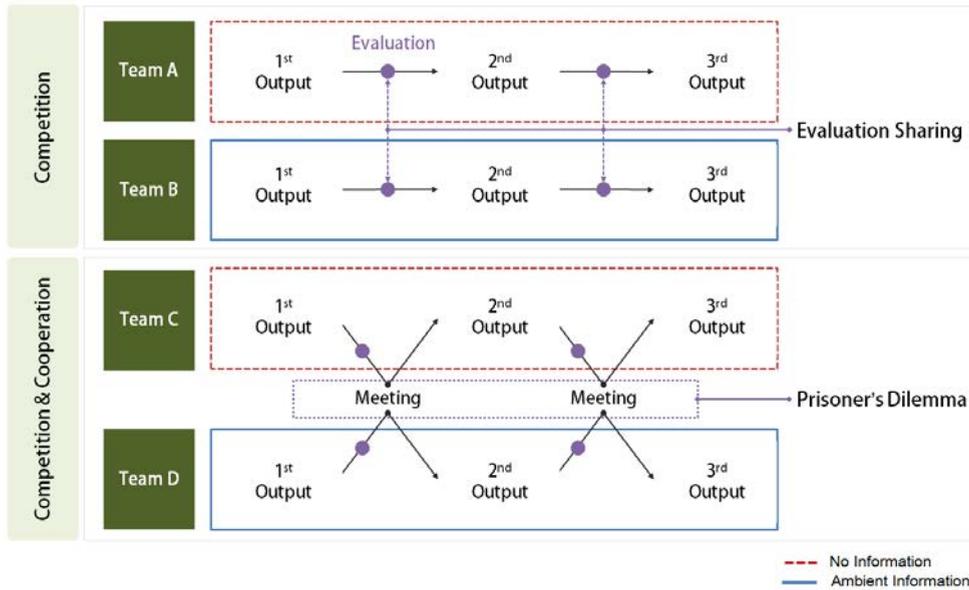


Fig. 2. Design experiment process

Figure 3 is the provided design data example about environmentally friendly buildings. In the experiment, the way of providing the ambient information was not fully arranged due to the time limit. So, the information of

eco-friendly building such as nature friendly materials, natural lighting and ventilation, energy-saving systems, water circulation systems and planting of building was randomly attached on the worktable to make students respond quickly. And this situation about providing the information was not announced to students.



Fig. 3. Providing of ambient information

To encourage participation of the experiment, students get into competition with others. The evaluation of each team's design output was differently offered like figure 4 along the competitive environment. The evaluation in competition condition was presented both own score (bar graph) and other team's score (line graph) by factors. On the other hand, the teams that are provided meeting times (in competition and cooperation condition) were offered own score (bar graph) by factors and the opposing team's total score (dot on bar graph).

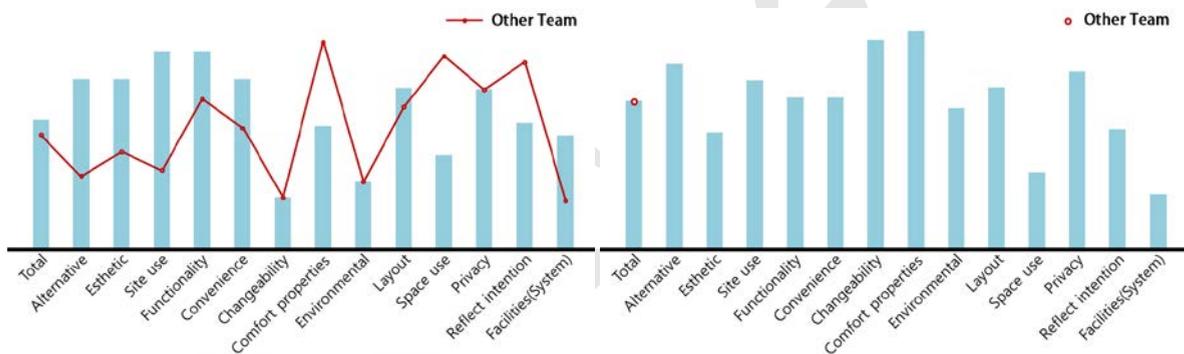


Fig. 4. Example of evaluation graph about 2nd day's outputs; competition team(left), competition & cooperation team(right)

In the meeting time, each team exchanges opinions with others on the design considerations in previous design operation. That moment, interchange of idea applied prisoner's dilemma, the game theory, for preventing design standardization resulted from share of every data (Table 1). Each team gets the score of 1 point when both of them contain the same element in the design, 2 points when one team contains any elements but the other team doesn't contain, and 0 point when neither of them contain the elements. Applying the game theory, it is possible that students have own unique design elements and strategically share the design information.

Table 1. Way for scoring applying of prisoner's dilemma

	Inclusion	Exclusion
Inclusion	1, 1	2, 0
Exclusion	0, 2	0, 0

#### 4. Experiment Analysis

The recording files were used to trace the design process of students. In this performance, the way of gathering and utilizing the ambient information and the effect on the design outputs of the acquired information was tried to be verified. And the effect of the competitive and cooperative relations between the teams was verified too. Referring the voice and video recording files, students' thinking and practice were investigated using the dialogue between the team members during the process for drawing the design outputs. Among four teams, the design process of team D (competitive and cooperative condition) was chosen for the first analysis (Figure 5).

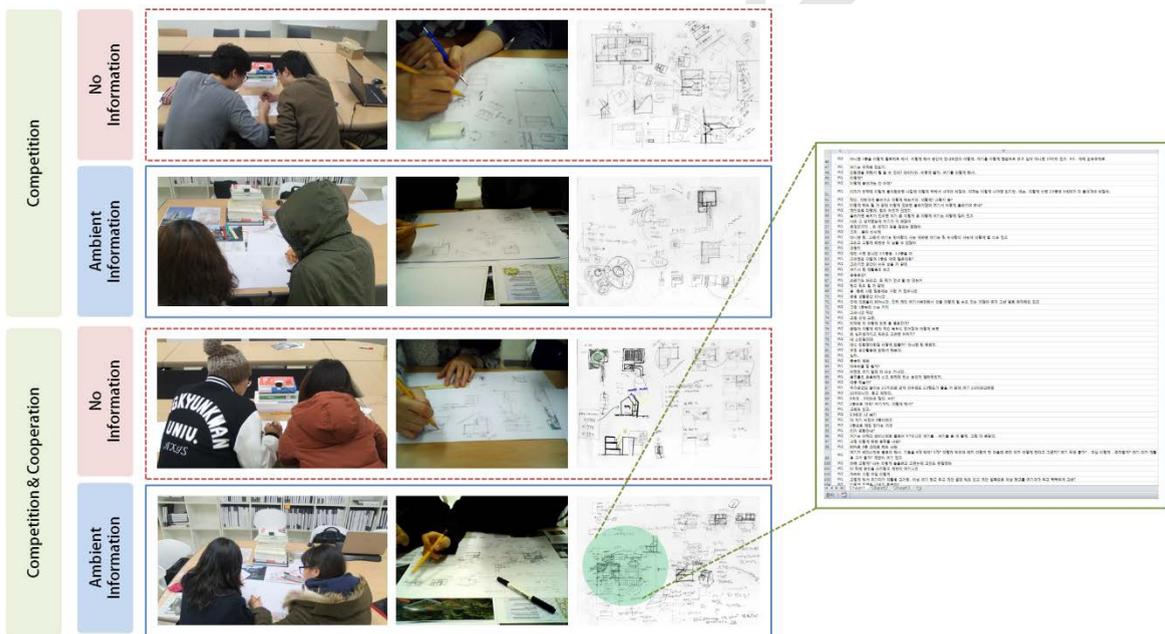


Fig. 5. Appearance of students conducting an experiment and design outputs and dialogue sample of team D

First of all, students decided the type of rooms by floors and draw up the programs. At this time, each room was composed efficiently by substantial consideration about the sunshine and view that are required by dwellers.

There was a feature that reflects the factors pointed out from the other team at the meeting time before the design experiment, when students laid out the plans. The opposing team comments that the children's room was planned to be best in contradistinction to other family's rooms. So, one student took up the position that other family's rooms plan to be better too. Similarly, students introduced the elements again that high scored at the evaluation from tutor. As the practical space-use got the high score on the evaluation, students introduced the same element used on the first day to prevent the creation of dead-spaces (Figure 6).

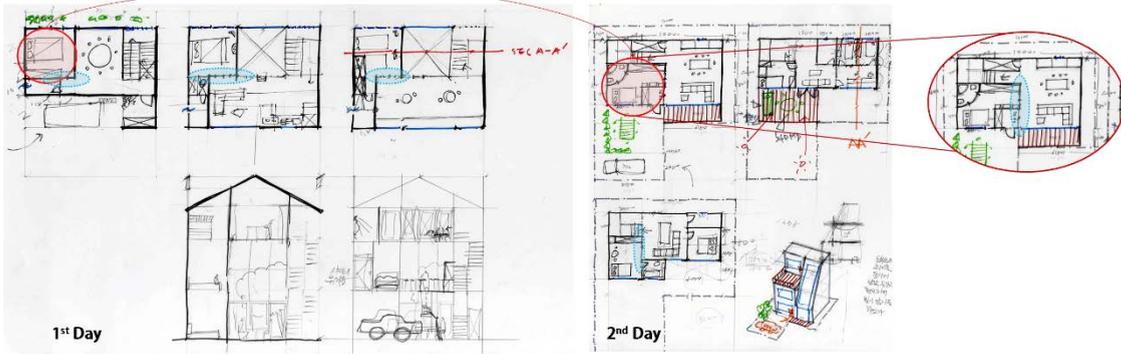


Fig. 6. Movement of rooms toward south (red line) and application of a sliding door (blue dotted line)

In the process of floor planning step, the furniture arrangement was discussed. The students tried to apply the unique furniture which had seen before to save the space. At this time, one student found the similar case with their design in the attached pictures on the worktable. Then, they reconsidered and canceled the idea of special furniture. Instead, they decided to compose the space and arrange the furniture following the example on the table (Figure 7),



Fig. 7. Two alternatives and reflection of ambient information

On the other hand, the design process of team A (no ambient information, no meeting time) was affected by visible evaluation graph with other team. These students tend to be more concerned for evaluation result than students of team that could have meeting time for exchanging the opinions. They looked into the evaluation graph and check the low scored elements again and again before and after experiment (Figure 8).

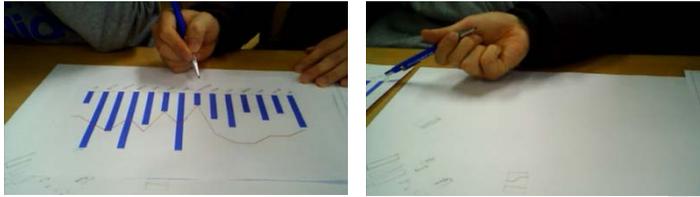


Fig. 8. Checking evaluation graph before and after experiment

In a case of team A, they got poorer ratings on the domain of alternatives, aesthetic, and facility than team B. So in opposition to general space assignment widthwise for a family, they suggested the spatial division lengthwise (Figure 9: left). Students decided that an alternative is more profitable to all dwellers and more effective in using space than first design, so they choose the alternative as a final form. And the mass of building had the unique bumpy exterior, didn't shape like a box at earlier experiment (Figure 9: right). The requisite of facility was mentioned on the drawing board. However, students didn't cover the facilities on the design due to lack of knowledge about facilities system and pressure of the restricted hours.

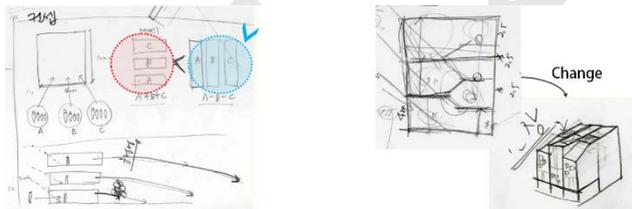


Fig. 9. Creating alternative(left) and changing of the building mass(right)

Through this experiment, it is proved that students are affected by ambient visible information, visible evaluation from tutor and exchange of opinion with other students in the design process. Especially, the competitive spirit goes a long way towards developing the design. The greater diversity of design objects are created when the students in competitive condition that is combined with cooperation condition. The system which is reflected the result of experiment is enabled to provide effective design education. That system increases the student's awareness about sustainability as strengthen the competition through the ambient information, visualization of design process and output's evaluation among the students. Therefore, it would help build future cities or buildings that formed salubrious environment where citizens live, if the education assistance system is developed.

## 5. Proposal of the Education Assistance System

As the design processes can be generally visualized like figure 10 (upper) (Kim 2006), it is have the merit of effectiveness for design tutor to confirm and guide the design operations of many students easily. So that they manage design studios and assess the students. Design object is offered as various alternatives along the

designer's cognition or restriction on design problem and continually repeated the processes that combine or eliminate the design elements along the tutor's evaluation. The objects are turned up as a final one last. At first time, the design objects begin as conceptual design such as simple sketches or bubble diagrams and finally become an architectural design plan or three-dimensional object. Figure10 (lower) is visualized team D's design outputs of 2nd day in the same way (Figure 10: upper).

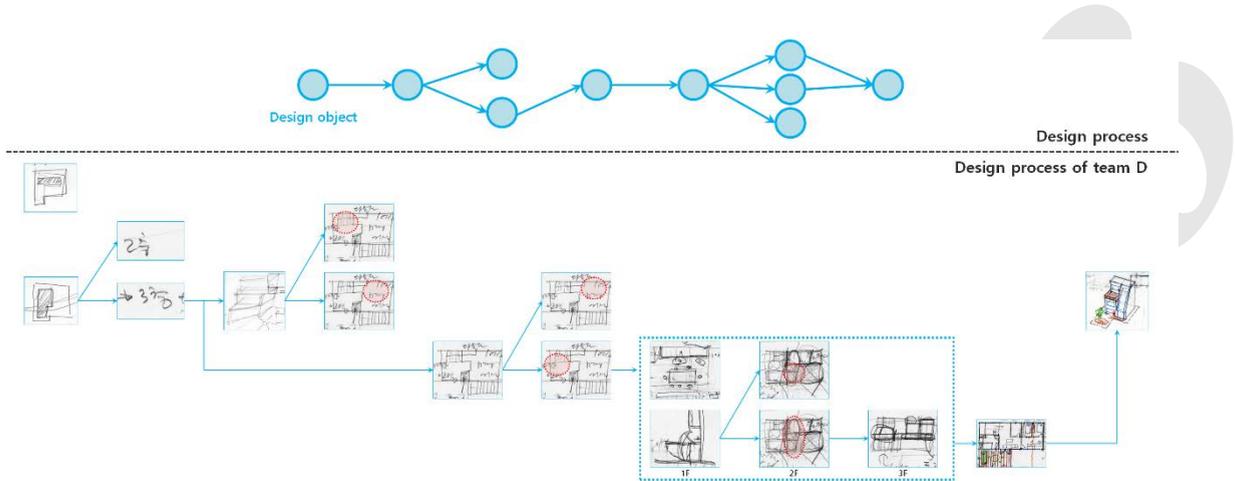


Fig. 10. The example of design process visualization(upper) and visualization of team D's design process(lower)

When the students develop their design, by the experiment and theories, the acquired knowledge and provided information excessively influence the designs. And if the delivery of provided information is interactive, the effect can be maximized. In this paper, we reflect the results of the previous experiment, so organized the visualization system that provide the needed information for design with the evaluation of design outputs to the students on the design process like figure 11. The students received the design problem and then analyzed and comprehended the design requirements or constraints. And the student's design outputs are advanced by the ambient information provided constantly and intended to develop the design quality through comparing evaluation with other students during design process.

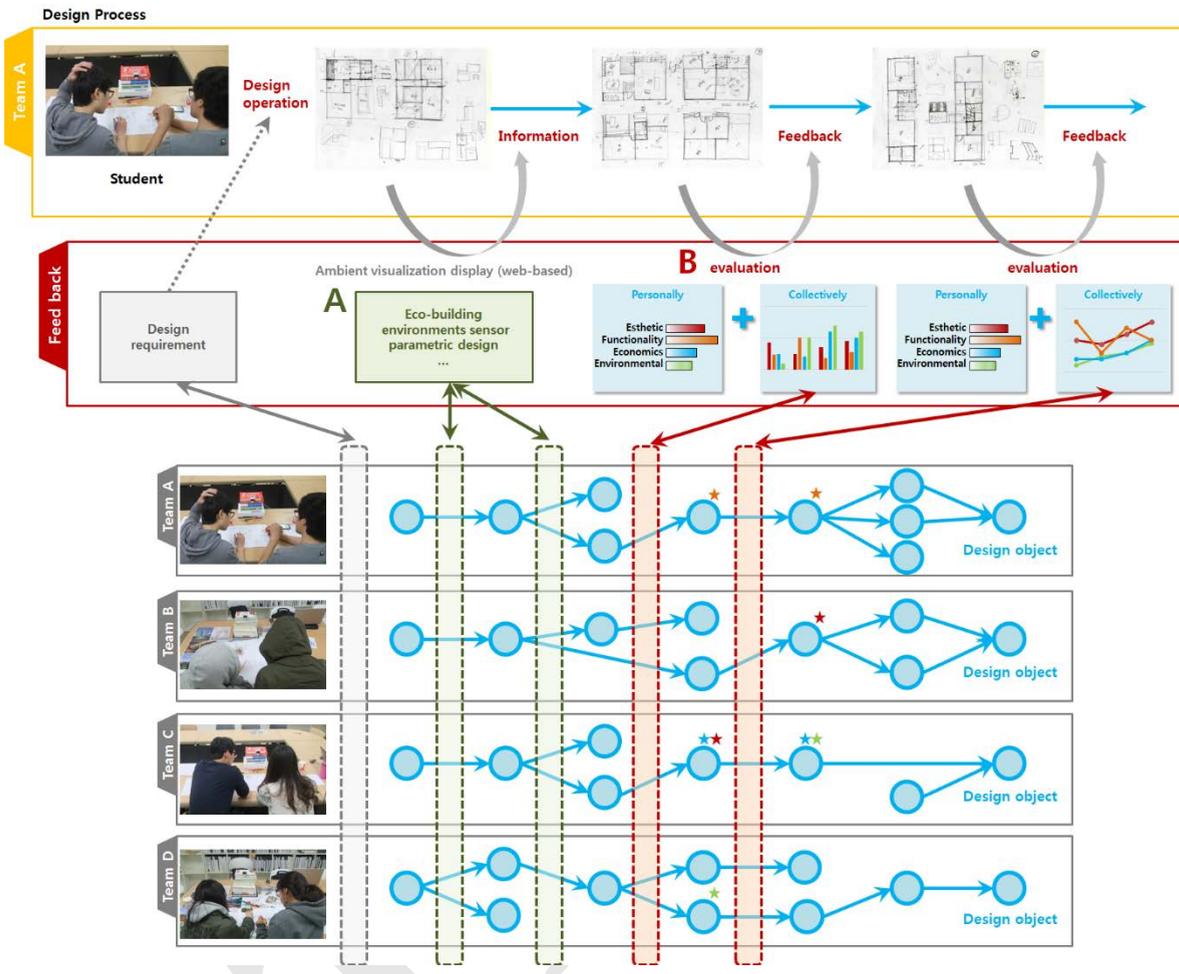


Fig. 11. Example of design process visualization integrated with providing information and competitive evaluation

- A : Provide the sustainable design information continuously by installing the monitor on the corridor where many students moved or in the design studio. Students with smartphone get more detailed data like a system plan using the QRcode that linked web data. In additionally, if the screen or the sculpture that visualize the indoor environmental information such as air pollution and then some for design is served additionally to student, it is possible to raise awareness about environment of students.
- B : Provide the professor's evaluation that based on sketched alternative designs that inputted into system for final result. And that is evaluated each design's element such as aesthetics, functionality and so on. The evaluation is shared with other students, thus enhance the cognition of competition among the students. The repetitive evaluation of design object using the system is enabling to expect to improve quality of student's design output.

## 6. Conclusion

This study aims for students to have environmental awareness naturally and improve quality of the design through information visualization of eco-friendly design and output evaluation to architecture student in process of learning the knowledge for design. To achieve this purpose, we use the way that visualize the eco-system designs' examples for student to increase understanding and reflecting acquired knowledge about sustainability from theoretical lecture. Also, providing the competitive and comparative evaluation with strategic information exchange among the students via game theory helps increase the students' awareness about sustainability more. Finally, when the students become the professional designers, the nature friendly practices and knowledge that have been formed from this educational system are naturally reflected in the design of cities or buildings. Then, the urban and residential environment is built salubrious and comfortable for people. Furthermore, the lifestyles of people living in this type of cities or buildings will be maintained in more sustainable ways.

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# A research on the impact of leadership style preferences of teachers on their teaching strategies

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## Abstract

One of the fundamental consequences of research is that there is a relation between leadership approaches of teachers and their teaching methods in the environment of class. It may be said that the teachers who have transactional leadership style more tend to teach through presentation, who have transformational leadership style more tend to teach through invention, who have transformational leadership style more tend to teach through research-examining and who have liberal leadership style more tend to teach through cooperation.

Keywords: teacher, leadership styles, teaching strategies

## 1. Introduction

Management is a function that has the same roles regarding business, public agency or non-governmental organizations and it performs similar functions. In order to implement the management function to achieve certain objectives at any time, therefore, it is necessary for the general manager of a business enterprise, for the branch manager a public body or for a teacher responsible for managing a class. The manager who performs planning, organizing, leading, or auditing functions of the management implements executive function through giving orders and secures the implementation of these orders by employees. The manager performs the executive function through two principle ways: one is completely based on the authority; the other on the leadership. In the authority based management, the manager applies the powers given to him on legal, economic or cultural ways. In the leadership based management, on the other hand, the manager can makes use of such unauthorized tools as effective communication, motivation, cooperation, reward, charisma, persuasion, endearing etc. Also taking external and internal environment conditions into account, employees can be said to be more effectively oriented through leadership tools in the majority of today's organizations. Taking into account the conditions of the external environment and internal environment, it is more effective to direct employees with leadership tools in the vast majority of today's organizations (Özdaşlı & Yücel, 2010). Therefore, nowadays, the concept of leadership stands as one of the most important concepts in terms of management and organization. A similar situation is also true for the management of the school and classroom. Today, although technological advances continue with an increasing pace, teachers who have leadership quality are one the most important elements in terms of educational environments. Although self-adaptation of teachers to these changes is an essential requirement and it is necessity for them to improve themselves according to the conditions, it is impossible to fill in the place of teachers using technology. At this point, the concept of leadership plays a role (Kılıç, 2006).

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In relation to leadership, it would not be a proper approach to make a determination as "this is the best leadership style ". However, it is possible to assess the advantages and disadvantages of each leadership style according to the time and conditions of the current organization. Therefore, in this study, our aim is not to identify the best leadership style for the teachers. The main purpose of this study, giving the leadership styles adopted by teachers of the sample group, is to determine whether these styles have an impact on their teaching strategies. Leader and leadership are different concepts. Leadership is the ability to convince people to direct towards the objectives that are set beforehand; the leader, on the other hand, is defined as a person who brings individuals together forming the group and direct and persuade them to the objectives of the group (Erdoğan, 1994).

When we look at the relationship between a leader and his/her follower, we often witness that the writers usually emphasize followers follow leaders as their own wishes. The process of a real leadership cannot be mentioned unless leaders and audience act together in this process (Doğan, 2007). However, what we know for sure is that leadership entails the use of influence and power. This effect can be fed with one source or different sources. One of the sources of this power is the position of the leader in the organization (Kurtz & Boone, 2007). In this context, we examine the relationship between teachers and students, the teacher can be said to have legal influence and power on students

Leadership style is the ability to use the power of a person while directing the behaviour of others (Kurtz & Boone, 2007). According to Hersey, Blanchard and Johnson (1997), basically three types of classifications on leadership styles are mentioned in the literature. These are autocratic leadership, democratic leadership and liberal leadership. Autocratic style is leader oriented. Leaders give their decisions without consulting his followers. In democratic style, the leader will delegate tasks, asks his followers for suggestions and tries to ensure the participation. In the liberal style, supervision and control are at the lowest level (Kurtz & Boone, 2007).

When we look at the contemporary classifications of leadership in the literature, we see that a number of different styles are discussed. We can list some of them as; for the work (operational), transformational, paternalistic (fatherly), learner, super, vision-based, cultural, symbiotic, servant (Robust, 2011) and ethical leadership. Of these, operational, transformational, paternalistic and the liberal leadership styles are included in the study.

When we look at the trends in recent literature on leadership styles, we primarily see that operational and transformational are divided. Transformational leadership style is a an approach which is directed at reshaping strategies and tactics of the organization and this style instils vision, innovation and creativity to his followers. Giving priority to the normal tasks to be performed, operational leadership is a leadership style that uses money and status in order that its followers show extra effort (Daft, 1998; McKenna, 2001).

Paternalistic leadership style is related to the interaction between leaders and subordinates. This interaction is manifested in a positive way. Paternalistic leadership style includes leader's taking care of every aspect of his subordinates lives a father / mother love, rewarding his employees, helping and supporting them. However, while dealing with his employees he always reminds who has the authority. In other words, paternalistic leadership is the leadership in which the relationship between the superior and subordinates is like that between the father and child (Çalışkan, 2009).

Teaching and learning concepts are different concepts. Learning is an individual permanent behavioural change as a result of interaction with one's environment. Teaching is a process of performing learning (Türkmen, 2003). According to Tezci, Önal, Uşun and Güven (2008), based on a specific plan and program, training activities which are implemented in schools to achieve specific goals are called teaching. For learning to occur, it is necessary to create a suitable learning environment.

One of the main causes of the problems of students who fail to grasp the subject in spite of much work during the process of teaching is that students do not know which strategy is more suitable for them. As the teaching strategies are very important for education, teachers should know which strategy is more appropriate very well and they should teach the subject in accordance with these strategies (Açıköz, 2009). In the widest sense, the strategy refers to the approach or the path to be followed to achieve the goal in any matter or case. One of the issues that are effective in the success of students and more comfortable comprehension of the subject is the teaching strategy. (Tok, 2012). Teaching strategy is the determination what tools and materials should be used and which method should be applied to implement effective education. Therefore, it has a very important role in achieving the desired objective of the course (Akar, 2006). Choosing the most appropriate teaching strategy for students, teachers can enable permanent knowledge by transferring the knowledge of students from temporary memories into their long-term memories. These strategies mostly used for the cognitive behaviours can also be used for affective and psychomotor behaviours (Sözer, [anadolu.edu.tr](http://anadolu.edu.tr)).

In the educational activities carried out in the process of teaching and learning, what students do about learning is highly important. In fact, to learn new information, every student has a strategy they follow. Therefore, learning strategies, with the participation of students in learning activity, has been mostly developed by themselves. Students acquire these strategies either from their lives or by trial and error, or more with the contribution of anyone else (mostly the teacher). Many studies have figured out that students generally know learning they do not know when and how to use them. Now that learning strategies are important factors that significantly affect student achievement, teaching of these creates great benefits to the students. Starting from the first years of primary education, helping students develop a number of learning strategies is extremely convenient. In order to achieve this, enlightening the teachers about these teaching-learning strategies is undoubtedly emerging as a key requirement. Expository, discovery-based, research and investigation based, mastery and cooperative teaching strategies are the most widely used teaching strategies in teaching - learning processes (Gürbüz, 2011).

*Expository teaching*, it is the process of transferring information, concepts, to student in a regular and sequential manner (Tan et al., 2002). In expository teaching strategy, first, generalizations are made by giving information, then; this information is presented to student choosing examples to provide a better understanding of generalizations. For this reason, the person who has the most significant effect in this strategy is the teacher. Applying deductive approach, teachers allow student to move towards the whole track (Tezci et al., 2008). In *discovery-based teaching strategy*, the teacher creates an environment in which the student learn through their own effort by analysing the facts and events rather than presenting already organized and prepared information (Sözer, [anadolu.edu.tr](http://anadolu.edu.tr): 79). Through this strategy, referred to as learning by doing or experiencing, the student is enabled to discover the subject following concrete components before making abstractions and generalizations, and so, significant learning is accomplished (Tan et al., 2002). *Research and investigation based teaching strategy*, the teacher, offering problems particularly to draw their attention, also help them in solving these problems (Açıköz, 2009). *Mastery teaching* is based on the idea that the differences between the students stem not from the difference between the levels of learning but from environmental differences. For this reason, environmental factors preventing the child from learning should be exposed (Tezci et al., 2008). Mastery learning is applied to a class and materials to be learned are divided into units. Achievement levels of these units are determined. If the learning occurs around 80-85%, this means the individual is successful. If the student falls below this percentage, the student is classified as to have failed. After this process, in order to determine what they have learned and what they haven't, students are given a monitoring test. The purpose of this test is to reveal learning difficulties. After determining learning difficulties of the student, adjustments are made to resolve these difficulties. If the student has reached to the desired level, one more screening test is applied. This monitoring test is the equivalent of the previous test. Generally, the vast majority of the students have reached to the desired level after this test and are ready for the second unit (Tok, 2012). *Cooperative teaching* is a method trying to improve the achievements of students by providing their active participation in classes. In this method, students work in small groups and they help each other to learn (Sezer & Tokcan, 2003). Creating a positive dependence between

the members of the student group, a right or a wrong thing is attributed to the whole group. Individual accountability matters while a student share new things which he/she has just learned. Learning efforts of students will be rewarded as a group. Feedback to other group members is ensured in individual preparations. Each student in the group is encouraged on topics such as decision-making and leadership. By creating group aim, the progress towards the aim is measured from time to time. By implementing the structure and management of the group effectively, The Teacher makes it known that materials, created by a student in the group or all members of the group, are for the success of the entire group (Felder & Brent, 2007).

Teachers can exhibit three leadership styles in the classroom as autocratic, democratic, and liberal leadership. There is a linear relationship between the learning environment and leadership styles of teachers who are the leaders of the class (Çiftçi, 2003-2004). Teachers exhibiting democratic leadership allow students to ask questions and the opportunity to express their thoughts, besides; they give them the right to take the initiative. Teachers exhibiting autocratic leadership do not allow students to express their ideas; they do not create a debate environment and they do not cooperate with them. Teachers who adopt liberal leadership style causes indiscipline and disorder; hiding behind the pretext of being democratic, they do not deal with students (Ilgar, 2007). Researching the existence of a relationship between leadership style and class management of teachers, Kadak (2008) has figured out that teachers show the three types of leadership style as autocratic, democratic and semi-democratic and there is a positive relationship between personality traits and teaching activities. Recent studies on the leadership attitudes of teachers have suggested that imposing pre-determined facts into the brains of students by providing authority and discipline (paternalistic and operational leadership) is a matter of the past. On account of their facilitating and encouraging roles (transformational leadership) teachers, in recent years, let students investigate and study the their own worlds, ask questions, teach their own realities, and discuss with teachers and classmates (Burke, 2011). Grasha (2002) has grouped education types of teachers into five parts as specialized, formal authority, personal model, facilitator and authority delegation. In official authority style, which deals with doing things right, acceptable, and in standard ways, teachers pursue a presentation way in which they transferring their knowledge without paying attention to relationship among students (way of teaching through presentation). In facilitating style which is close to the transformational leadership style, teachers ask questions to students, offer alternatives, ask for searching options, and they follow their teaching strategies through innovation and research. There is a tendency to independent projects and teams of students (through co-operation training) in authority delegation style which allows students to work independently, show close behavioural patterns to those of liberal leadership style, emphasize the authority.

## **2. Research**

### *2.1. Purpose, Sample and Limitations of the Study*

The main objective of this study is to determine whether leadership style of teachers has any effect on their teaching strategies which they apply in classroom and while performing the course. Main body of this research is composed of teachers in the centre of Isparta, a province of Turkey. In the light of the information received on 05/17/11 from Isparta Provincial Directorate of National Education, it is found out that a total of 2,200 teachers are employed in Isparta and its villages. Based on formal authorization of the Directorate of Education of Isparta Province, the questionnaire has been sent to all schools for teachers working at primary and secondary schools in the centre of Isparta. Convenience sampling method is used in the selection of teachers and every teacher who agrees to answer the questionnaire is included in the sample. Under these conditions, 235 teachers have responded to the survey. As this research has been conducted only in the province of Isparta, a further generalization cannot be made. In addition, the limitations of this study can be listed as: people's being unable to analyse their own behaviour enough, difficulty in defining leadership, teachers reluctance to filling out surveys, inclination of teachers to show themselves as successful, and their different perceptions of the questions.

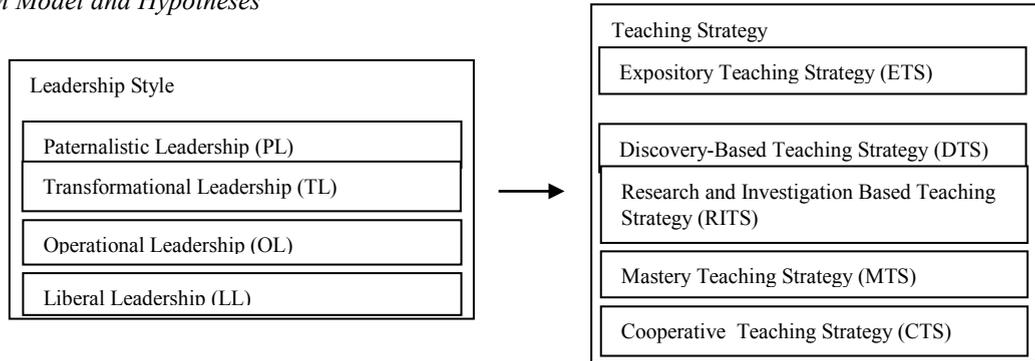
## 2.2. Survey Form and Scales

Survey technique has been used as a means of data collection. Two scales are used in the form of the questionnaire. The first scale (teaching strategies scale (TSS) includes what teachers benefited from (expository teaching strategy, discovery-based teaching strategy, research and investigation based teaching strategy, mastery teaching strategy, cooperative teaching strategy). TSS is prepared especially being benefited from literature parts of the article "Teaching Strategies Preferred by Turkish Teachers" prepared by Saracaloğlu et al. and master thesis of Akar (2006) titled "The Effectiveness Of The Discovery Learning Strategy On The Mathematics Achievement At The Second Step Elementary Education". Expository teaching, is assessed with the query "Generally, I lecture the Courses."; Discovery based teaching strategy is assessed with the query "I provide suitable examples for mental development of student and I ensure the student to comment on my examples"; Research and investigation based teaching strategy is assessed with the query "I lead the student to do mental research on the problem"; mastery teaching strategy is assessed with the query "I find out why Every student does not learn"; and cooperative teaching strategy is assessed with the query "I create working groups". There are 4 questions for each strategy on instructional strategies scale. There are questions about leadership styles of teachers in the second scale. Leadership styles are paternalistic, transformational, operational and liberal leadership styles. The scale is prepared based on the master thesis titled "Relationship between leadership styles and effecting tactics of leaders to their subordinates: a research on five-star hotels managers" prepared by Derya (2010). Each style is measured with following question: paternalistic style (a total of 5 questions), "I am almost like a mother / father for my students"; transformational style (a total of 7 questions), "I always encourage and appreciate my students to do new things"; liberal style (a total of 5 questions), "I would like to find his solution when a student has problem"; operational style (a total of 7 questions), "I explain in detail the ways for the fulfilment of the tasks" Five-point Likert type metric expression is used for answers of statements in the scales. For example, for the expression "I always do long-term plans", there are following answers: "1-never", "2 - rarely", "3-occasionally", "4 - Often", "5 - Always". In addition, six questions are asked to examine the demographics of teachers. Obtained answers in survey forms have been coded and analysed using "SPSS for Windows 21.0".

## 2.3. Data Preparation

To prepare the data file, lost data, extreme value, normality, homogeneity are firstly tested after the data previously used in the research part of the thesis have been saved in SPSS 21.0 package program. *Missing data:* We have examined whether the ratio of answers which are left blank for each survey to total materials are 15% or over or not. Assignment operation has been implemented to 13 respondents missing data (on averages). *Extreme Value:* 43 questionnaires whose "Z" and "T" points are over + 3 and - 3 are excluded from analysis. In total, 192 survey data have been analysed. *Normality:* N-Par Test results are examined; there is no normal distribution in terms of leadership style scale (Sig (2-tailed) = 0.000); instructional strategies scale (Sig (2-tailed) = 0.000). Therefore, logarithms of the data have been taken to normalize. *Homogeneity:* data are determined to be homogeneous because sig. value of the "homogeneity test" result is bigger than 0.05. The data are analysed using SPSS 21 and Eviews statistical programs. Demographic findings, factor analysis and correlation analysis have been done using SPSS 21 and regression analysis has been done on Eviews.

#### 2.4. Research Model and Hypotheses



Model of the research is compatible with the model referred to as descriptive and status designator. With these models, variables and relationships between variables can be defined and some predictions can be made on the basis of these definitions (Kurtuluş, 1996). The aim of the study, in the direction of the related literature and in the context of the model hypotheses are as follows.

- H1.1. Paternalistic leadership style has a positive effect on the tendency of teaching through presentation.
- H1.2. Operational leadership style has a positive effect on the tendency of teaching through presentation.
- H1.3. Transformational leadership style has a positive effect on the tendency of teaching through discovery.
- H1.4. Transformational leadership style has a positive effect on the tendency of teaching through research and investigation.
- H1.5. Liberal leadership style has a positive effect on the tendency of teaching through cooperation.

#### 2.5. Demographic Findings

Based on the analysed data, 55.7% of teachers (107 people) are female, while 44.3% of them (85 people) are male. 80.2% are married, and 19.8% are single. 3.1% of teachers younger than 24, 59.9% are from 24 to 40 age group, 35.4% are in the age group between 41 and 60, 1% are over the age of 60 and 0.5% of them have not specified their ages. 69.8% of them are primary school teacher and 24% of them are high school teachers, while 6.3% have not specified the school. It is seen that 23.4% of teachers that is analysed have less than 5 years of professional experience. However, 76.6% of them –majority- have more than 5 years of professional experience. Both leadership tendencies in terms of classroom management and teaching strategies in terms of implementing the course curriculum of those people who have spent years in their profession is an expected result. 35.9% of participants (69 people) are classroom teachers, 12.5% of participants (24 people) are Turkish literature teachers, 9.9% of participants (19 people) are foreign language teachers, 8.9% of participants (17 people) are science teachers, 6.8% of participants (13) people are mathematics teachers, 5.2% of participants (10 people) are social studies teachers and the others are religious, fine arts, technical education, physical education and kindergarten teachers.

## Factor Structure Formation and Reliability Analysis

Table 1. Factor Analysis Results of Teaching Strategies Scale

Expressions	Factors				
	ETS	DTS	RITS	MTS	CTS
Usually, I lecture during lessons.	.698				
I present concepts, principles and generalizations in a neat and orderly manner, and I explain by giving examples.	.566				
I do not go elaborate on the details; I give importance to the general outlines of the subjects.	.467				
I use a motivational teaching approach based on student activities.		.783			
I set examples in accordance with the mental development of student and I let comments on examples.		.694			
I make students think on the actual size of the event, and I encourage them to make objective decisions.		.620			
I lead students to develop a proper overview of the problems and the habit of reaching to the solution.			.710		
I ensure the student analyse the collected data related to the events, and make conclusion.			.630		
I direct the student to do mental research on the problem.			.620		
I make the student notice the situation creating problem.			.576		
I ensure that all students complete their learning.				.787	
I figure out why each student does not learn.				.682	
I provide bringing together the factors playing role in teaching - learning process in a way to ensure the desired behaviour for a student.				.479	
I compare the previous thoughts of students with what they have learned after finishing of the topics.				.464	
I apply physical activities which students will use their skills.					.793
I make it easy for students to benefit from the capabilities each other, work together and share responsibility.					.767
I ensure that students learn from each other.					.737
I create work groups.					.734
<b><i>Cronbach Alpha value</i></b>	<b>.653</b>	<b>.700</b>	<b>.690</b>	<b>.725</b>	<b>.802</b>

As a result of factor analysis of the data obtained through Teaching Strategy Scale (TSS), five dimensions have come into existence. The first of five dimensions is referred to as expository teaching strategy (ETS); the second, discovery based teaching strategy (DTS); the third, research and investigation based teaching strategy (RITS); the fourth, mastery teaching strategy (MTS), and the fifth is referred to as cooperative teaching strategy (CTS). Kaiser-Meyer-Olkin (KMO) test applied to the analysis of the main components has shown the sample size (KMO value, 846) is adequate for factor analysis. The result of Bartlett's test, which is applied to determine whether the data of variables have normal distribution, is significant (118.277,  $p < .01$ ). 5 factors, eigenvalues of which are greater than 1:00, have been obtained as a result of processing the data variables of TSS and varimax rotation. The resulting factors accounts for 55.516% of the total variance. Internal consistency coefficients obtained for each of the scales as a result of the reliability analysis of five Scales (Cronbach's alpha values) are given under the table respectively. Scales are seen to have reliability levels in the field of social sciences. It can be expressed that scales, obtained as a result of the Varimax rotation factor analysis, measure a structure similar to that of theory and that they have structural validity.

Table 2. Factor Analysis Results of Leadership Style Scale

Expressions	Factors			
	PL	TL	OL	LL
Like a father who knows what's best for his child, I know what's good for the students.	.810			
As a teacher, I give advice to my students like a father and direct them.	.713			
To me, the teachers should show interest and attention to the students their as if they were their children.	.656			
I'm almost like a mother / father for my students.	.610			
As a teacher, my current experience and knowledge is a guide to students.	.503			
I have a clear stance with my values and I apply the piece of advice myself.		.672		
I always encourage my students to do new things and appreciate them.		.623		
I encourage the co-operation, participation and self-confidence of my students.		.569		
I encourage my students to come up with new ideas to solve the problems and apply them.		.503		
I organize the task that anyone can fulfil within the framework of a program in advance			.650	
I want to be sure that I am understood completely by the students about the tasks I have assigned.			.610	
I explain the ways in detail in performing tasks.			.589	
I decide how my students will perform the duties and tasks.			.562	
I always like the realization of the standards I set for a student.			.509	
When a problem occurs among my students, I wait so that they resolve among themselves.				.795
Before deciding on a something, I wait for it to happen spontaneously.				.763
I would like students to find their own answers to questions about the problems.				.742
When a student has a problem, I want him to find solutions to the problem himself.				.721
Most of the time, I do not interfere with anything in my class, and I do not want to be interfered.				.705
<i>Cronbach Alpha values</i>	<b>.745</b>	<b>.675</b>	<b>.655</b>	<b>.810</b>

Serving to both factors, 2 topics of TSS – numbered 3 and 5- are excluded from the analysis. 4 dimensions are formed as a result of factor analysis conducted on the data of Leadership Style Inventory consisting of 24 questions. The first of four dimensions is referred to as Paternalistic Leadership (PL); the second, Transformational Leadership (TL); the third, Operational Leadership (OL); and the fourth, the Liberal Leadership (LL). Kaiser-Meyer-Olkin (KMO) test applied to the analysis of the main components has shown the sample size (KMO value, 785) is adequate for factor analysis. The result of Bartlett's test, which is applied to determine whether the data of variables have normal distribution, is significant (1473,057,  $p < .01$ ). 4 factors, eigenvalues of which are greater than 1:00, have been obtained as a result of processing the data variables of OSO and varimax rotation. The resulting factors accounts for 58.087% of the total variance. Internal consistency coefficients obtained for each of the scales as a result of the reliability analysis of four Scales (Cronbach's alpha values) are given under the table respectively. Scales are seen to have reliability levels in the field of social sciences. It can be expressed that scales, obtained as a result of the Varimax rotation factor analysis, measure a structure similar to that of theory and that they have structural validity.

## 2.6. Impact Analysis Findings

According to R-squared- determination coefficient- value of the regression model 6% of the variance of expository teaching strategy is explained by the three independent variables. The calculated F value is valid at .000 level ( $p < 0.01$ ). The relationship between the dependent and independent variables is statistically significant. When positive Beta values are examined, it is seen that these three leadership styles affect expository teaching strategy. Expository teaching is affected, respectively, by operational leadership and liberal leadership after transformational leadership most. Only if does it remain steady for other independent variables, a cumulative increase in operational, transformational and liberal leadership styles of teachers provides ,216 units; ,148 units

and ,065 units of increase in education through presentations, respectively. According to these findings, H1.1 is rejected, H1.2. is adopted. 21.52% of the variance of discovery based teaching strategy is explained by the three independent variables. The calculated F value is valid at .000 level ( $p < 0.01$ ). The relationship between the dependent and independent variables is statistically significant. When positive Beta values are examined, it is seen that these three leadership styles affect discovery based teaching strategy. discovery based teaching strategy is affected, respectively, by paternalistic leadership and operational leadership after transformational leadership most. As long as it remains steady for other independent variables, a cumulative increase in operational, transformational and paternalistic leadership styles of teachers provides ,375 units; ,200 units and ,095 units of increase in discovery based teaching strategy, respectively. According to these findings, H1.3 is adopted. 27.36% of the variance of education through research and analysis is explained by the four independent variables. The calculated F value is valid at .000 level ( $p < 0.01$ ). The relationship between the dependent and independent variables is statistically significant. If Beta values are examined, it is seen that these four leadership styles affect research and investigation based teaching strategy. It is affected, respectively, by paternalistic leadership, operational leadership and liberal leadership most after transformational leadership. If it remains steady for other independent variables, a cumulative increase in operational, transformational, paternalistic and liberal leadership styles of teachers provides ,314 units; ,220 units ,120 and ,016 units of increase in research and investigation based teaching strategy, respectively. According to these findings, H1.4 is adopted. 27.36% of the variance of cooperative teaching strategy is explained by the two independent variables. The calculated F value is valid at .000 level ( $p < 0.01$ ). The relationship between the dependent and independent variables is statistically significant. If positive Beta values are examined, it is seen that the two leadership styles affect cooperative teaching strategy. It is affected, respectively, by liberal leadership most after transformational leadership. Providing it remains steady for other independent variables, a cumulative increase in transformational and liberal leadership styles of teachers provides ,566 units; ,278 units of increase in cooperative teaching strategy, respectively. According to these findings, H1.5 is adopted. 34.90% of the variance of education through mastery teaching is explained by the three independent variables. The calculated F value is valid at .000 level ( $p < 0.01$ ). The relationship between the dependent and independent variables is statistically significant. If positive Beta values are examined, it is seen that the three leadership styles affect teaching through mastery teaching strategy. It is affected, respectively, by transformational and operational leadership most after paternalistic leadership. As long as it remains steady for other independent variables, a cumulative increase in operational, transformational and paternalistic leadership styles of teachers provides ,443 units; ,296 units and ,272 units of increase in education through mastery teaching strategy, respectively. According to these findings, H1.5 is adopted.

Table 3. Regression Analysis Summary Findings

		ETS	DTS	RITS	CTS	MTS
C	Coef.	2.490256	1.597567	1.3013018	0.733377	-0.378136
PL	Coef. t-Statistic Prob.	-0.076907 (-0.929054) [0.3541]	0.200344 (2.722042) [0.0071]	0.220046 (3.486082) [0.0006]	-0.056818 (-0.594337) [0.5530]	0.443098 (5.536448) [0.0000]
TL	Coef. t-Statistic Prob.	0.148793 (1.543800) [0.1243]	0.375654 (4.383673) [0.0000]	0.314821 (4.283713) [0.0000]	0.566615 (5.090596) [0.0000]	0.296847 (3.185702) [0.0017]
OL	Coef. t-Statistic Prob.	0.216118 (2.328493) [0.0210]	0.095113 (1.152561) [0.2506]	0.120072 (1.696573) [0.0914]	-0.016581 (-0.154688) [0.8772]	0.272077 (-3.032062) [0.0028]
LL	Coef. t-Statistic Prob.	0.040070 (0.762029) [0.4470]	-0.061998 (-1.326074) [0.0001]	0.016863 (0.420562) [0.6746]	0.278152 (4.580368) [0.0000]	0.000986 (0.019391) [0.9845]
	R-squared	0.065295	0.215297	0.273688	0.258138	0.349044
	J-B	0.337474	0.902504	2.968956	6.983256	29.46479
	LM	0.573748	1.009862	0.397155	2.104249	0.764442
	H-W	3.385440	0.264573	0.377717	0.857081	0.639809
	R-R	1.078380	0.350826	0.458691	0.458691	0.015300
*0,01;**0,05;***0,1 0	Note: The diagnostic tests is used for regression models for the normal distribution Jarque-Bera (JB); Breusch-Godfrey Serial correlation (LM) is used for serial autocorrelation of the error terms; Heteroskedasticity White Test (H-W) is used to measure the fixed variance of error terms and Ramsey Reset Test (R-R) is conducted for model specification					

## Conclusion

One of the main results of the study is that there is a relationship between the leadership styles of teachers and the methods they use in teaching environments. Of hypotheses, especially in relation to the results of other studies, only H1 hypothesis (paternalistic leadership style has a positive effect on expository teaching strategy.) is rejected. As expected, "teachers who have paternalistic leadership style are more effective in education through the presentation" query is not confirmed in the context of our sample. Other hypotheses have been adopted. So, it can be expressed that teachers who have operational leadership style tend to have more educative ability through presentations; teachers having transformational leadership style tend to teach more effectively through discovery; teachers having transformational leadership style tend to teach better through research and investigation and teachers having liberal leadership style tend to teach better through co-operation. Moreover, more serious results which are not expressed initially as a hypothesis have been obtained. If an overall assessment is made in this regard: 1. Teachers who have operational leadership style, that is, the teachers who give priority to normal tasks to be performed tend to use teaching methods a certain level except for collaborative of education type. 2. Teachers who have paternalistic leadership style, that is, those who deal with students, support them as well as always keeping the authority tend to use other teaching strategies, especially full teaching strategy, except through presentation and teaching strategies. 3. Teachers, who have transformational leadership style, that is, those who instil their students with vision, innovation and creativity as well as dealing with them, have a tendency to use all teaching strategies, particularly, cooperative teaching strategy. 4. Teachers who have liberal leadership style, that is, the teachers who do not interfere with the events more tend to use cooperative teaching strategy, through the invention strategy and teaching and research strategy.

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4<sup>th</sup> International Conference on New Horizons in Education

# A review on processes of writing about art from the perspective of visual arts

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## **Abstract**

Writing about art can be seen as an engagement pertains to historical researchers and people who have acquired criticism as a profession. But it's not only the area of interest of historians and critics but also of artists and art students. It can be seen as a necessity for art students who are closely interested in interdisciplinary issues to gain certain skills such as being able to writing critiques, reports and articles about today's visual works or to keep the record of visual history. Yet, it's just possible by having knowledge of the nature, research methods and problems of art to research and interpret these issues and transform them into a written text through a certain system.

The purpose of this research is examining the process and problems starting from theme selection and can be extended by interpretations in forming, shaping and presenting the ideas in the process of developing writing skills of fine art students.

*Key Words:* Research methods in art literature, visual art education

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## 1. Introduction

One should consider modern art practices and its condition in Europe to define subject area and characteristics of fine arts. Art is a creative and intellectual engagement analyzing and questioning new art types and understandings produced by artists. Modern art, on the other hand, is a dynamic field including broader approaches, techniques, concepts, theories, traditions and social functions. Art practices contain rapidly developing contents, media and materials in technology to varying degrees. They are managed in galleries and museums by commissions in public sphere and cooperative or independent works mediating in visual or public environment. These activities are formed by various, broad, private, multiple or interdisciplinary media and presentation types such as painting, sculpture, installation, design, film and video, photography, web-based projects, performance, literature and script-based works.

Developments in modern art practices are presented in special art practices in fine art program or program module through the social relation of art practice and space project the relation of space and process. Thus, the reflections of knowledge and experience are combined by practices and processes. Searching for new ways of conception, questioning and exploring via conception and knowledge production are a special esthetic approach in art.

Higher education in fine arts presents a unifying approach for production, theory, critical reflections of professional practices, technical development and public indicators. Diversity is an apparent characteristic of fine arts education in Europe. The most remarkable point in here is that fine art programs continue to define special characteristics of their own structuring by concentrating on their education program approaches (Inter-Artes Handbook, 2008).

Thus, fine art students can become creative art practitioners. Students learn the importance of developing and maintaining their intellectual, theoretical and practical skills as well as professional applications and their imaginations in personal development. Students should define application areas, theories and relevant professional skills required for research and should become an active part of education. Fine arts education includes improvisational and traditional investigations focusing on working styles and creativeness.

Art is of vital importance for all society and art program plays an active role in forming necessary creative human capital. Art graduates can work as artists as well as build a career in the fields of art teaching, curatorship or art management, criticism or the relation of art with other fields.

Art studio constitutes a basis in art education and it's an important place where ideas are shaped. Art studio is a place reserved for personal works of students as well as shared with other student groups and used by everyone and its usage can be discussed with lecturers. Studio is a laboratory where students experiment and test their ideas and approaches to make mistakes and explorations. On the other hand, some students can form their own studio environments in advances levels. Applications included in fine arts education and works make joint contributions to the development of importance and quality of cultural experience. Artist-teacher plays an important role in fine arts program (Inter-Artes Handbook, 2008).

**Special skills** that are expected to be gained by fine arts students in their **first year** in accordance with proficiency criteria defined by European Union are as follows:

- Discovering and becoming familiar to the language, tools and materials of fine arts
- Understanding, being aware and having knowledge of broad theory, cultural and social context concerning

the applications in modern art and fine arts history

- Carrying out communication/organization and technical skills concerning art practices based on a professional working process
- Assessing critically his/her own works and the works of others

- Declaring and expressing his/her own ideas by means of appropriate visual, verbal and written instruments
- Developing an art practice including the production and exhibition of an art work
- Generating creative ideas, experimental methods, concepts, suggestions and solutions
- Developing a cooperative/independent discussion or investigation concerning his/her personal activities
- Showing conceptual and esthetic awareness and understanding the relation between viewers and artwork
- Forming a conceptual framework through which he/she can develop his/her own works
- Obtaining information about how to find his/her way in professional field (Inter-Artes Handbook, 2008)

On the other hand, **general characteristics** and **skills** defined within the context of fine arts qualifications are as follows:

- Improving fundamental research skills such as decision, analysis, synthesis, selection and summarizing that unifying the information on a critical basis
- Understanding and developing the knowledge of methods, concepts and theories in education field
- Using the reasoning methods for several complex situations or concepts by an appropriate way
- Having an active place in the works carried out in the working areas by art specialists
- Maintaining his/her works through unique and variable context
- Performing his/her learning tasks and workloads in an independent, professional and ethical way
- Having an active interaction with art consumers and developing his/her exhibition skills
- Carrying out his/her applications and works by using his/her ethic, economic, security and health applications information (Inter-Artes Handbook, 2008).

According to European Union ELIA competence criteria, fine arts students are expected to express themselves in written and verbal terms in addition to visual language in their **first year**. On the other hand, one of the fundamental skills that a fine arts student must gain is to combine his/her personal expression style with subjective visual styles and to express them in his/her works through appropriate materials and techniques. Although developing visual expression skills in arts education is always seemed as the first target, it's also important to the same degree for fine arts students to gain the skill to express their ideas both concerning their own works and art world in written and verbal form.

## 2. Results

Writing experiences of the research were carried out in the course of Workshop III of Erciyes University, Faculty of Fine Arts. Data of research were obtained through interviews and document analysis which are qualitative research methods. Interviews were made with eight (8) students participating in the course of Workshop III by using the interview form that can be found in Annex 1 and all interviews were recorded. The documents of research include writings of students of type of experimentation and report.

It was seen that general and specific skills that students have to gain at the education level of undergraduate of Turkey Fine Arts Education correspond the first academic year of the programs in the degree of Europe. It is thought that this situation was realized because of the reason that it was given place to basic arts education instead of workshop course in Turkish programs. For this reason, the first level criteria of European Fine Arts Undergraduate program was taken as base in determination of specific and general qualifications determined for course of Workshop III.

**Table 1: Student Personal Self Assessment Form for Painting Workshop III**

\*Measurement Tools used for course of Painting Workshop III in the Research (Written and verbal

expression)

Name and Surname of Student:	
Development / Improvement:	<p>What are the issues make you develop in your works during this semester and what are the issues that u-you feel you have self-developed?</p> <p>How well could you bring your needs and intentions together?</p> <p>Explain.</p>
Critical Analysis:	<p>Evaluate your work that you have offered in an attentive and impartial manner. In which ways you think that your work is analyzed?</p> <p>What are the imparting meanings of your choices and materials that you used? Such as tone, value, saturation, placement, relationship with audience etc. Explain.</p>
Planning:	<p>What were the strategies that you had developed during the stage of conclusion in exhibition of your works?</p> <p>What do you need to achieve success and ensure progress?</p> <p>Explain.</p>

Students are requested to express their thoughts about their works on personal evaluation forms based on verbal and written expression criteria and to make a verbal expression of fifteen minutes and then written expression of 600 words (approx. 2 pages) in my course program that I had prepared within the scope of course of Workshop III of Erciyes University, Faculty of Fine Arts in the academic year of 2010-2011. (You can find form 1, 2 and 3 in the following)

**Table 2: Painting Workshop III General Assessment Criteria (Written and verbal expression)**

Research and Information 40%	Concepts 40%	Presentation 20%
Compliance of content with the desired information	The get to the root of the information	Using clear and concise statements
Relationship between theory and context	Logical organization	Setting up an effective context (introduction, body conclusion paragraphs)
General perspective	An open discussion	High-quality analysis
	Independent own thoughts, comments	As long as necessary
	Association with information given in courses with sources.	Quotations and mentioning quotations
	Good analysis of the samples	Proper and multiple references

**Table 3: Application / Painting Workshop Arts Practice Assessment Criteria**

Verbal ability to express ideas 40%	Research and inquiry 40%	Contextual information and insight 20%
Being aware of relationship between method and material.	Using information given during the course in the area of application.	Ability to research methods and materials used by artists
Demonstrating an innovative approach about the interpretation of methods or materials.	Bringing method and material applications together by inquiring, skills and abilities.	Evidences of relationship between information in the area and own application.

After the applications, students were interviewed. Students were asked whether they had problems during verbal and written expression and they were asked to analyze the processes.

## Conclusion

The results according to data obtained from interviews and documents of the research are as follows:

- 80% of students participating in research could not express their thoughts about arts applications in their written statements.
- 80% of students think that verbal expression skills in explaining a concept of arts applications may help the development of written expression skills.
- 70% of students believe that they can write easily in issues which they had made a lot researches or they understand.
- 80% of students like to write research reports and 70% of them said that they like to write in type of experiments (descriptive).
- 90% of students believe in the necessity of writing their artistic process down.
- 90% of students do not believe that especially writing before the writing and verbal works can create positive contribution in artistic processes and they said that their ideas and thoughts have changed after verbal and writing works.
- 90% of students believe that writing skills and artistic creative production show parallelism.
- It was understood that 80% of students do not have a coherent writing experience before the courses.

All works which will be carried out to develop writing skills of fine arts students and contributions that their writing skills may add value to creating process has always been a matter of course open to debate. For example, Nolan explores the relationship of writings about the works of artistic writers with the general of arts in his article in which he examined writing characteristics of artists about their arts. The writer tells that he is interesting in a myopic philosophy of art requiring corrective lenses by writing these articles and criticizes the low profile of the comments of thinks over these kinds of articles.

In summary, as a result, it can be said that experiences of fine arts students participating in the study, in their own works and artistic processes may be believed to affect their creativity processes of ability of presentation in writing in a positive manner.

### **Annex 1 Interview Form -**

Applied before and after the activities.

- Is it necessary to explain your works verbally?
- Is it necessary to explain your works in writing?
- Explain your answers about both two cases with reasons.
- Does verbal expression affect your artistic creating process and how?
- Does written expression affect your artistic creating process and how?
- Did you ever explain your works that you had been carried out before this course verbally? Explain.
- Did you ever explain your works that you had been carried out before this course in writing? Explain.
- Does talking about your works seem hard to you or writing about them? Can you please write the degree of difficulty from one to ten of both two activities?
- What types of writing do you know? Do you have a font type that you feel yourself successful?

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4<sup>th</sup> International Conference on New Horizons in Education

# A study on multiple linear regression analysis

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## Abstract

Regression analysis is a statistical technique for estimating the relationship among variables which have reason and result relation. Main focus of univariate regression is analyse the relationship between a dependent variable and one independent variable and formulates the linear relation equation between dependent and independent variable. Regression models with one dependent variable and more than one independent variables are called multilinear regression. In this study, data for multilinear regression analysis is occur from Sakarya University Education Faculty student's lesson (measurement and evaluation, educational psychology, program development, counseling and instructional techniques) scores and their 2012-KPSS score. Assumptions of multilinear regression analysis- normality, linearity, no extreme values- and missing value analysis were examined. The data that verify the assumptions were analyzed with multiple regression and lessons measurement and evaluation, instructional techniques, counseling, program development and educational psychology were estimate the KPSS respectively.

*Keywords:* Multiple Linear Regression educational sciences, KPSS

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## 1. Introduction

Regression analysis is performed so as to determine the correlations between two or more variables having cause-effect relations, and to make predictions for the topic by using the relation.

Answers are sought in this research to questions such as “are there any relations between dependent and independent variables?”, “if there are any relations, what is the power of the relation?”, “is it possible to make future-oriented predictions regarding the dependent variable?”, and “if certain conditions are controlled, what influences does a special variable or group of variables have over another variable or variables?” (Alpar, 2003).

The regression using one single independent variable is called univariate regression analysis while the analysis using more than one independent variable is called multivariate regression analysis (Tabachnick,1996, Büyüköztürk, 2002). Through univariate regression analysis, the relations between a dependent variable and an independent variable are analysed, and the equation representing the linear relations between the dependent and

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the independent variables is formulated. The regression models with one dependent variable and more than one independent variable, however, is known as multivariate regression analysis (Köksal, 1985; Tabachnick, 1996; Büyüköztürk, 2002).

In multivariate regression analysis, an attempt is made to account for the variation of the independent variables in the dependent variable synchronically (Ünver & Gamgam, 1999). Multivariate regression analysis model is formulated as in the following;

$$y = \beta_0 + \beta_1x_1 + \dots + \beta_nx_n + \varepsilon$$

*y = dependent variable*  
*X<sub>i</sub> = independent variable*  
*β<sub>i</sub> = parameter*  
*ε = error*

The assumptions of multivariate regression analysis are normal distribution, linearity, freedom from extreme values and having no multiple ties between independent variables (Büyüköztürk, 2002).

The sample data used in the research were obtained from the end-of-the-term scores received from the measurement and evaluation, educational psychology, curriculum development, guidance, and teaching methods courses in the fall semester by 240 undergraduate students studying in the departments of Psychological Counselling and Guidance, Turkish Education, and Science Education of the Educational Faculty of Sakarya University in the 2011-2012 academic year as well as from the scores received from the KPSS exam (state employees selection examination) in 2012. Through the multiple linear regression analysis, it was checked whether or not the five independent variables in the standard model were significantly predictive of the KPSS score, which was the dependent variable, according to the ANOVA statistics.

## 2. Method

This is a descriptive study analysing whether or not the five independent variables in the standard model (namely, end-of-the-term scores received from the courses measurement and evaluation, educational psychology, curriculum development, guidance, and teaching methods) were significantly predictive of the KPSS score- the dependent variable- based on the ANOVA statistics.

### 2.1. Research Data

The research data were composed of the end-of-the-term scores received from the measurement and evaluation, educational psychology, curriculum development, guidance, and teaching methods courses in the fall semester by 240 undergraduate students studying in the departments of Psychological Counselling and Guidance, Turkish Education, and Science Education of the Educational Faculty of Sakarya University in the 2011-2012 academic year as well as the scores received from the KPSS exam (state employees selection examination) in 2012.

## 2.2. Data analysis

Firstly, the availability of the lost data was checked in the research through frequency analysis. Then, multivariate normality, linearity, freedom from extreme values, and multi-linear relation- the assumptions of multiple regression analysis- were analysed.

Prior to multivariate normality analyses, univariate normality assumption was analysed for each quantitative variable. In order to do this, the skewness coefficient and kurtosis coefficient, and histogram charts were examined.

For the multivariate linearity assumption, scatter diagram matrix was prepared.

In order to check the unidirectional extreme values, it was checked whether or not the Z scores of the variables were in the  $\pm 3$  range. So as to check the multidirectional extreme values of the data, the Mahanobis distances were used.

So as to see whether or not there were any multiple ties, the simple correlations, variance increase factors (VIFs), tolerance value and the condition index (CI) were examined.

Through the data which was analysed so as to see whether or not they satisfied the assumptions and which were cleared for this purpose, the linear regression analysis was performed.

## 3. Results

Firstly, the data were analysed for convenience for regression analysis. For this purpose, following the missing data analysis, multivariate normality, multivariate linearity, freedom from extreme values, and ties between independent variables were researched, respectively.

For the analysis of the lost data, the data were analysed descriptively, and it was found that there were no missing data. The related findings are shown in Table 1.

Table 1. Frequency Table for Missing Data

	Measureme nt	Edu.psyc.	Teach.Meth.	Guidanc e	Curric.Dev.	KPSS
Being	240	240	240	240	240	240
Missing	0	0	0	0	0	0

Prior to multivariate normality analyses, univariate normality was analysed for all of the quantitative variables. In order to examine the univariate normality assumptions, the skewness coefficient and kurtosis coefficient of the variables were analysed.

Table 2. Descriptive Statistics

	N	Skewness		Kurtosis	
		Statistic	Std. Error	Statistic	Std. Error
Measurement	238	.028	.158	-1.327	.314
Educ.Psych.	238	-.046	.158	-.746	.314
Inst.Methods	238	-.141	.158	-1.258	.314
Guidance	238	.059	.158	-1.396	.314
Curri.Develop.	238	.146	.158	-1.343	.314
KPSS	238	-.053	.158	-.728	.314

According to Table 2, since the skewness coefficients for all the variables are within the acceptable  $\pm 1$  range, the variables may not be said to be skew. An examination of the kurtosis coefficient obtained for the variables in the table shows that the kurtosis coefficients calculated for the variables apart from educational psychology and KPSS are outside the  $\pm 1$  range. In examining the normality premise, skewness values are more important (Büyükoztürk, 2002), and because the kurtosis coefficient does not differ greatly from the normal, this variable may be said to distribute normally. The normality premise of the variables could also be shown by drawing a histogram chart.

For the multivariate normality and linearity assumption, the scatter diagram is examined for each group. Figure 1 shows the scatter diagram matrix for all the groups.

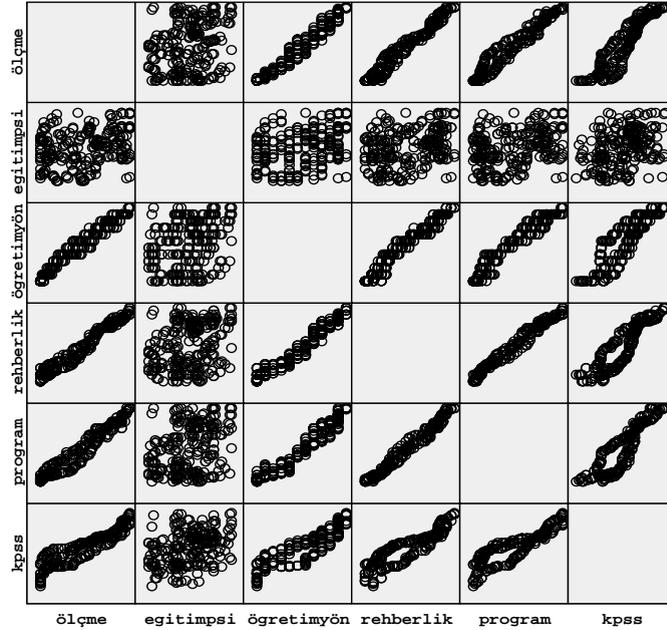


Figure 1. Scatter Diagram Matrix

On examining the scatter diagrams in Figure 1, it may be said that the diagrams are almost elliptic in shape.

Having examined the data so as to check the multidirectional extreme values by using the Mahanobis distances (for  $df=4$ ,  $p=0.01$ ,  $\text{Chi-square}= 13.2767$ ), person 31 and 21 were excluded from the analysis.

So as to see whether or not there were any multiple relations between variables, the simple correlations, variance increase factors (VIFs), tolerance value and the condition index (CI) were examined. The findings concerning these values are shown in Table 3 and Table 4.

Table 3. Multiple Relations Coefficients

	<i>B</i>	<i>Std. Error</i>	<i>Beta</i>	<i>t</i>	<i>p</i>	<i>Zero-order</i>	<i>Partial</i>	<i>Part</i>	<i>Tolerance</i>	<i>VIF</i>
<i>Constant</i>	163.350	25.580		6.386	.000					
<i>Curr.Dev.</i>	6.606	1.471	1.642	4.491	.000	-.171	.283	.254	.124	1.821
<i>Measure</i>	3.449	1.291	.889	2.671	.008	-.210	.173	.151	.229	4.678
<i>Educ.Psy</i>	1.174	.315	.226	3.730	.000	.187	.238	.211	.872	1.147
<i>Inst.Meth.</i>	-5.915	1.167	-1.479	-5.069	.000	-.263	-.316	-.287	.138	6.644
<i>Guidance</i>	-5.641	1.870	-1.340	-3.016	.003	-.219	-.194	-.171	.116	6.780

When the simple correlations are examined, it is seen that none of the correlations coefficients are higher than .80. This case points that there is not any multiple relations between variables. If variance increase factors (VIF) equal or higher than 10, there is a multiple relations between variables and when looking at the Table 3, it can be seen that VIF values for all variables are smaller than 10. In addition to these, if tolerance values are higher than .10, no multiple relations between variables is decided. When examining the Table 3, all tolerance values are higher than .10. In Table 4, it can be seen condition indexes (CI).

Table 4. Multiple Relations CI Values

Model	Factors	Eigenvalues	Condition Index	Variance Ratios					
				Constant	Curr. Dev.	Meas.	Edu.Psy.	Ins.Meth.	Guidance
1	1	5.912	1.000	.00	.00	.00	.00	.00	.00
	2	.066	5.457	.10	.00	.00	.18	.00	.00
	3	.018	8.293	.72	.00	.00	.78	.00	.00
	4	.002	12.053	.01	.26	.10	.02	.32	.04
	5	.001	19.992	.02	.03	.80	.00	.67	.00

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6	.001	22.271	.15	.70	.10	.02	.01	.96
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In cases when the CI is bigger than 30, it is regarded that there are multiple relations between variables. Yet, as is clear from Table 4, all of the CI values calculated are smaller than 30. Thus, it was concluded that there were no multiple relations between variables.

With the data which were analysed whether or not they satisfied the assumptions and which were cleared accordingly, the regression analysis was done.

The findings obtained by doing the multiple linear regression analysis concerning whether or not the five independent variables in the standard model predicted significantly the KPSS score - the dependent variable- according to the ANOVA statistics, and the degree of emerging model's predicting the dependent variable in consequence of the standard regression, and the degree of the model's explaining the variance in the dependent variable are shown in Table 5.

Table 5. Multiple Linear Regression Analysis Results Related to KPSS Scores

Variables	B	SH <sub>B</sub>	$\beta$	T	p	Paired-r	Partial
Constant	9.811	2.261	-	4.340	.000	-	-
Measure.	1.157	.114	1.421	10.136	.000	.924	.554
Edu.Psyc.	.090	.028	.082	3.230	.001	.348	.207
Ins.Meth.	-.339	.103	-.404	-3.291	.001	.884	-.211
Guidance	-.195	.165	-.221	-1.181	.239	.894	-.077
Curri.De.	.078	.130	.093	.604	.547	.891	.040
		R=0.932	R <sup>2</sup> =0.87	F <sub>(5,232)</sub> =306.534	p= 0.00		

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An examination of Table 5 makes it clear that the five independent variables in the standard model are significantly predictive of the dependent variable KPSS score according to the ANOVA statistics [F(5, 232)= 306.534, p< .05] . In consequence of the standard regression analysis, the model's degree of predicting the dependent variable was found to be R= .932. The model's degree of explaining the variance in the dependent

variable was  $R^2=0.87$ . Looking at these coefficients, it may be said that the model predicts the dependent variable very well.

The absolute value of  $\beta$  (Beta) in Table 5 indicates the order of importance of the independent variables. The variable with the highest  $\beta$  value is relatively most important independent variable. On examining the contributions made by the independent variables in the model to the model, it was found that the end-of-the-term-scores received from the measurement and evaluation course made the biggest contribution with the value of ( $\beta= 1.421$ ). It was followed by the scores received from teaching methods, guidance, curriculum development, and educational psychology courses, respectively. Although the contributions made by the scores received from guidance and from curriculum development were significant, they entered the model due to the property of the regression analysis, and they were found to make the smallest contributions to the model with their determination coefficients of .221 and .093, respectively.

Based on the regression analysis results, the regression equation was obtained as it is shown below:

$$\text{KPSS} = 9.811 + 1.157 \text{ Measurement} + 0.090 \text{ Educational Psychology} - 0.339 \text{ Teaching Methods} - 0.195 \text{ Guidance} + 0.078 \text{ Curriculum Development.}$$

#### 4. Conclusions

This study analyses whether or not the five independent variables in the standard model (namely, end-of-the-term scores received from the courses measurement and evaluation, educational psychology, curriculum development, guidance, and teaching methods) were significantly predictive of the KPSS score, the dependent variable, based on the ANOVA statistics. The primary aim of the research is to exemplify the multiple linear regression analysis with its stages.

For our purposes, the end-of-the-term scores received in the measurement and evaluation, educational psychology, curriculum development, guidance, and teaching methods courses in the fall semester by 240 undergraduate students studying in the departments of Psychological Counselling and Guidance, Turkish Education, and Science Education of the Educational Faculty of Sakarya University in the 2011-2012 academic year were analysed for the power of predicting the KPSS scores. Firstly, the assumptions necessary for the multiple linear regression analysis were examined in the research, and the regression analysis was performed with the data which were thought to satisfy the assumptions. The standard model's degree of predicting the dependent model was found to be  $R=0.932$ . The model's degree of explaining the variance in the dependent variable was  $R^2=0.87$ . Looking at these coefficients, it may be said that the model predicts the dependent variable very well. On examining the contributions made by the independent variables in the model to the model, it was found that the end-of-the-term-scores received from the measurement and evaluation courses made the biggest contribution with the value of ( $\beta= 1.421$ ); which is followed by the scores received from teaching methods, guidance, curriculum development, and educational psychology courses, respectively.

In consequence, it might be recommended that similar research studies concerning determining the variables predictive of the scores received in KPSS - which is a hurdle that prospective teachers should overcome before starting their career after graduation from educational faculties – should be conducted with different variables and with larger samples.

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# A study on the consistency between university entrance exam (ÖSS) and questions published in examinations at schools on the subject of determinant

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## Abstract

In this research, whether the questions in University Entrance Exam (OSS) and the questions asked to students during the exams in schools coincide or not has been investigated. This study is a qualitative one. Samples of the research are 55 students from 3 different classrooms in 11<sup>th</sup> grade, in the 2011-2012 education years in Mahmutbey High school. The data of the research has been gathered by application of the determinant questions of the previous years' University Entrance Exam (OSS) and the course books to the students. This study shows the performance of the students during the exams. Research also covers the accordance of determinant questions in the previous University Entrance Exam (OSS) and the exercises in the course books which has the approval of Ministry of Education (MEB). Students are asked to answer 10 questions and the data acquired has been analyzed by researchers. As a result of the survey, it has been seen that the students were more comfortable while answering the multiple choice questions and had difficulties with the classic questions. It has been seen that the questions in the MEB approved books and the OSS questions of previous years are consistent. Although the questions are consistent, the reasons why the students are more successful in the multiple choice questions rather than the classical questions have been investigated. Especially in the written exam, it has been seen that students had problems with the questions where they had to calculate the determinant, having the knowledge of logarithm and triangle rules. It has been detected that the majority of the students were unable to answer these two questions.

*Keywords:* Concept of determinant, Student Selection Examination (ÖSS), The Ministry of National Education (MEB) books, Mathematics education

## 1. Introduction

When the secondary school's studies on the linear algebra has been analyzed, the Ercerman (2008), the majority of the student's knowledge on the linear algebra, in the context of the conceptual and procedural information is being, inconsistent, incomplete, and that are the complementing information and has determined that the operational information has the weight of. However, the Oktac (2008), did not see enough importance on the linear algebra topics during the secondary education by comparison with the other areas of the mathematics and stating that the processed is shorter and less content of those are being representing (Aydin, Delice, Kardes 2011). Linear algebra is an abstract field of mathematics which was used to introduce MA and PhD levels in Turkish Universities until 1960. After that it has been lectured at undergraduate level. The importance of linear algebra topics can be discussed in two dimensions. The first one is the applications of linear algebra not only to mathematic departments but also to other departments of faculties of arts and science, engineering faculties and

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even social sciences. And the second one is creating a base for abstract lectures which is introduced in the sophomore year. Since Linear algebra course is one of the most important subjects of mathematics, which are the basis of abstract algebra, students are required to learn them at a higher level (Ozdogan & Aygor, 2011). The objective of the Linear Algebra course is to enable the students to create the mathematical proof in their minds. The Student's intuitive dimensions on the Linear Algebra are to explain the mathematical relationship between the cause and the effect. These should be given in the first half or within the two-thirds of the courses. It is also important, in terms of similarity of movements of mathematicians before the 1850's. (Uhlir, 2002). As the use of linear algebra have a wide field of the application and the mathematics education employees have been effective to make a number of studies in this area. However, as almost no work has been done on the educational aspect of these courses in our country, the textbooks of which was written in Turkish or been translated to Turkish are that either very few or inadequate. The studies in Linear Algebra field are; a) The historical researches to develop new programs, and to reveal some of the reasons of the student's learning difficulties, b) Aiming at balancing the use of geometry in the linear algebra and to make researches in the cognitive flexibility, on the issues such as the formal structure of the linear algebra, c) To be classified as the evaluation of the teaching of the Linear Algebra by the software programs (Aydin, 2009). The basic causes of the students who are living the learning disabilities in the linear algebra, is that the students are not thinking in abstract, enough even though the linear algebra has an abstract form, the linear algebra has an axiomatic character and the students has been listed in the poor knowledge math basis "(Tatar, 2006). The conceptual exercises and the introduction of the types of the exploratory concepts enable the understanding of the linear algebra in the abstract form. The elaboration of this course is to teach on the basic concepts, rather than the concrete examples and by this course the Linear Algebra is quite easy to build a relationship basis. The Linear algebra has a powerful form of the self-expression, and is open to all the students; the need to be done via the algebra teachers is to guide their students in transfers as it was guided to themselves. However, a lively and accessible approach makes this course vivid and useful. This new approach that has been brought by Uhlir to the teaching field of the linear algebra has been seen in the linear algebra textbook that presents itself as wrote (Uhlir, 2002) "(Aydin, 2009).

Determinants are a major issue in the High school 11<sup>th</sup> class math program in Turkey. There are difficulties experienced in learning and teaching of this subject. It is observed that determinant subject is handled very abstract in schools and some learning difficulties appear caused of this situation. Harel focused on the reasons of learning difficulties of students about basic concepts of linear algebra and how a way should be followed to resolve this situation, in a research he made in 1989. It is expressed that's the first reason of these difficulties is that the terms are abstract, the second is that application areas are unusual for students and the third is that most of the students don't know proof methods yet.

At the various levels of the education, in our country, for the students who wish to pursue their education in a further education institution, an examination is carried out with the purpose of the selection and placement by the Center. These exams are made to measure of the student's achievement, ability, or the level of readiness expected and for this purpose a measuring is often carried out by some quality selection exams. The vast majority of tests is done by the Student Selection and Placement Center (OSYM) in Turkey, (Deniz & Kellecioglu 2005). Basturk, in his work of 2011 "Negative reflections of preparation process to the university entrance exam on students' mathematics learning" named work is stating that for the students, the University Entrance Examinations are held either at the end of the high school or enter the examinations when they graduate. However, due to the existing race, the exam preparation starts within the lower grades. In this way and without having a good math infrastructure, the students are facing with many practical ways. Therefore, the high school teachers, should not rush in making short and quick ones, in particular, and without fully adopted of the long method by the students, had been proposed.

The written exams, problem solving and organizing the problems, to produce new and original ideas and monitoring the information and the assessment feedback, and to analysis the ideas for measuring behavior and the alike, it is considered to be the most appropriate test type (Tan and Erdogan, 2004). The teachers and the

students are accustomed to this type of exams and are used in all levels of educations starting from the primary school levels. The respondent which is being applied to this question of the multiple-choice tests should read the expected questions carefully and to decide on the correct answer and do reflect accordingly by tagging the option. There is no freedom of answering multiple-choice tests. The answers are limited by the options (Ozdemir, 2008).

The textbook, "is either a selected book or had been prepared in relation to the teaching of a course" or "Specifically measured and reviewed according to a particular school, class and course and been recommended as a basic reference book for the students and the teachers "(Oguzkan, 1993, 83). A textbook includes the tested and verified information (Kula, 1988, 98). As can be seen, the teaching textbooks has significant effects on what the students can learn and what do teachers may teach (Semerci, 2004)

## 2. Research

The samples of this study, during the academic year of 2011-2012, has been included the students of the Mahmutbey High School and as of 55 students from various three classes of the eleventh grades. In this study and on the determinant subjects, the questions used in school exams and in the university entrance exams overlapping had been investigated. To do this, under the supervision of a math educator's and in accordance with the opinions of a high school math teacher's, 5 multiple-choice questions and five classical problems which were in question of the 11th year's math textbooks of the National Education Grade and also were out in the OSS exams, a total of 10 questions, were asked to the students to answer. In the process of the preparing for the exam, firstly in relating to the determinants and on the gains of which were in the math programs and the mathematical textbooks, were studied. The reason of the application of the formal examination was; in what matters the students were in the lack of knowledge and to be able to observe where they were in the errors. Because the students were used to the techniques of the tests and although the answer on how to do was nameless, they can access to the correct answer by approaching to the answer choices. The exam's time were set at 50 minutes.

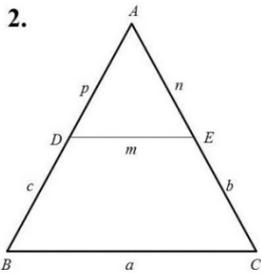
### 2.1. Problem used in research

In order to obtain the data of this study, the following questions were provided for the students. The examination had been prepared, in order to measure the students' knowledge about the determinants and therefore a five multiple-choice questions and the classical five questions were asked as a consist of a total of 10 questions. The reason for the formation of the multiple-choice questions and as well as of the classics; to become able to observe that on what type of exams, the students were more successful, and on what matters they were in the lack of the information and where their errors were.

#### 2.1.1. Multiple-choice questions

1. Determine the value of  $a$  for which the matrix  $\begin{bmatrix} 1 & 3 & 5 \\ 3 & 0 & 7 \\ 1 & 3 & a-9 \end{bmatrix}$  is not invertible.

- A) 15    B) 14    C) 11    D) 6    E) 5



2. According to figure at the left,  
 $|DE| \parallel |BC|$  and  
 $a, b, c$  are the lengths of  $ABC$ 's sides and  $m, n, p$  are the lengths of  $ADE$ 's sides.

Evaluate the determinants of  $\begin{vmatrix} 1 & 2 & 3 \\ m & n & p \\ a & b & c \end{vmatrix}$

- A) 6 B) 3 C) 2 D) 1 E) 0

3. Evaluate the determinants of  $\begin{vmatrix} 99876 & 99877 \\ 99874 & 99875 \end{vmatrix}$

- A)  $(99870)^2$  B) 99872 C) 99882 D) 4 E) 2

4. Find the slope of line  $\begin{vmatrix} x & y & -3 \\ 2 & 1 & 0 \\ -3 & -2 & -1 \end{vmatrix} = 5$

- A) 1 B)  $\frac{1}{2}$  C) 2 D)  $\frac{1}{3}$  E) 3

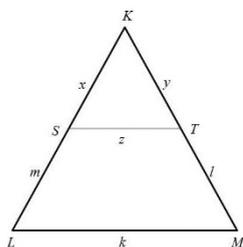
5. Evaluate the determinants of  $\begin{vmatrix} \log_2 8 & \log_4 5 \\ \log_5 4 & 1/\log_{27} 3 \end{vmatrix}$

- A) 10 B) 9 C) 8 D) 6 E) 5

2.1.2 Classical questions

1. Determine the value of  $k$  for which the matrix  $\begin{vmatrix} 1 & 2 & -3 \\ 1 & -3 & -1 \\ -1 & 3 & k+2 \end{vmatrix}$  is not invertible.

2.



According to figure at the left,

$$|ST| // |LM| \text{ and}$$

$k, l, m$  are the length of  $KLM$ 's sides and  $x, y, z$  are the length of  $KST$ 's sides.

Evaluate the determinants of 
$$\begin{vmatrix} 3 & x & m \\ -2 & y & l \\ 1 & z & k \end{vmatrix}$$

3. Evaluate the determinants of 
$$\begin{vmatrix} 3726 & 3727 \\ 3724 & 3725 \end{vmatrix}$$

4. Find the slope of line 
$$\begin{vmatrix} x & y & 1 \\ 2 & -3 & 5 \\ -1 & 2 & 0 \end{vmatrix} = 3$$

5. Evaluate the determinants of 
$$\begin{vmatrix} \log_5 6 & \log_3 9 \\ \log_4 16 & \log_6 5 \end{vmatrix}$$

## 2. Findings

The findings of the study were evaluated as qualitatively. This research is composed of two types of questions, as the classic and testing. A similar sort of questions has been selected for both of the question types. The objective of this is to measure in which way the students were more successful in the exam. Depending on the option chosen by the student, the test question would be either as a right or wrong answer. Also, the element of the luck, plays a role in the test method exams. In the classical tests, while the student solves the question, may start from the right but can result to improper handling or may stop in the middle of the process, or may solve the question correctly. In the classical tests, it can be seen more comfortable that which of the issues were known and what issues had not been discovered yet, by the students. Thus, by comparing of these two exams, it can easily be discovered that either the students really learned the subject or not. On the basis of the class, the student's answers given to these classical questions are; in the form of the true, false, empty and incomplete solutions. However, the answers to the test questions are grouped as true, false and empty and transformed into the form of the solution table. And as acknowledged from the following tables, each of the three class' students was more successful in the test questions.

**Table1.** According to the classes, the number of true, incomplete, blank and false answers in classical questions

Questions	Class A			Class B			Class C		
	T	IC	F	T	IC	F	T	IC	F
1	30	7	11	32	5	10	20	11	8
2	5	10	17	7	8	25	2	6	20
3	25	9	16	28	10	7	18	10	13
4	8	10	25	9	11	25	5	4	25
5	6	8	22	8	10	20	4	4	18

**Table 2.** According to the classes, the number of true, false and blank answers in multiple-choice questions:

Questions	Class A			Class B			Class C		
	T	F	B	T	F	B	T	F	B
1	40	10	5	43	6	6	35	20	-
2	20	29	6	22	24	9	10	27	18
3	42	10	3	45	8	2	25	14	16
4	23	25	7	25	22	8	11	30	14
5	21	25	9	26	20	9	8	25	22

As can be seen from the above tables, all of the students participating in the survey of the classical questions were being forced during to solve the 2nd, 4th and the 5th questions. The reasons that they were being forced were the determinant question issues were contained the logarithm and the geometry.



question by the wrong way. A number of students could not imagine to seek the benefit from the similarity of triangles and had tried to directly calculate the value of the determinant. This question that was prepared as the subject of geometry and the determinant as had been mixed and the difficulty was, in bringing together of these two subjects, were for the students.

Answer of Student C for 3<sup>rd</sup> question:

3.  $\begin{vmatrix} a & b \\ 3726 & 3727 \\ c & d \\ 3724 & 3725 \end{vmatrix}$  determinantının değeri nedir?

$$ad - cb = (3726 \cdot 3725 - 3727 \cdot 3724)$$

$$= \dots$$

This question can be solved very easily by using the properties of the determinant. The students calculated the determinant directly, because they did not know this feature. Some of the students made the same mistake as well as the student C's paper that the figures were larger and either could not do the multiplication and also could not find the result.

Answer of Student D for 4<sup>th</sup> question:

4.  $\begin{vmatrix} x & y & 1 \\ 2 & -3 & 5 \\ -1 & 2 & 0 \end{vmatrix} = 3$  doğrusunun eğimini bulunuz.

$$x - y = 1$$

$$2x - 3y = 5$$

$$-5y + 4 - 3 - 10x$$

$$-10x - 5y + 1$$

The student D had been solved the determinant correctly, but he cannot find the slope, because he has a lack of knowledge geometry. Most of the students in this question were unable to make a combination of these two issues and had responded the question in wrong way.

Answer of Student E for 5<sup>th</sup> question:

5.  $\begin{vmatrix} \log_2 6 & \log_2 9 \\ \log_4 16 & \log_6 5 \end{vmatrix}$  değeri nedir?

$$\begin{vmatrix} \log_2 6 & \log_3 3^2 \\ \log_4 16 & \log_6 5 \end{vmatrix} = \begin{vmatrix} \log_2 6 & 2\log_3 3 \\ 2\log_4 16 & \log_6 5 \end{vmatrix}$$

$$= \begin{vmatrix} \log_2 6 & 2 \\ 2 & \log_6 5 \end{vmatrix} =$$

The student E was also inconclusive, because he did not know the rules of logarithms very well. As it was created by combining the two issues in the question, and again, some of the students had been good knowledge on the determinants but not in the logarithm and could not solve any problems related to the logarithm in the question correctly. Another part of the students, even though they were aware on the subject of the logarithms, of whom that they do not know on the subject of the determinant had been solved the question in the wrong way.

#### 4. Conclusions and Recommendations

According to the research that had been done by Başturk in 2011, from the primary education to the highest level, almost all the entrance examinations are being done by the multiple-choice questions, in our country. The quickly evaluation of these examinations which were done by these questions and especially in cases where the number of candidates are large, is a specialty sought. At the same time to be objective evaluations on these examinations had brought the feeling of confidence by the community (Baker, 2001; Dillon, 2004). By the effects of the entrance examinations and at the every stage of the primary and the secondary educations, these multiple-choice tests are being used in the courses and at the assessments. On the mathematics teaching, the student's expressions to be given in writing and with the reasons, has an important place in learning. Unfortunately, it is impossible to provide this via the multiple-choice tests. By these types of the questions, the student's ways of thinking and the ways of solutions cannot be valuated.

Durmuş (2004), in his study, had been determined that if a subject's question is not being asked during the OSS examinations or the request to be just a little question, has negative impact on the motivation of the students and that also raises the index of the difficulty. Tall, (1993) in order to identify the learning difficulties in the mathematics had remarked that there were some different studies going on and for the reasons of the difficulties in these studies that had been referred to the "Lack of the knowledge on the basic mathematics" and "Not being able to compile the verbal expressions, to the mathematical symbols" and "The lack of knowledge in Algebra, geometry and trigonometry to connect". Similarly, Kacar and Tuna (2005) has expressed that the students who are coming to the universities in short knowledge would be negatively affected in the implementations of the programs and would live difficulties (Gurbuz, Toprak, Yapici, Dogan, 2011).

Yenilmez and Cimen (2012), in their study's subject had stated that the students are not focusing on the understanding of the concepts and learning, instead their efforts were focusing on the achievement of the examinations. If these difficult issues weight to be increased in the university entrance examinations than the interest and the motivation of students will be increased on those issues too.

When our examinations are considered it is concluded that the students are more successful in the test examinations than the conventional tests. The textbooks, although they had been created that in both, for the university entrance examinations and conceptual figure so as to permit the students to be more successful in the test examinations is intended towards the education with to be in line of the university entrance examinations. As can be seen from the tables, the students that they have failed in the classical questions and in which the questions were particularly by low success of the 2, 4 and 5 questions. Within the process of the determinant, in the second and fourth questions where the concept of the geometry has passed were difficult for the students. The students also needed information on the geometry, in order to solve the question. Although knowledge on the determinants had been for some students, but due to the lack of the knowledge of geometry and in part, while those who have knowledge of the geometry, but in the lack of knowledge on the determinants had been caused for them not being able to solve the question of the determinants. On the fifth question, where in the determinant process occurrence were, in the concept of the logarithms had become difficult to the students. The students also needed knowledge about logarithms to solve the question. In this question, some of the students could not solve the question due to the shortcomings of the determinant knowledge and some of the other students were on the

shortcomings of the logarithms information. In the test questions of the 2, 4 and 5 as of the classical examination questions and although had been in the same type of question, the achievement of the students were higher than the test examinations. The reason of this is; some of the student's to reach to the correct answer by using the answering choices and some of the students do remember the path of the solution by seeing the answers and some of the students, even without knowing the correct answer, are marking the correct answer by the chance of.

In this study; within the types of the questions that had been asked by combining the two issues, if the students have a lack of knowledge, the questions were remained unsolved. These types of questions had proved that can be solved easily if the student is fully equipped. The problems had been faced by the students were the processing error, being closer the logic of the test in solving, and the lack of information and also been observed as misconceptions. The causes of the students to fail had been recognized as they are preparing themselves for the multiple-choice examinations and also they are not used to solve the classical method questions and therefore they do more errors.

The multiple-choice examinations, although is applied as the university entrance examination, this examination cannot provide the information's retention. At the same time the student's ways of thinking and the preferred solutions cannot be seen by this type of examinations. Therefore, we suggest to the teachers that, not only to prefer to focus on the OSS examination tests and regarding to the retention of the information, also to practice on the conventional examinations. On the mathematics education and while the teachers are teaching, to use a long way to ensure that the students may understand the topics, instead of memorizing the rules and make them to be aware of on why and how it is by standing on the questions and ask to the students in the written examinations that the answer of the questions to be explained and that is important regarding to the retention of the information.

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# A study on the multiple intelligences of kindergarteners from different socioeconomic backgrounds

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## Abstract

This study was designed to identify the effects of gender, mother's and father's educational level on the intelligences of kindergarteners from different socioeconomic backgrounds. The population of the study included six-year-old kindergarteners from independent kindergartens and the preschool classes of elementary schools attended by children from different socioeconomic backgrounds in Viranşehir, Şanlıurfa. The study sample comprised a total of 208 six-year-old children attending a kindergarten and three elementary schools which were presumed to represent the lower, middle and upper socioeconomic status and selected randomly from among the schools in the population. Data were collected by using a Demographic Information Form and the Teele Inventory of Multiple Intelligences (TIMI). These data were by using One-Way and Two-Way Analysis of Variance (ANOVA). The results showed that socioeconomic background create a difference in children's multiple intelligences.

*Keywords:* Preschool education, kindergarten, socioeconomic background, multiple intelligences;

## 1. Introduction

Ways to be more successful in education have always been discussed by scientists. Studies on how the brain works have shed light on meaningful and permanent learning. Early studies focused on the extent to which brain functions can be used and on measuring intelligence (Köroğlu and Yeşildere, 2004).

Intelligence was long thought to include one single factor. However, nowadays it is widely accepted that it includes multiple cognitive skills and abilities. Thus the belief that multiple abilities cannot be explained by one single construct (Çakan, 2002). In addition, as a result of the developments in education and psychology, the view that classical tests are not enough to evaluate children and that their potential also started to gain ground.

The Multiple Intelligences Theory, which emerged under these circumstances, holds an important place in education in terms of pinpointing what individuals are able to do (Abacı and Baran, 2007; Köroğlu and Yeşildere, 2004). This theory opposes an IQ-based approach to human intelligence, emphasizes that intelligence is multi-dimensional, asserts that individuals have different learning styles, puts the individual in the center, and pinpoints the importance of individual differences (Köksal, 2006; Ergül et.al., 2007). This theory centralizes individual learning styles, interests, abilities and inclinations (Vural, 2004).

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The Multiple Intelligences Theory first appeared in 1983 in Howard Gardner's book titled "Frame of Mind" outlining seven different intelligences (Amerson, 2006; Çuhadar, 2006). According to Gardner, different kinds of intelligences are effective tools people use to live, learn, solve problems, and be humans. Although intelligence is shown to have different dimensions, these dimensions have similar structures and traits (Mendi et. al., 2004).

According to Gardner, human beings genetically have all of these intelligences. Research findings show that differences in children's intelligences appear not only due to hereditary and biological factors but also due to their nourishment, and environmental and cultural factors (Radin, 2008).

Environmental factors cover the environment within which the child lives. From the moment a child is born, he starts gaining experience within his society and is exposed to the opportunities presented by the sociocultural environment and his family (Üstün, 2004). In order to enhance children's existing potential, environments to meet their interests and needs. Their environments should be enriched with various fields of experience.

Family, like in other developmental areas, has a crucial and determining role in a child's mental development. Therefore, the role of a kindergartener's home environment cannot be overlooked. Lack of materials at home due to the family's low socioeconomic status (not being able to buy musical instruments, for instance), the quality of the place lived in (the possibility of having high naturalistic intelligence for children living in villages), the family's effect on an individual's choices (forcing a child who wants to become a painter to instead become a doctor) and the structure within the family (nuclear or extended family) may all have an effect on an individual's fields of intelligence (Saban, 2004).

Especially in the first five months of a baby's life, the capacity to learn increases quickly owing to the fast development of the brain and the nervous system, thus making environmental stimuli crucial for cognitive development (Kağıtçıbaşı, Bekman and Sunar, 1993, p.29). Rather than heredity, the experiences that the individual gains later in life play a crucial role for the brain to execute these functions. Therefore, it is of utmost importance to present children with an environment full of rich stimuli during pre- and elementary school. The more objects (stimuli) encountered, the more connections are formed between brain cells. These form the basis of learning in adulthood (Gürkan, 2003). Therefore, teachers should take into account individual differences in learning and organize the learning environment accordingly (Ülgen, 1995).

The Multiple Intelligences Theory made individualized instruction and life knowledge and skills important. In order to fulfil the duties demanded by the society, the individual has to use more than one kind of intelligence at any given time. That is why it is important to improve different types of intelligence. Gardner also emphasizes the need to consider the use of multiple intelligences as an achievement criterion (Sevinç, 2003).

It is believed that a high-quality education advances children's potential for learning and that there is a relationship between potential for learning and intelligence. Similar to adults, children also have a certain level of intelligence that can be increased via education. It is asserted that when learning environments are organized according to this fact, it greatly contributes to child development.

### *1.1. Significance of the Study*

Pre-school is the most important period in children's lives. In this period, children go through important developmental stages and their intelligence develops the fastest. The Multiple Intelligences Theory is an important approach in revealing the child's existing potential and in determining the dominant and non-dominant fields of intelligence. Determining children's intelligences at an early age is important for families and teachers in terms of providing healthy and correct guidance and counseling. The socioeconomic status of the family may also

have significance in achieving guidance and counselling. Therefore, it is essential to investigate the intelligences of kindergarteners from different socioeconomic backgrounds.

This study was conducted in order to investigate the multiple intelligences of kindergarteners from different socioeconomic backgrounds in relation to gender, mother's and father's educational level, and the common effect of the variables.

## **2. Method**

### *2.1. Study Group*

The study group comprised 6-year-old children attending kindergartens affiliated with the Ministry of Education during the 2011-2012 school year in Viranşehir, Şanlıurfa. The study group was chosen as a result of interviews carried out with the Directorate of District National Education, school principals and teachers. The interviews showed the socioeconomic status of schools. Nine preschool classes from three primary schools and one kindergarten were selected by sampling. The socioeconomic status of families was decided by looking at their salary brackets. Those with a monthly income of up to 1,000 TL (~500€) were placed in the lower SEL, those between 1,000(~500€) - 2,000 TL (~1000€) in the middle SEL, and those above 2,000 TL (~1000€) in the high SEL. As a result, 50 children from lower SEL, 57 from middle SEL, and 101 from higher SEL, 208 children in total, were chosen for the sample. Of those children in the study group, 99 (47.60%) were girls and 109 (52.40%) were boys.

Among the mothers of children in the study group, 65.37% were primary school graduates, 14.94% were secondary school graduates, 11.05% were high school graduates, and 11.05% were higher education graduates. Among the fathers, 45.70% were primary school graduates, 9.12% were secondary school graduates, 26.91% were high school graduates, and 18.26% were higher education graduates.

### *2.2. Data Collection tools*

In this study, data were collected through the Teele Inventory of Multiple Intelligences Test - TIMI). The Teele Inventory of Multiple Intelligences was specifically designed to examine the dominant intelligences of students in all grades. The TIMI is a forced-choice pictorial inventory with 56 numbered pictures of panda bears representing characteristics of each of the seven intelligences: linguistic, logical-mathematical, spatial, musical, bodily-kinesthetic, intrapersonal and interpersonal. It provides students with 28 opportunities to make selections between two alternatives. The different intelligences are matched with one another and students have the chance to select each of the seven intelligences eight different times in the inventory. Students are asked to select one of the two choices that they feel is the most like them – there are no right or wrong answers in this inventory.

Each picture selected by the students represents a score for the intelligence associated with that picture and the answer sheets are coded accordingly. The intelligence or intelligences that are more frequently selected yield the dominant intelligence of students. The answer sheet enables the student and teacher to determine most dominant intelligences as indicated by the highest scores. The test was used to investigate whether there is a difference between children's intelligence types, socioeconomic status, gender, and mother and father's educational level.

Reliability and validity studies of the TIMI were carried out between the years 1992-1993 by Teele. It was investigated whether the pictures used for validity represented the chosen intelligence, and the TIMI emerged as a valid inventory. In the reliability study carried out by Teele, it was found that TIMI's fields of intelligence were significantly different at the level .01. The validity studies carried out in Turkey by Oklan Elibol (2000),

Göğebakan (2003), Terzioğlu (2005) and Özdemir (2006) also revealed that the inventory was valid. In the reliability study by Özdemir (2006) the relationship between test-retest was found to be significant at the level 0.01 and the test was concluded to be reliable.

In addition to the TIMI, a 10-item “Demographic Information Form” developed by the researchers was also used in order to collect data about the children and their families.

### 2.3. Data Collection Method and Procedures

The data were collected by the researchers in Viranşehir, Şanlıurfa during the first term of the 2011-2012 school year. Before the test was administered, the researchers met and had a conversation with the children. The test was administered by the researchers in a corner of the classroom and the answers were coded on the answer sheets. The process lasted approximately 20-25 minutes for each child. The Demographic Information Form was filled out the same day by interviewing the parents at the end of the school day.

### 2.4. Statistical Analyses

One way and two way analysis of variance (ANOVA) was used in the study to determine whether the scores kindergarteners obtained from the Multiple Intelligence Inventory varied according to the variables chosen.

## 3. Findings

Table 1 represents the summary of intelligences for the children in the study that show significant differences in terms of socioeconomic status, gender, and mother and father’s educational level. Table 1 also shows the common effects of the relationship between socioeconomic status and the variables on children’s multiple intelligences.

Table 1: ANOVA results of TIMI scores in terms of children’s socioeconomic status, gender, mother and father’s educational level, which show significant difference according to multiple intelligences (Summary Table)

Intelligence Types	SES	Gender	SES x Gender	Mother’s Education Level	SES x Mother’s Educational Level	Father’s Educational Level	SES x Father’s Educational level
Linguistic	F= 1.42 p= 0.24	F= 0.04 p= 0.84	F= 1.34 p= 0.26	F= 0.26 p= 0.84	F= 0.65 p= 0.57	F= 1.20 p= 0.31	F= 0.42 p= 0.73
Logical- mathematical	F= 3.01 p= 0.05	F= 2.12 p= 0.15	F= 1.14 p= 0.32	F= 0.68 p= 0.56	F= 2.24 p= 0.08	F= 0.86 p= 0.46	F= 0.61 p= 0.60
Musical-rhythmic	F= 5.14 p= 0.00*	F= 0.61 p= 0.44	F= 1.55 p= 0.22	F= 1.03 p= 0.37	F= 0.01 p= 0.99	F= 0.34 p= 0.79	F= 0.21 p= 0.88
	In favour of middle SES						
Bodily- kinaesthetic	F= 2.41 p= 0.09	F= 1.32 p= 0.25	F= 2.51 p= 0.08	F= 0.70 p= 0.55	F= 1.12 p= 0.33	F= 0.55 p= 0.64	F= 0.57 p= 0.63
Intrapersonal- social	F= 3.99 p= 0.02*	F= 0.49 p= 0.48	F= 0.45 p= 0.64	F= 0.52 p= 0.66	F= 1.10 p= 0.35	F= 0.14 p= 0.93	F= 0.13 p= 0.93
	In favour of Low SES						
Interpersonal	F= 4.71 p= 0.23	F= 0.07 p= 0.79	F= 2.73 p= 0.07	F= 1.51 p= 0.21	F= 1.69 p= 0.16	F= 1.08 p= 0.35	F= 1.44 p= 0.23
Spatial	F= 0.92 p= 0.39	F= 2.00 p= 0.16	F= 0.00 p= 1.00	F= 0.09 p= 0.96	F= 0.55 p= 0.64	F= 0.60 p= 0.61	F= 0.79 p= 0.49

p<0.05\*

As can be seen in Table 1, it was found that children's TIMI scores show significant difference in terms of socioeconomic status in musical-rhythmic intelligence and intrapersonal-social intelligence ( $F=5.14$ ,  $p=0.00$ ,  $p<0.05$ ;  $F=3.99$ ,  $p=0.02$ ,  $p<0.05$ ). In other words, children's multiple intelligences differ significantly according to socioeconomic status in two intelligences. In other intelligences, a significant difference was not observed in terms of socioeconomic status. The results of the Scheffe test, which was used in order to find the groups among which the difference existed, revealed that the average musical-rhythmic intelligence scores of children in middle socioeconomic status ( $x=4.24$ ) was higher than children in low socioeconomic status ( $x=3.26$ ). In addition, children from low socioeconomic status were found to have higher mean scores in intrapersonal-social intelligence ( $x=4.88$ ) than the children in middle socioeconomic status ( $x=4.02$ ). This finding shows that socioeconomic status has an important effect on musical-rhythmic and interpersonal intelligences.

In general the majority of children had an average level of musical intelligence. It is largely up to the environment to teach the art of music and to raise musical artists (Kürklü, 2003). In this case, it can be assumed that children from middle socioeconomic status enter environments in which they can improve their musical intelligence more than those from low socioeconomic status. Teker (2009), in a study in Şanlıurfa, the reflection of local colour in the paintings of 9-12 year-old children. He found that "Anatolian Folk Dance" provides an opportunity for rich expression in children's paintings and that such topics are reflected in colour, scheme, space and expression in different ways. The results related to musical-rhythmic intelligence corroborate the findings obtained in previous studies on multiple intelligences (Gürçay and Eryılmaz, 2002; Karşal, 2004; Şahlı, 2010 and Koca, 2010), and the results regarding intrapersonal-social intelligence exhibit similarities with Aral's (1993) study.

According to the analysis of variance, the study revealed that the common effect of gender alone and the interaction of gender and socioeconomic status did not have a significant effect on children's multiple intelligences.

This finding is parallel to the results obtained by Şanlı (2010), a study whose demographic features were similar to this study.

An analysis of the results displayed in Table 1 reveals that mother's educational level on its own, and the interaction of mother's educational level and socioeconomic status did not have a significant effect on children's multiple intelligences.

This finding is parallel to the results obtained by Şanlı (2010), a study whose demographic features were similar to ours.

According to the analysis of variance, the study revealed that the common effect of father's educational level alone and the interaction of father's educational level and socioeconomic status did not have a significant effect on children's multiple intelligences.

In a study by Uysal (2006), it was found that father's educational level did not have a significant effect on the multiple intelligences of six-year-old children who were attending different pre-schools.

#### **4. Conclusion**

This study analysed the multiple intelligences of kindergarteners from different socioeconomic backgrounds in relation to the variables of gender and mother's and father's educational level, and concluded that socioeconomic status has a significant effect on musical-rhythmic and interpersonal-social intelligences. It was found that in musical-rhythmic intelligence, children from middle socioeconomic status obtained higher mean

scores than those from lower socioeconomic status. On the other hand, the intrapersonal-social intelligence mean scores of children from lower socioeconomic status were higher than those of children from middle socioeconomic status.

The study revealed that the common effect of gender alone and the interaction of gender and socioeconomic status were not significant.

Likewise, the effect of the interaction of mother's educational level and socioeconomic status on multiple intelligences was not significant. Similarly, the interaction of father's educational level and socioeconomic status was not significant.

## 5. Suggestions

Pre-school is the most important stage in a child's life. In this period, it is essential to discover children's interests and abilities, support their developmental areas, and thus encourage them to know themselves for future success in life. Multi-dimensional educational programs should be administered in pre-schools in order to reveal children's individual differences and areas of interest. Additional efforts may be made to equip teachers with the necessary experience and knowledge in order to be able to pinpoint children's primary and secondary multiple intelligences and areas of interest.

Public videos may be prepared by universities and the Ministry of Education to inform parents about multiple intelligences. In addition to these, educational activities such as panels, forums and conferences may be organized.

Other factors affecting multiple intelligences may be investigated by using different and larger samples in future studies. The multiple intelligences of children in kindergartens with a multiple intelligences curriculum may be compared against others.

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4<sup>th</sup> International Conference on New Horizons in Education

# A survey on the cognition of the teacher for continuity of elementary and secondary english education in South Korea

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## Abstract

This study tried to find out how teachers thought about continuity in English curriculum between elementary and middle school. For achieving the goal, the authors implemented a survey toward 103 teachers and analyzed the quantitative and qualitative responses. The most of the participants comprehended own school level English curriculum however, only a few teachers comprehended other school level English curriculum. In case of understanding of activities, it was unveiled that middle school teachers' cognition to the activity was vague as they usually didn't utilize activities in their daily teaching. Furthermore, teachers' cognitions to continuity in activity, difficulty and amount of learning were all negative.

Keywords: Curriculum, Continuity, English Education

## 1. INTRODUCTION

The public school system of South Korea is consisted of 12 grades in 3 school levels (6 grades in elementary school, 3 grades in middle school and 3 grades in high school) and organization of English curriculum is mainly divided into 2 parts; one is 'the secondary' which includes middle school and high school curricula, the other is 'the elementary' which contains only elementary curriculum. Therefore, interrelation of English curriculum between elementary and middle school is loose compared with connectivity between middle and high school because the main department managing curriculum development is separated by school level. The Elementary Education Department controls all of the elementary school curricula and The Secondary Education Department handles middle and high school whole curricula.

Table 1. comparison between elementary and middle school English curricula

	Elementary school	Middle school
Functions	listening, speaking, reading, writing, grammar, vocabulary	listening, speaking, reading, writing, grammar, vocabulary
Main focuses	communication(speaking, listening)	reading & grammar
Teaching method	activity centered	teacher centered
Goal	basic communication skill	achieving

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Based on this situation, many studies indicated problems related to the continuity in elementary and middle school English curricula. Lee, Choi, Boo and Lee(2001) mentioned that activities and teaching methods became different as each curriculum pursuit has pursued different goal. Analyzing goals and activities suggested in The National English Curriculum 7<sup>th</sup> Version revised in 2009, while elementary curriculum focused on increasing basic communicative competence related to themes from daily life, middle curriculum stressed development of literacy abilities required in achieving higher academic goals. Yoon(2003) claimed that more than half of the 1<sup>st</sup> graders of middle school felt difficulty and burdened when they studied English as there were huge gap of goals between elementary and middle school curriculum. Therefore, it is important to consider how to secure continuity of English curriculum from elementary to middle school to increase efficiency of English education in South Korea.

This study sets its focus on teachers since they are main players in implementing and utilizing National English Curriculum and the closest observers who can monitor authentic reactions and feedbacks from their students. So, this study tried to investigate teachers' cognition to the continuity in English education curriculum.

## 2. Outline of the Survey

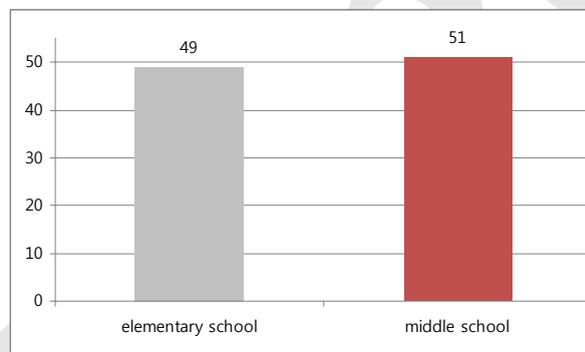


Fig. 1. the number of respondents sorted by school level.

This study tried to investigate how do elementary and middle school English teachers think about continuity in English curriculum. To meet the goal, a survey had been implemented for a month from March to April, 2013. The number of the questionnaires was 15. Among them, 7 were yes-no questions and others were open-ended questions which were put behind each yes-no question to find out the reasons behind quantitative responses.

For conducting the survey effectively, the researchers set school inspectors as the main contact point and utilize their human network to distribute and collect survey sheets. 103 elementary and middle school teachers from various regions participated to the survey. Among the respondents, 49 were elementary school English teachers and 51 were middle school English teachers. After collecting all the survey sheets, the researchers coded all the responses into a data file to analyze it with SPSS 13.0 program and Nvivo. By utilizing Frequency Analysis for quantitative responses and Keyword Analysis for qualitative responses, the results were drawn out.

### 3. Results and Discussions

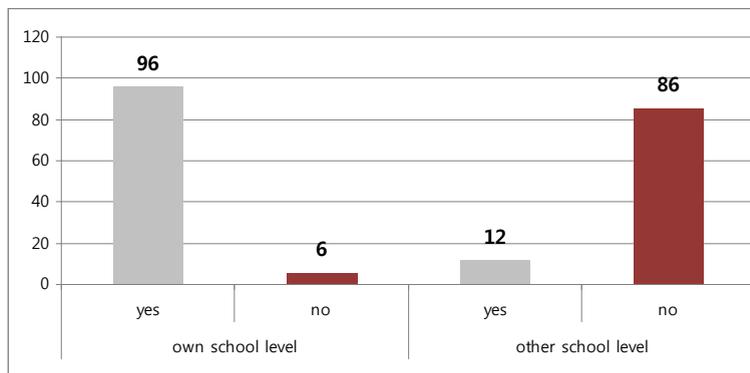


Fig. 2. understanding of English curricula

Figure 2 shows the number of the participants who understood own school level and other school level English Curriculum. As the result, while almost of the participants(96) understood their own school level curriculum, but didn't grasped other school level curriculum(86). In other words, among 49 elementary teachers of the participants, 47 understood elementary school curriculum, whereas only 2 teachers understood middle school level curriculum. Similar with elementary school teachers, 47 middle school teachers comprehended own level curriculum, however, 10 teachers comprehended elementary school curriculum.

Originally, the authors predicted that most of teachers probably didn't comprehend English curriculum of other school level as they hadn't had enough chances to encounter other school level curriculum in their daily life. Opinions from the open-ended question fitted with this assumption. 'busy(68)' 'not necessary (59)' were the top frequent words included in teachers' opinion to the question, 'please describe the reason why you don't understand other school level English curriculum'. 59 teachers mentioned that what they required to teach in the field was already fixed and well arranged in National English Curriculum, so it was not necessary to consider other school level.

Figure 3 shows the number of the participants who comprehended activities in own school level and other school level curricula. 59 knew activities in own level and 51 knew activities in other level. These results are very remarkable because the response tendencies are totally different with aforementioned results.

Results of Figure 2 presents clear discrepancy lying in teachers' understanding between own and other school level English curricula. However, results of Figure 3 shows balanced responses not only between 'yes' and 'no', also between 'own level' and 'other level'. Considering that the activity is one of the elements included in a curriculum, the results were at odds with the preceding results. It allows this situation; a middle school teacher who didn't know elementary school English curriculum answered he comprehended activities in elementary school English curriculum.

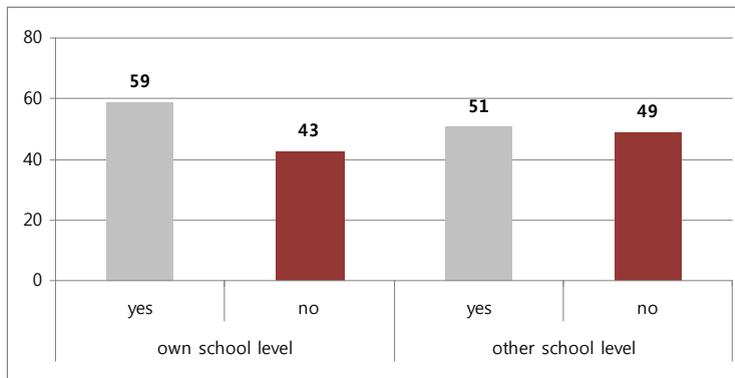


Fig. 3. understanding of the activity in English curricula

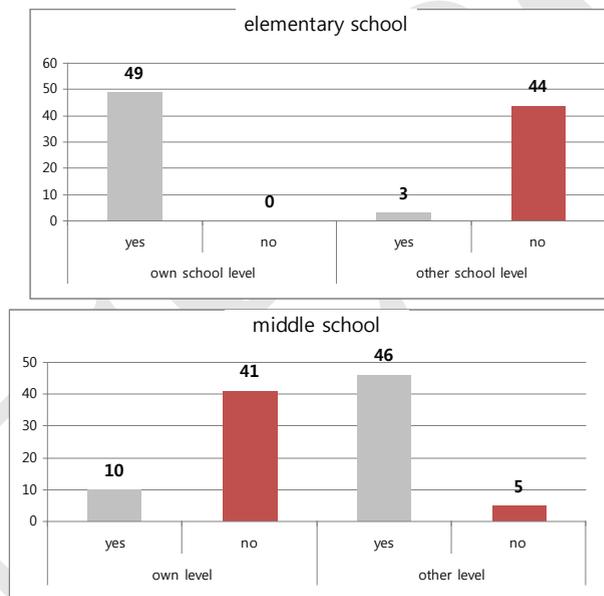


Fig. 4. comparison in understanding of the activity sorted by school level

To find out why 51 teachers chose 'yes' in other school level, the authors divided respondents into two groups by school level. Looking into Figure 4, the response tendencies of elementary school teachers correspond with Figure 2. But, the answers of middle school teachers are totally different from the aforementioned results. The results of Figure 3 were derived from the responses of middle school teachers.

By sorting opinions from 46 teachers, who checked 'yes' in other level in the open-ended question, 'activity-centered'(25) was drawn out as the top frequency word. Summarizing the opinions, middle school teachers

vaguely knew elementary English curriculum contained many communicative activities and they chose 'yes' even though they didn't exactly comprehend actual elementary school activities.

Also, 41 teachers answered that they didn't understand middle school activities. 'no use'(22) was the top frequency word. Although National English Curriculum for middle school, which was already designed to sustain continuity between elementary and middle school, suggested diverse communicative activities, teachers didn't set their focus on using them because reading and grammar were main functions required them to teach, based on students' and parents' strong needs for achieving good score in high school. This phenomenon gives an implication that the teacher's cognition is the most important element to secure continuity in actual English classes.

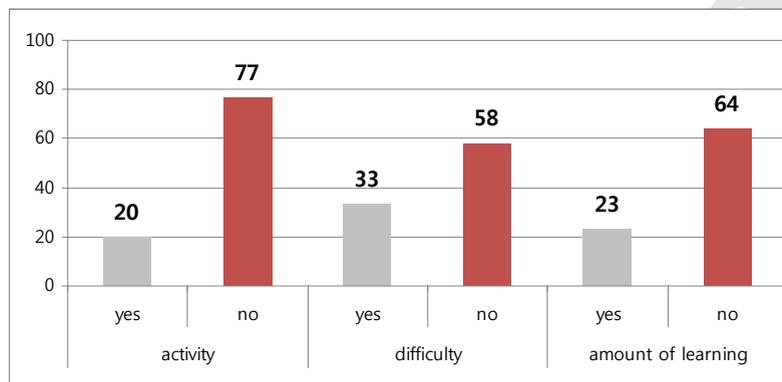


Fig. 5. cognition of continuity for activity, difficulty and amount of learning

Figure 5 shows participants' cognition about continuity in terms of activity, difficulty and amount of learning. To all the elements, proportion of negative cognitions was high in each category.

#### 4. Conclusions

This study tried to find out how teachers thought about continuity in English curriculum between elementary and middle school. For achieving the goal, the authors implemented a survey toward 103 teachers and analyzed the quantitative and qualitative responses. The most of the participants comprehended own school level English curriculum however, only a few teachers comprehended other school level English curriculum. In case of understanding of activities, it was unveiled that middle school teachers' cognition to the activity was vague as they usually didn't utilize activities in their daily teaching. Furthermore, teachers' cognitions to continuity in activity, difficulty and amount of learning were all negative.

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4<sup>th</sup> International Conference on New Horizons in Education

# A training model for “typesetting operator” profession in the publishing industry (design - implementation - evaluation)

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## Abstract

Nowadays the main problem that faced by people is adapted to rapidly the conditions of life by the effect of technology. The field that that technological alteration is felt mostly is undoubtedly the experience of individual business. In behalf of to adapt the steps of alteration and innovation of technology, the individual is required to take some steps to improve him in this business life. Either, is required to gain completely different qualifications by retraining totally in new field. Nowadays, the situation which corresponds to words as “Life / Lifelong Learning” creates the main axis of adult education activities. In accordance with transferred above, this study; aimed to planning, implementation and evaluation by the approach of “process” model that provided by the science of adult education to give a professional skill individuals who volunteered.

In the evaluation process; was used Participant Information Form, Self- Sufficiency Rating Scale (at the beginning and the end of the course). At the analysis of research data, were benefit from percentage, standard deviation, and correlation techniques of descriptive statistics.

Keywords: Publishing, Training Model, Typesetting Operator

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## 1. INTRODUCTION

The developments in science and technology that caused radical changes in our daily lives, at the present time, anymore the knowledge has become a produce by recycling every day again. From the end of the 20<sup>th</sup> century, the rapid change and transformation, has laid the foundations of the creation of human model that aware the requirements of continuous learning / learning of workforce in all business lines (Gültekin. 2004). Anymore, the truth that cultural changes are shorter than human life and we live in the times that could not able to pass a life with information learned in his youth has been stood in front of us (Knowles, 1990). Gaining the qualification related a work and can become perform the profession constitutes the essence of the maintaining life. The development and advancement of the profession of the individual and place this in the basic needs of him constitutes the fact that people do in a process of lifelong vocational training. The process, at the same time also has been put forwarded the fact that individuals are self-managed. Work to establish a life-long learning education system which can control educational content, methods and results of individuals that have gained the ability to self-directed learning has been required to be main task of adult education.

The process of self-development of people, learning trends and capacities, past lives and the interaction of the individual with the environment, has been revealed the truth that the adults stand in a different spot than learning of children. The process that starting with adult learning has shown the fact those adults can also

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learn and additionally they have different interests and abilities from children to us. (Knowles, 1990). The andragogy is a general name given a theory that occurs as a result of studies on adults. The first use of the word Andragogy has been by Knowles. Andragogy has been issued as a concept that used in education of adults against the pedagogical approach used in the education of young people. (Weygand, 2001).

The process of computerizing of written production or an interview or conversation that taken audio recording generally is called as typesetting in Turkey. In the certification training programs which purposed professional, technical and cultural that prepared under the protocol that signed between Ministry of Education, Ankara Metropolitan Municipality and Gazi University, the Typesetting Operator; are defined as qualified persons who transfers to the computer using the keyboard with a letter F, editing the information how desired and have qualifications to redact the job that done, who has ability to do his own job by himself and in certain period. It has been indicated as a third level of profession in a frame of European Qualifications (Qualifications Turkey).

Since 1997, the personnel requirement analysis that directed to printing industry has been made periodically by Gültekin and his friends (Gültekin, 2004), (Tokmak and Sevindik 2004), (Gültekin and his friends 2007). As a result of analysis, has been seen that the sector is in a need of personnel which increases every day. The only research in the field of publishing; has been realized by Kansu and his friends. According to the research which titled as “Advertising Agencies and Labor Market Requirement Analysis of Publishing Industry (Ankara Province -2011-2014)” by Kansu and his friends, between 2011- 2014, the requirement of typesetting for Ankara are estimated to be 315 people (Kansu and his friends 2011).

## **2. Mission (Purpose)**

The purpose of this study, by developing training program directed to adults for the profession (Typesetting Operator) that located in the printing and publishing industry is evaluated the results of the program. The answers of following questions were searched in research for the specified purpose. These questions are;

- What is the direction of change that qualifications of adults which admitted to gain skills related to Computer Applications in Publishing / Typesetting Operator at starting and ending?
- Can content of created course give enough information to the participants?

## **3. Practice (Method)**

In this chapter are included research model, the developed program curriculum, universe, sample, data collection, and resolution.

### *3.1. Research Model*

The research model has been created in 3 stages. At the first stage; has been developed competency-based modular training program under the name of “Computer Applications in Publishing (Typesetting Operator – Typesetter) Course”. The developed program; is approved by the Ministry of National Education and are given an approved certificate at the end of the course. The developed program that occurs 3 modules as “F Keyboard 1 “Editing Page on Computer 1” and “Editing Page on Computer 2” and covers a period of 108 hours. As far in the second stage, by applying course into two consecutive terms have been realized the application of designed model. In the third stage, by giving Self-Sufficiency Scale to the participants both at the beginning and the end of the course; evaluation information has been collected by evaluating themselves.

### 3.2. Universe and Sampling

The trainees who participated to 22. and 23. Term BELTEK Courses has been generated the universe of research. As for the working group covers trainees that participated the courses. In each term, 20 people have been participated to "Computer Applications on Publishing". Both two courses, has ended with 20 people as the number of people at the beginning. To fill Self- Sufficiency Form which left the desire of the trainees that attending courses, has been filled by all participants in the ongoing course both at the beginning and the end of the course. In this way, totally 40 pieces Check-in Self-Sufficiency forms and 40 pieces Check-out Self-Sufficiency forms has been obtained to measure the alterations at the beginning and the end of the course.

### 3.3. Collecting data and Analysis

The data which will be used in scope of the research was collected with Self-Sufficiency Scale that created. The scale was created by taking into account that Typesetting Operator/Typesetter should know in accordance with the content which prepared in the frame of protocol that signed between Ministry of National Education, Ankara Metropolitan Municipality and Gazi University. Prepared Self-Sufficiency scale is presented to the opinion of experts. The scale that revised again according to expert opinions, the data has been collected by filling to the participants at the first day and the last day of the course. The Self-sufficiency Scale consists 21 items related to 3 modules. The question that includes in Self-Sufficiency has been divided into four in itself. According to this; 4 items of Self-Sufficiency Scale are related to Typesetting and the Application, and 6 of them are related to General Printing Information, and 9 of them are related to General Design Information and 3 of them are related to Typographical Editing Information. For each item, 6 point likert scale has been used. According to 6 point likert scale, has been requested to evaluate themselves from participants. According to this, "0" means that the participants have no information about this matter, "5" means that they have enough information on this matter.

The data that obtained in the scope of research analyzed by using statistical programs in the context of frequency, standard deviation and correlation.

## 4. Evidences

### 4.1. Evidences of Demographic and Reliability

The Self-Sufficiency Scale which used in the scope of Research were examined the state of reliability. In general terms to put forward the reliability of Self-Sufficiency Scale was benefit from Cronbach's alpha statistic. After the analysis; the alpha value of the scale that is equal to 7.0 or upper (Hair and Others, 1995) has been determined as minimum criteria to verify the reliability of the scale. The data which shows the reliability status of Self-Sufficiency Scale are presented in Table 1.

Table 1. The Reliability Status of Self-Sufficiency Scale

Cronbach's Alpha	N of Items
,972	44

Looking at the table that shows the status of Self-Efficacy Scale reliability, the reliability of the questions which used in the scope of questionnaire was very high compared to 0.972 according to Cronbach Alfa statistic. The expressions which used in scale have appeared properly understood and significant by the participants.

According the research; the table which shows the gender distribution of the demographic characteristics of the participants has been located in Table 2.

Table 2. Distribution of Participants In Terms of Gender

	Frequency	Percent
Female	22	55,0
Male	18	45,0
Total	40	100,0

Looking at the gender distribution of participants; the participants has been consisted %55 from women, and % 45 from men.

In the scope of research, the table which shows the age distribution of trainees who participated in the study has been located in Table 3.

Table 3. Distribution of Participants In Terms of Age

	Frequency	Percent
Between age 20 to 30	25	62,5
Between age 31 to 40	12	30,0
Between age 41 to 50	2	5,0
51 and over age	1	2,5
Total	40	100,0

Looking at the distribution of age of trainees, has appeared that 62,5% of participants are between 20 to 30, 12% are between 31 to 40 age, 5% are between 41 to 50 age and 2,5% are also 51 and over it. According to the table; participants were mainly concentrated in age from 20 to 30. The frequency of between 20-30 years old that participants are the most intense is also 25.

#### 4.2. Evaluation of General Printing House Information Articles

The Self- Sufficiency Scale which used in scope of the research, 5 items has been given related to General Printing House Information. The distributions that shows input and output values and the mean and standard deviation of items which has been given related General Printing House Information has been located in Table 4.

Table 4. Self-Sufficiency Scale – The Input-Output Distributions of “General Printing House Information” Items

	N	Nr of questions	Range	Minimum	Maximum	Mean	Std. Deviation
General Printing House (Input)	40	5	5	0	5	1,40	1,626
General Printing House (Output)	40	5	3	2	5	3,77	,649
Valid N (listwise)	40						

Looking at the table related to Input and Output ratings of General Printing House Information items which evaluated by participants; is given in input level as value of lowest 0, as highest as 5. The average of evaluation of General Printing House Information (Input) is 1.40 and the standard deviation is 1.626. Looking at the data (Output) of General Printing House Information is given 2 as lowest and 5 as highest. The average of General Printing House Information (Output) items is 3.77 and standard deviation is 0.646.

The correlation between “General Printing House Information” of Self-Sufficiency Scale and Input-Output related items has been examined. The table which shows the correlation values between Input-Output of General Printing House Information Items has been located in Table 5.

Table 5. Self-Sufficiency Scale – The Input and Output Distribution of “General Printing House Information” Items

		General Printing House (Input)	General Printing House (Output)
General Printing House (Input)	Pearson Correlation	1	,811(**)
	Sig. (2-tailed)		,000
	N	40	40
General Printing House (Output)	Pearson Correlation	,811(**)	1
	Sig. (2-tailed)	,000	
	N	40	40

\*\* Correlation is significant at the 0.01 level (2-tailed).

According to the correlation analysis that made between the given values before training and the values at the end of the training which gives to the items that measured General Printing House Information of Participants; between both two values which are given related to General Printing House Information is seen a significant level of differentiation ( $P < 0,05$ ) and this differentiation was detected as strong (0,811) in positive direction.

#### 4.3. Evaluation of General Design Information Items

In Self- Sufficiency Scale which used in the scope of research; 9 items has been given related General Design Information. The distributions that shows input and output values and the mean and standard deviation of items which has been given related General Design Information has been located in Table 6.

Table 6. Self-Sufficiency Scale “The Input and Output Distribution of “General Design Information” Items

	N	Nr of questions	Range	Minimum	Maximum	Mean	Std. Deviation
General Design (Input)	40	9	5	0	5	1,59	1,661
General Design (Output)	40	9	3	3	5	3,89	,597
Valid N (listwise)	40						

Looking at the table related to Input and Output ratings of General Printing House Information items which evaluated by participants; are given the value of 0 as lowest, 5 as highest in input level. The average of evaluation of General Design Information (Input) is 1.59 and the standard deviation is 1.661. Looking at the data (Output) of General Design Information is given 3 as lowest and 5 as highest. The average of General Design Information (Output) items is 3.89 and standard deviation is 0.597.

The correlation between “General Design Information” of Self-Sufficiency Scale and Input-Output related items has been examined. The value which shows the values of correlation between Input-Output items of General Design Information is located in Table 7.

Table 7. Self-Sufficiency Scale- The Input and Output Distribution of “General Printing House Information” Items

		General Design (Input)	General Design (Output)
General Design (Input)	Pearson Correlation	1	,798(**)
	Sig. (2-tailed)		,000
	N	40	40
General Design (Output)	Pearson Correlation	,798(**)	1
	Sig. (2-tailed)	,000	
	N	40	40

\*\* Correlation is significant at the 0.01 level (2-tailed).

According to the correlation analysis that made between the given values before training and the values at the end of the training which gives to the items that measured General Design Information of Participants; between both two values which are given related to General Design Information is seen a significant level of differentiation ( $P < 0,05$ ) and this differentiation was detected as strong (0,798) in positive direction.

#### 4.4. Evaluation of Items of Typographical Editing Information

In Self- Sufficiency Scale which used in the scope of research; 3 items has been given related Typographical Editing Information. The distributions that shows input and output values and the mean and standard deviation of items which has been given related Typographical Editing Information has been located in Table 8.

Table 8. Self-Sufficiency Scale- The Input and Output Distribution of “Typographical Editing Information” Items

	N	Nr of questions	Range	Minimum	Maximum	Mean	Std. Deviation
Typographical Editing (Input)	40	3	5	0	5	1,23	1,681
Typographical Editing (Output)	40	3	3	2	5	3,72	,686
Valid N (listwise)	40						

Looking at the table related to Input and Output ratings of Typographical Editing Information items which evaluated by participants; are given the value of 0 as lowest, 5 as highest in input level. Looking at the table related to Input and Output ratings of Typographical Editing Information items which evaluated by participants; are Typographical Editing Information (Input) is 1.23 and the standard deviation is 1.681. Looking at the data (Output) of Typographical Editing Information is given 2 as lowest and 5 as highest. The average of Typographical Editing Information (Output) items is 3.72 and the standard deviation is 0.686.

The correlation between “Typographical Editing Information” of Self-Sufficiency Scale and Input-Output related items has been examined. The value which shows the values of correlation between Input-Output items of Typographical Editing Information is located in Table 9.

Table 9. Self-Sufficiency Scale- The Input and Output Distribution of “Typographical Editing Information” Items

		Typographical Editing (Input)	Typographical Editing (Output)
Typographical Editing (Input)	Pearson Correlation	1	,746(**)
	Sig. (2-tailed)		,000
	N	40	40
Typographical Editing (Output)	Pearson Correlation	,746(**)	1
	Sig. (2-tailed)	,000	
	N	40	40

\*\* Correlation is significant at the 0.01 level (2-tailed).

According to the correlation analysis that made between the given values before training and the values at the end of the training which gives to the items that measured Typographical Editing Information of Participants; between both two values which are given related to Typographical Editing Information is seen a significant level of differentiation ( $P < 0,05$ ) and this differentiation was detected as strong (0,796) in positive direction.

#### 4.5. Evaluation of Items of Typesetting Information / Application

In Self- Sufficiency Scale which used in the scope of research; 4 items has been given related Typesetting Information / Application. The distributions that shows input and output values and the mean and standard deviation of items which has been given related Typesetting Information / Application has been located in Table 10.

Table 10. Self-Sufficiency Scale- The Input and Output Distribution of “Typesetting Information / Application” Items

	N	Nr of questions	Range	Minimum	Maximum	Mean	Std. Deviation
Typesetting / Application (Input)	40	4	5	0	5	1,64	1,227
Typesetting / Application (Output)	40	4	2	3	5	4,01	,503
Valid N (listwise)	40						

Looking at the table related to Input and Output ratings of Typesetting Information / Application items which evaluated by participants; are given the value of 0 as lowest, 5 as highest in input level. Looking at the table related to Input and Output ratings of Typographical Editing Inform Typesetting Information / Application items which evaluated by participants; are Typesetting Information / Application (Input) is 1.64 and the standard deviation is 1.227. Looking at the data (Output) of Typesetting Information / Application is given 3 as lowest and 5 as highest. The average of Typesetting Information / Application (Output) items is 4.01 and the standard deviation is 0,503.

The correlation between “Typesetting Information / Application” of Self-Sufficiency Scale and Input-Output related items has been examined. The value which shows the values of correlation between Input-Output items of Typesetting Information / Application is located in Table 11.

Table 11. Self-Sufficiency Scale- The Input and Output Distribution of “Typesetting Information / Application” Items

		Typesetting Information / Application (Input)	Typesetting Information / Application (Output)
Typesetting Information / Application (Input)	Pearson Correlation	1	,717(**)
	Sig. (2-tailed)		,000
	N	40	40
Typesetting Information / Application (Output)	Pearson Correlation	,717(**)	1
	Sig. (2-tailed)	,000	
	N	40	40

\*\* Correlation is significant at the 0.01 level (2-tailed).

According to the correlation analysis that made between the given values before training and the values at the end of the training which gives to the items that measured Typesetting Information / Application of Participants; between both two values which are given related to Typesetting Information / Application is seen a significant level of differentiation ( $P < 0,05$ ) and this differentiation was detected as strong (0,717) in positive direction.

## 5. Conclusion and Recommendations

As a result of the study, are reach to the following conclusions.

These evidences which made within the context of creating the design of the course content, implementation and evaluation of the results has been shown to us from the moment when they started classes and applications until the end of the course that the participants have significant and strong alteration in

positive direction. They subjects that they don't have any information at the beginning of the course, in the later period of course have knowledge about these matters and have adopted information which provides basis of related the profession, gained basic experience as a result of applications.

The module that has been generated during the design of program is designed in accordance with the purpose of education and has been determined that the participants' level of knowledge relatively contributes the ascending upper than the beginning. In addition to be in the change of positive direction and development in all modules; appear to have a decrease in the relative of the participants related to Typesetting Information / Application. This decline is expected due to the applications on the use of ten-finger keyboard. By the application of the use of ten-finger keyboard, also has been expected to sufficient in time considering by increasing the practice of hand to use continuously.

The compliance that applied curriculum; come close to the values and the relationship of the results of the correlation analysis that made under group information of each item, has revealed that it is appropriate and integrated as instructional among themselves (in the curriculum) of each training module. During the application of each module has been supported and complemented each other.

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4<sup>th</sup> International Conference on New Horizons in Education

# Barrier-free education at the Czech Technical University in Prague - modern European university

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## Abstract

Modern society should make higher education accessible to all gifted students, regardless of their economic situation, religion, or health. The society should strive to fulfill the right to freedom of movement of its citizens by removing barriers, in order to integrate the handicapped citizens. This article deals with accessibility to the Czech Technical University in Prague by the handicapped students and their options for successful studies.

*Keywords:* barrier-free; university; education; CTU in Prague; Faculty of Transportation Sciences

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## Introduction

The Czech Technical University (CTU) in Prague was founded on January 18, 1707, as the first public engineering school in central Europe. Its founder was the Emperor Joseph I, but the initiative belonged to Christian Joseph Willenberg, a highly regarded fortification specialist, who was named a professor by a decree of the general Estates on November 9, 1717. The university was named the “Estates Engineering School in Prague” and the first schooling programs were launched in January 1718. The prestigious “École Nationale des Ponts et Chaussées” in Paris was founded only 30 years later.

Initially, the Estates Engineering School in Prague focused only narrowly on the military and fortification matters. Its curriculum was expanded to include civil engineering only during the tenures of two prominent figures: Jan Ferdinand Schor, its second professor, a painter and architect, and Frantisek Antonin Leonard Herget, its third professor, a land surveyor and water management expert.

In 1803, the Emperor Francis II proposed to transform the engineering school into a polytechnic school. The principle personality behind this effort was Frantisek Josef Gerstner, an astronomer, professor of mathematics and mechanics, and the architect of the horsecar from Ceske Budejovice to Linz, who modeled the school after the polytechnic school in Paris. The Prague Polytechnic existed as a part of the Prague University until its independence in 1815. It was located in the Husova Street in the Old Town. Along with Frantisek Josef Gerstner, its other eminent personality was Christian Doppler, professor of mathematics and practical geometry.

Another milestone in the history of the Prague Polytechnic was the approval of its first Status in 1863, which became the foundation of its new pedagogical organization and management of a higher education institution, headed by an elected rector.

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The Czech language was used equally with German, despite the fact that conflicts between the Czech and German staff led to the division into a Czech and German institutes in 1869. A new building was built for the Czech institute at the Charles Square in the New Town, according to a plan by architect Ullmann. In 1878, two state exams were introduced and as of 1901, the school was granted the right to award the doctoral titles in technical sciences.

The school assumed the name Czech Technical University in Prague in 1920. It then comprised seven higher education schools. It was closed during the Nazi occupation and reopened after the liberation in 1945 [5].

The intention of this short historic overview was to show that the CTU in Prague has a rich history and a tradition of remarkable personalities and achievements. Nevertheless, we live in the 21<sup>st</sup> century when a modern European university must offer the highest standards of superb education, competent staff, and well-equipped laboratories to all the gifted students who wish to pursue their degrees. One of the obstacles to education (the article focuses on universities but they can be generalized for any educational level) are various disabilities, which could potentially prevent handicapped students from embarking on or completing the studies. In the contemporary open society, however, disabilities should not be the reason why a student should not study at the institution of his/her choice in the field, in which he/she can prove to be an asset. This is also enshrined in Article 33 of the Charter of Fundamental Rights and Basic Freedoms [6], which guarantees universal right to education.

Making education available to the handicapped students requires adjustments in three areas:

1. barrier-free access to buildings;
2. barrier-free use of buildings;
3. access to lectures and educational materials.

Adjustments in all these three areas are guaranteed both in the Czech legislation and in the rules and regulations of the CTU in Prague.

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### **Legislation in the Czech Republic**

Rights of the handicapped persons are firmly anchored in the Czech legislation in the form of laws, norms, and methodologies. The legislation, however, does not define the term “handicapped person”. Rather, it uses the term “persons with limited ability of movement and orientation,” which refers not only to persons with physical, visual, hearing or mental impairment, but also to seniors, pregnant women or children younger than three and their accompaniment [7].

The chief legislative norms are as follows:

- Act No. 183/2006 Coll., about local planning and construction regulations, as last amended on January 1, 2013;
- Regulation No. 398/2009 Coll., about general technical requirements guaranteeing barrier-free use of buildings.

The Czech Republic has additional rules and regulations for specialized areas of the issue, such CSN 73 6110 - Design of Urban roads, which requires that proposals for design of local routes must make them safe for all its users.

Regulation No. 398/2009 Coll. [7] applies to the following situations:

- processing of documentation for issuance of territorial decisions;
- processing of simple technical descriptions of plans for issuance of territorial agreements;
- processing of project documentation;
- approval, announcement, and realization of construction;
- issuance of final approval agreement;
- use or removal of buildings or installations;
- building inspections.

Buildings covered by this regulation include buildings containing civil equipment, such as schools, pre-schools, and other schooling establishments. All new or reconstructed buildings belonging to such buildings

should therefore have the parameters for barrier-free use in order to be suitable for persons listed in paragraph one of this section.

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### **Students with special needs**

The Faculty of Nuclear Sciences and Physical Engineering of the CTU in Prague established shortly after the end of communism in 1992 the TEREZA Center to enable access to higher education to visually impaired students. In 2007, the CTU in Prague established the Handicap Advisory Center to assist students with other than visual impairments. As of 2012, both centers were merged into the ELSA Center for Support of Students with Special Needs [1]. The ELSA Center falls under the competence of the rectorate of the CTU in Prague, specifically the Student Affairs Department. By this move, the CTU in Prague has clearly demonstrated its readiness to tackle the problem and open its educational programs to all the interested students.

Parents or persons with full-time employment, who at the same time pursue their education, fall into the category of students with special needs as well. The CTU in Prague runs a kindergarden called “The Little Lions,” which helps them to combine the student and parental responsibilities. The CTU in Prague is a pioneer among the Czech universities in this regard. This is an issue to which we would like to dedicate a separate article, since one of the authors of this article was active in establishing the kindergarden.

In addition to parents with small children, it is necessary to pay attention to the needs and look for solutions for persons with the following types of handicaps (or their combinations):

- visually impaired or blind;
- impaired hearing;
- physically challenged, particularly the wheelchair-bound.

Persons suffering from these impairments can be referred to as disadvantaged persons or persons with special needs. Since all of these impairments manifest themselves in specific ways, they must be addressed individually. At the same time, solutions in removing barriers must always be of a complex nature.

The term persons with special needs is very important in the context of education, since the health disabilities must include, besides the physical ones, also the following:

- specific learning impairments;
- psychological problems;
- chronic somatic disease.

The Study and Examination Code for Students at the CTU in Prague [2] states that students and applicants with special needs are entitled to modifications in the studies requirements. This easement is governed by the methodological instruction from 2012 about the support of students and applicants with special needs at CTU in Prague.

Between November 2012 and June 2013, the ELSA Center took under its patronage a project to map all the main buildings of the CTU in Prague under the project „Barrier-free Czech Technical University.“ Individual buildings are described in the textual part, along with their visual documentation (maps, floor plans, photographs) and description of the access routes.

Particular problem is posed by buildings that are part of the old building complexes, especially in the protected heritage zones. For example, the Faculty of Transportation Sciences comprises of three buildings, out of which two have already undergone reconstruction to install barrier-free elements as widely as possible. The CTU in Prague is also trying to find a solution for the accessibility to its dormitories by constructing or reconstructing barrier-free rooms. For example, the Masaryk Dormitories now have barrier-free rooms on different levels. The Dejvice Dormitories are not equipped with the elevator, therefore the barrier-free rooms are located on the ground floor, which is also convenient from the point of view of the daily building traffic and fire safety. It will also be technically possible to install acoustic isolation in selected rooms to address the needs of students with hearing impairments [4].

The following overview provides statistics about students with specific needs who studied at the CTU in Prague in the academic years 2011-2012 and 2012-2013, their numbers and types of impairments:

Table 1. Number of registered students with special needs at the CTU in Prague in the academic year 2011-2012:

Faculty	Number of students with visual, hearing or motoric impairment	Number of students with specific learning disability	Number of students with psychological disability or chronic static disease
Faculty of Civil Engineering	0	8	1
Faculty of Mechanical Engineering	3	10	0
Faculty of Electrical Engineering	0	3	3
Faculty of Nuclear Sciences and Physical Engineering	2	1	0
Faculty of Architecture	1	4	1
Faculty of Transportation Sciences	2	0	0
Faculty of Biomedical Engineering	8	2	1
Faculty of Information Technology	1	6	2

Table 2. Number of registered students with special needs at the CTU in the academic year 2012-2013:

Faculty	Number of students with visual, hearing or motoric impairment	Number of students with specific learning disability	Number of students with psychological disability or chronic static disease
Faculty of Civil Engineering	0	14	1
Faculty of Mechanical Engineering	3	14	1
Faculty of Electrical Engineering	2	10	5
Faculty of Nuclear Sciences and Physical Engineering	3	0	0
Faculty of Architecture	1	7	3
Faculty of Transportation Sciences	2	1	1
Faculty of Biomedical Engineering	2	4	1
Faculty of Information Technology	0	9	2

The figures account only for those students who have registered with the ELSA Center. There are, however, additional students who choose to confront and manage their limitations on an individual level. Handicapped students at the CTU in Prague usually do not seek any advantages but try to integrate as much as possible among other students.

#### Service arrangements for students with specific needs

While the preceding section outlined the different limitations students can face and their protection in the legislative and other documents, this section lays out an overview of what the ELSA Center offers to students with special needs [1].

Students with hearing impairments can make a use of visualization and note-taking services, as well as of interpretation services. It is also possible to transfer scripts into the Braille characters and mathematical formulas. Such transfer is, however, time consuming and its completion can last more than half-a-year. Under the digitalization and library services, the study materials are being made accessible, including adaptation of specialized symbolism and transfer of the materials into a tactile form. The ELSA Center also offers services of general assistance, personal assistance and training of orientation in space.

The organizational-methodological service offers to students training of studying and working strategies, which allows them to adopt working methods, which will help them to compensate as much as possible for their motoric, sensory and cognitive impairments. In addition, the ELSA Center arranges individual study programs, where necessary. Technical services guarantee accessibility to the technical equipment, with the possibility of borrowing.

Counseling on how to best take advantage and understand the whole spectrum of services is an integral part of the assistance as well. There are many different services that the ELSA Center offers and the aim is to help students on an individual basis with his/her specific needs.

Students can also receive time compensation, meaning that they are allowed longer deadlines, taking into consideration the student's specific impairment and the task.

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#### **Studies at the CTU in Prague focused on the barrier-free environment**

At the CTU in Prague, students can choose subjects in which they can learn how design barrier-free environments and thus remove barriers for different types of disabilities. For example, the Faculty of Architecture and Faculty of Civil Engineering provide instruction on how to design and construct buildings not only for people without disabilities, but also for the handicapped.

The Faculty of Transportation Sciences teaches subjects, which take into consideration the needs of the handicapped when designing roads. A special subject "Barrier-free Transportation" gives students the opportunity not only to become familiar with the current legislative regulations, but also to interact with specialists from the field and attend events designed to experience what it is like to be handicapped (see Fig. 4). This is an invaluable tool for taking the perspective of the handicapped when designing barrier-free solutions in their later professional lives.

Students of the Faculty of Transportation Sciences can also participate in the student project "Barriers in Transportation", which focuses on removal of barriers not only from the point of view of transportation and construction, but also from the point of view of information and technologies.

The CTU in Prague offers regular seminars on the subject and cooperates with expert organizations, for example with the Prague Organization for Persons in a Wheelchair (Czech acronym POV) or the United Organization of the Blind and Visually Impaired in the Czech Republic (Czech acronym SONS).

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#### **Selected photographs from the CTU in Prague**



Fig.1. Staircase platform – Horská building (Faculty of Transportation Sciences)



Fig. 2. Entrance barrier – Konviktská building (Faculty of Transportation Sciences)



Fig. 3. Students of the Faculty of Transportation Sciences during instruction in the field

### Conclusion

The aim of this article was to introduce the Czech Technical University in Prague as a public institution of higher education, which recognizes the imperative to take into consideration and make the necessary adjustments to accommodate students with special needs or the handicapped. The ELSA Center, which functions as a standing specialized department to help address the problems and needs of students with disabilities, is one of the answers. The CTU in Prague is also engaged in a project, which aims to remove architectural barriers through building adjustments, and also is preparing an electronic manual for easier access and movement in its buildings. The curriculum contains subjects which teach students how to propose barrier-free environment, i.e. buildings and local roads. We are happy to work at such a university.

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4<sup>th</sup> International Conference on New Horizons in Education

## Being Digital Citizen

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### Abstract

Digital citizenship can be defined as “the norms of appropriate, responsible behavior with regard to technology use” (Ribble & Bailey, 2007). Based on this definition, this study is aimed to determine whose students are digital citizens and whose are not. Within the scope of this research, face-to-face learning students and blended learning students were compared with of the fact that being digital citizen. In order to make this comparison, Digital Citizenship Survey was used.

Keywords: digital age, digital citizen, digital citizenship

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### 1. INTRODUCTION

One of the emerging concepts with ICT is the concept of digital citizenship. Along with this concept, individual, social and cultural properties have changed. Digital citizenship can be defined as “the norms of appropriate, responsible behavior with regard to technology use” (Ribble & Bailey, 2007) or “the characteristic of a genuine digital city” (Schuler, 2002) or “those who use the Internet regularly and effectively” (Mossberger, Tolbert & McNeal, 2011).

Three key features are identified for digital citizens. While these features whose digital citizens must have are defined as educate, empower and protect (Common Sense Media White Paper, 2011), by Ribble & Bailey (2007) respect(etiquette, access, law), educate(communication, literacy, commerce) and protect(rights and responsibility, safety/security, health and welfare) are described as these three features. Ribble & Bailey (2007) made these identifications based on some researches (Ribble, Bailey & Ross, 2004, Ribble & Bailey, 2004, Ribble & Bailey, 2005) and adapted features to the students.

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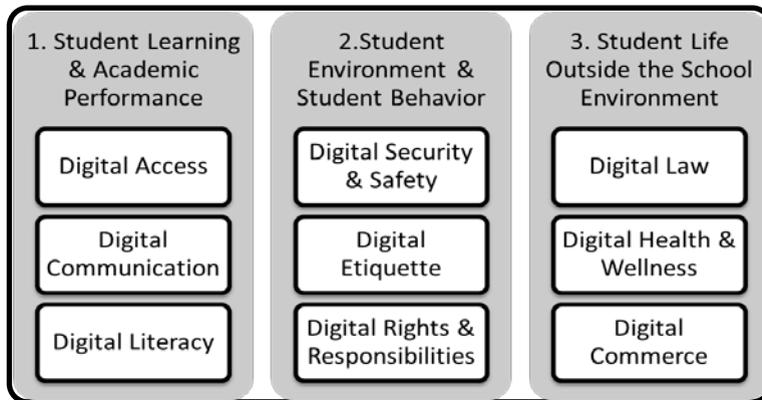


Fig. 1. Digital Citizenship Touchpoints (Ribble & Bailey, 2007)

- Student Learning & Academic Performance
  1. Digital Access: full electronic participation in society.
  2. Digital Communication: electronic exchange of information.
  3. Digital Literacy: process of teaching and learning about technology and the use of technology.
- Student Environment & Student Behavior
  4. Digital Security (self-protection): electronic precautions to guarantee safety.
  5. Digital Etiquette: electronic standards of conduct or procedure.
  6. Digital Rights & Responsibilities: those freedoms extended to everyone in a digital world.
- Student Life Outside the School Environment
  7. Digital Law: electronic responsibility for actions and deeds
  8. Digital Health & Wellness: physical and psychological well-being in a digital technology world.
  9. Digital Commerce: electronic buying and selling of goods.

With these touchpoints, the features which students must have as digital citizenship was identified. Based on these features, in this study the levels of university students' digital citizenship was investigated.

## 2. Method

### 2.1. Population

The population of this study constitute of students of the Faculty of Education of Sakarya University in the 2012-2013 academic year. The population consists of a total of 4395 students. Participation in the study was on a voluntary basis. Convenience sampling method was used in the study. 246 students have applied the scale. 7 students are identified not to complete the scale correctly. Their data have been excluded the study. Totally 239 students data have been evaluated.

### 2.2. Data Gathering Tool

Comparing the students' level of digital citizenship is the aim of this study. For gaining this goal, the Digital Citizenship Scale (DCS) (İşman & C. Güngören, 2013) was used. This scale was developed by İşman & C.

Güngören(2013) and was based on Ribble & Bailey(2007)' s digital citizenship nine touchpoints. DCS has 33-items and it is five-point Likert-type scale. The students answered the items by selecting one of the “Strongly Agree”, “Agree”, “Neutral”, “Disagree”, “Strongly Disagree” options.

Gender, class, education, having computer, using computer hours per day, taking computer training, using the Internet, using the Internet hours per day, purposes for using the Internet, the device used to connect to the Internet, thinking the Internet safe, membership of social network sharing sites, using which social network sharing sites were used as descriptive statistics of the research. According to these descriptive statistics, students' level of digital citizenship were compared.

### 2.3. Data Analysis

SPSS 21 statistical software was used for performing analyses. For analyzing to compare the students' level of digital citizenship, Independent Sample t-Test and One Way ANOVA was used.

## 3. Findings

### 3.1. Demographic Characteristics

For comparing the students' level of digital citizenship, students' demographic characteristics were collected in this research. According these data, 141 male and 98 female, 31 1st class, 65 2nd class, 72 3rd class and 67 4th class, 104 1st education, 59 2nd education and 73 blended education students attended the research. 230 students have computer, 7 students not. 9 students use a computer 0-1 hour per day, 48 students use a computer 1-3 hours per day, 99 students use a computer 3-6 hours per day, 52 students use a computer 6-9 hours per day, 30 students use a computer more than 9 hours per day. 222 students took computer training, 16 students not. 236 students use the Internet, 2 students not. 30 students use the Internet 0-1 hour per day, 62 students use the Internet 1-3 hours per day, 93 students use the Internet 3-6 hours per day, 32 students use the Internet 6-9 hours per day, 21 students use the Internet more than 9 hours per day.

Students use the Internet for different purposes. 202 students for sending and receiving e-mail, 171 students for reading newspaper/book, 176 students for listening radio/music, 167 students for watching TV/video, 121 students for playing games, 181 students for chatting, 75 students for banking transactions, 134 students for shopping, 210 students for doing homework/course work, 64 students for improving foreign language, 200 students for communicating with friends, 190 students for entering the social network sharing sites, 53 students for meeting people use the Internet. 226 students with laptop, 60 students with PC, 24 students with tablet, 116 students with mobile phone connect to the Internet. 146 students think the Internet safe, 88 students not.

229 students are members of social network sharing sites, 7 students not. Students use different social network sharing sites but generally Facebook, Twitter and Google+ are used. 230 students use Facebook, 160 students use Twitter and 130 students use Google+ in our study.

### 3.2. Findings

The data of the scale was assumed to have a normal distribution. Therefore, Independent Sample t-Test and One Way ANOVA parametric analyses were made for this study. For comparing students' the levels of digital citizenship by gender, having computer, taking computer training, using the Internet, purposes for using the Internet, the device used to connect to the Internet, thinking the Internet safe, membership of social network

sharing sites, using which social network sharing sites were used Independent Sample t-Test. For comparing students' the levels of digital citizenship by class and education were used One Way ANOVA.

Students by gender between the levels of digital citizenship were not found a significant difference ( $t(237)=-.785, p=.433$ ).

Students by class between the levels of digital citizenship were not found a significant difference ( $F(3,235)=1.817, p=.145$ ).

Students by education level between the levels of digital citizenship were not found a significant difference ( $F(2,233)=2.189, p=.115$ ).

Students by having computer between the levels of digital citizenship were not found a significant difference ( $t(237)=-.785, p=.433$ ).

Students by using computer hours per day between the levels of digital citizenship were not found a significant difference ( $F(4,233)=1.518, p=.198$ ).

Students by taking computer training between the levels of digital citizenship were not found a significant difference ( $t(236)=1.626, p=.105$ ).

Students by using the Internet between the levels of digital citizenship were not found a significant difference ( $t(236)=-.994, p=.321$ ).

Students by using the Internet hours per day between the levels of digital citizenship were found a significant difference ( $F(4,233)=3.061, p=.017$ ). As a result of the Scheffe test to find significant difference, students using the Internet between 0 -1 hour per day ( $X_{0-1\text{hour}}=118,30$ ) and 3-6 hours per day ( $X_{3-6\text{hours}}=128,84$ ) were found significant difference. Students using the Internet 3-6 hours per day have the higher level of digital citizenship than students using the Internet 0 -1 hour per day.

Relationship between students' purposes for using the Internet and the level of digital citizenship were took a look at one by one. Students by using the Internet for sending and receiving e-mail ( $t(236)=-1.410, p=.160$ ), listening radio/music ( $t(237)=.057, p=.954$ ), watching TV/video ( $t(237)=-.966, p=.335$ ), playing games ( $t(237)=.444, p=.658$ ), chatting ( $t(237)=.053, p=.958$ ), doing homework/course work ( $t(237)=-1.537, p=.126$ ), improving foreign language ( $t(237)=-1.411, p=.160$ ), communicating with friends ( $t(237)=-1.457, p=.146$ ), entering the social network sharing sites ( $t(237)=.287, p=.774$ ), meeting people ( $t(237)=-1.283, p=.201$ ) between the levels of digital citizenship were not found a significant difference. Students by using the Internet for reading newspaper/book ( $t(237)=-2.521, p=.012$ ), banking transactions ( $t(237)=-2.239, p=.026$ ), shopping ( $t(237)=-3.373, p=.001$ ) between the levels of digital citizenship were found a significant difference. As a result of these tests, students using the Internet for reading newspaper/book ( $X_{\text{reading newspaper/book}}=127,86$ ), banking transactions ( $X_{\text{banking transactions}}=129,58$ ) and shopping ( $X_{\text{shopping}}=129,22$ ) have the higher level of digital citizenship than students not using the Internet for these purposes ( $X_{\text{notreading newspaper/book}}=122,30, X_{\text{notbanking transactions}}=124,77, X_{\text{notshopping}}=122,53$ ).

Relationship between the devices for students to use to connect to the Internet and the level of digital citizenship were took a look at one by one. Students by using laptop ( $t(237)=-1.726, p=.086$ ) and PC ( $t(237)=-1.491, p=.137$ ) to connect to the Internet between the levels of digital citizenship were not found a significant difference. On the other hand, students by using tablet ( $t(237)=-4.183, p=.000$ ) and mobile phone ( $t(237)=-3.386, p=.001$ ) between the levels of digital citizenship were found a significant difference. As a result of these tests, students using tablet ( $X_{\text{tablet}}=138,45$ ) and mobile phone ( $X_{\text{mobilephone}}=129,71$ ) have the higher level of digital citizenship than students not using tablet ( $X_{\text{nottablet}}=124,92$ ) and mobile phone ( $X_{\text{notmobilephone}}=123,04$ ).

Students by thinking the Internet safe between the levels of digital citizenship were not found a significant difference ( $t(232)=1.597, p=.112$ ).

Students by being members of social network sharing sites between the levels of digital citizenship were not found a significant difference ( $t(234)=1.713, p=.088$ ).

Relationship between students using different social network sharing sites and the level of digital citizenship were took a look at one by one. Students by using Facebook ( $t(236)=-1.941, p=.053$ ) and the other social network

sharing sites ( $t(236)=.716$ ,  $p=.475$ ) between the levels of digital citizenship were not found a significant difference. On the other hand, students by using Twitter ( $t(236)=-2.556$ ,  $p=.011$ ) and Google+ ( $t(236)=-3.559$ ,  $p=.000$ ) between the levels of digital citizenship were found a significant difference. As a result of these tests, students using Twitter ( $X_{\text{Twitter}}=128,10$ ) and Google+ ( $X_{\text{Google+}}=129,51$ ) have the higher level of digital citizenship than students not using Twitter ( $X_{\text{notTwitter}}=122,66$ ) and Google+ ( $X_{\text{notGoogle+}}=122,47$ ).

#### 4. Conclusion

In this study, Digital Citizenship Survey(DCS) was used and students' level of digital citizenship were compared. 239 students from Faculty of Education of Sakarya University in the 2012-2013 academic year have applied the scale. Within the scope of this study gender, class, education, having computer, using computer hours per day, taking computer training, using the Internet, using the Internet hours per day, purposes for using the Internet, the device used to connect to the Internet, thinking the Internet safe, membership of social network sharing sites, using which social network sharing sites were compared with the students' level of digital citizenship.

As a result of these analyzes variables of gender, class, education, having computer, using computer hours per day, taking computer training, using the Internet, thinking the Internet safe, membership of social network sharing sites between the levels of digital citizenship were not found a significant difference. Using the Internet hours per day, purposes for using the Internet, the device used to connect to the Internet, using which social network sharing sites between the levels of digital citizenship were found a significant difference.

Students using the Internet 3-6 hours per day have the higher level of digital citizenship than students using the Internet 0 -1 hour per day. Students using the Internet for reading newspaper/book, banking transactions and shopping have the higher level of digital citizenship than students not using the Internet for these purposes. Students using tablet and mobile phone have the higher level of digital citizenship than students not using tablet and mobile phone. Students using Twitter and Google+ have the higher level of digital citizenship than students not using Twitter and Google+.

In conclusion, students who use the Internet 3-6 hours per day for reading newspaper/book, banking transactions and shopping with tablet and mobile phone and use Twitter and Google+ have more digital citizen's features. Looking at the results of analysis, this study will repeat for different groups or different variables in future studies.

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4<sup>th</sup> International Conference on New Horizons in Education

# Brazilian technical report on higher education and national education plans: reflection tools in building an inclusive society.

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## Abstract

Brazilian Higher Educational Institutions have an important function in transforming the social reality of the people and the Brazilian National Education Plans accent this role in its goals. In this paper we will reflect on the role of the Brazilian Higher Educational Institutions in building an inclusive society, with social responsibility, based on the National Education Plans and a numerical analysis of information provided by National Institute for Educational Studies and Research Anísio Teixeira (INEP) in their Technical Briefs on the Census of Higher Education.

*Keywords:* Inclusive Society; Social Responsibility; Higher Educational Institution; National Education Plan; Census of Higher Education.

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## 1. The Need for Reconfiguration of Higher Education Institutions in Brazil

Never before higher education attained such importance, whether the expansion of its effects, the resources allocated to it, or the role it plays in society, transformed, worldwide, in the knowledge society. (Federico Mayor Zaragoza, 1998.)

Federico Mayor Zaragoza, Director-General of UNESCO in 1998, in the opening speech of the First World Conference on Higher Education, has already signaled about the importance of higher education and its institutional responsibilities, and the ability of educational institutions having a vital power of transformation.

The World Conference on Higher Education in 2009, whose theme was "New Dynamics of Higher Education and Research for Social Change and Development," was also about the responsibilities of higher education. In its Communiqué of July 8, 2009, the World Conference recognizes that higher education is a matter of responsibility and economic support of all governments. Incentives for Education by the Government have become important tools and it is absolutely necessary for the access and quality of higher education. The incentives for Education and the concern for building an inclusive society are factors that contribute to the sustainable development of the country.

Never in history was so important to invest in higher education as a major force in building an inclusive and diverse knowledge, and advancing

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research, innovation and creativity. (World Conference on Higher Education 2009. Communiqué of July 8, 2009.)

The participants in the World Conference on Higher Education 2009 indicate that "the past decade has left evidence that research and higher education contribute to the eradication of poverty, sustainable development and progress, achieving the international development goals ..."

With the emergence of new institutions and tools disseminators of knowledge, institutional structures need to focus education efforts to build a new identity, based on the construction of knowledge in the contemporary context.

Annually, in Brazil, the National Institute for Educational Studies and Research Anísio Teixeira (INEP) conducts the Census of Higher Education, collecting information about Higher Education Institutions (IES), undergraduate and sequential specific training and students and teachers connected to these courses. The Census aims to portray the Brazilian Higher Education, providing information to general society in the Census Technical Report on Higher Education. These reports, over the years, have been sensing a growing student demand, and therefore there is a need to think about a reconfiguration of higher education in general.

Several significant changes are occurring in higher education, including the transformation of higher education institutions in social organizations and public entities of private nature. Given this fact, and since the federal system of higher education in Brazil is not able to absorb all the demand, private institutions must be prepared quantitatively and qualitatively, in the interest of promoting social inclusion.

Opening the market to higher education institutions for profit, tax incentives for higher education institutions, student financing programs, among others, are measures that benefit not only students, but also promote the development of private institutions and assist the government, since public education, with complex management, cannot, by itself, meet the demand.

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## **2. An Overview of Brazilian Period from 2001 to 2010**

Observing the evolution of the number of Brazilians Higher Education Institutions, summarized in Technical Briefs on the Census of Higher Education, in the 1970s, 1/3 of the system was private and 2/3 public. Already in 1980, 77% of the institutions were private, reaching 78% in 1998 (INEP / MEC). The figures for 2001, released by INEP/MEC, demonstrated that 86.8% of the institutions were private, reaching 88.3%, in 2010.

Ano	Total	Pública								Privada	
		Total	%	Federal	%	Estadual	%	Municipal	%	Privada	%
2001	1.391	183	13,2	67	4,8	63	4,5	53	3,8	1.208	86,8
2002	1.637	195	11,9	73	4,5	65	4,0	57	3,5	1.442	88,1
2003	1.859	207	11,1	83	4,5	65	3,5	59	3,2	1.652	88,9
2004	2.013	224	11,1	87	4,3	75	3,7	62	3,1	1.789	88,9
2005	2.165	231	10,7	97	4,5	75	3,5	59	2,7	1.934	89,3
2006	2.270	248	10,9	105	4,6	83	3,7	60	2,6	2.022	89,1
2007	2.281	249	10,9	106	4,6	82	3,6	61	2,7	2.032	89,1
2008	2.252	236	10,5	93	4,1	82	3,6	61	2,7	2.016	89,5
2009	2.314	245	10,6	94	4,1	84	3,6	67	2,9	2.069	89,4
2010	2.378	278	11,7	99	4,2	108	4,5	71	3,0	2.100	88,3

Fonte: MEC/Inep

Table 1. Number of Higher Education Institutions by Category Administrative - Brazil - 2001-2010

The amount of Higher Institutions between 2001 and 2010 had a significant increase: 71%. This increase is mainly due to the increasing number of private institutions (74%), while increasing the number of public institutions was 52%.

Ano	Total	Pública								Privada	
		Total	%	Federal	%	Estadual	%	Municipal	%	Privada	%
2001	3.036.113	944.584	31,1	504.797	16,6	360.537	11,9	79.250	2,6	2.091.529	68,9
2002	3.520.627	1.085.977	30,8	543.598	15,4	437.927	12,4	104.452	3,0	2.434.650	69,2
2003	3.936.933	1.176.174	29,9	583.633	14,8	465.978	11,8	126.563	3,2	2.760.759	70,1
2004	4.223.344	1.214.317	28,8	592.705	14,0	489.529	11,6	132.083	3,1	3.009.027	71,2
2005	4.567.798	1.246.704	27,3	595.327	13,0	514.726	11,3	136.651	3,0	3.321.094	72,7
2006	4.883.852	1.251.365	25,6	607.180	12,4	502.826	10,3	141.359	2,9	3.632.487	74,4
2007	5.250.147	1.335.177	25,4	641.094	12,2	550.089	10,5	143.994	2,7	3.914.970	74,6
2008	5.808.017	1.552.953	26,7	698.319	12,0	710.175	12,2	144.459	2,5	4.255.064	73,3
2009	5.954.021	1.523.864	25,6	839.397	14,1	566.204	9,5	118.263	2,0	4.430.157	74,4
2010	6.379.299	1.643.298	25,8	938.656	14,7	601.112	9,4	103.530	1,6	4.736.001	74,2

Fonte: MEC/Inep

Table 2. Number of Registrations by Administrative Category Brazil - 2001-2010

Between 2001 and 2010 there was an increase of 110% in enrollment in Higher Institutions, and, although there has been an increase in enrollment in public institutions (74%), the most significant increase was in enrollments in Private Institutions (126% increase) and it is consistent with the fact that the number of these institutions have grown by 74%.

The number of entry into Higher Education Institutions grew by 109%, between 2001 to 2010, 78% of the entering of Private Institutions.

Ano	Total	Pública								Privada	
		Total	%	Federal	%	Estadual	%	Municipal	%	Privada	%
2001	1.043.308	251.239	24,1	125.701	12,0	99.214	9,5	26.324	2,5	792.069	75,9
2002	1.431.893	334.070	23,3	148.843	10,4	149.017	10,4	36.210	2,5	1.097.823	76,7
2003	1.554.664	325.405	20,9	153.393	9,9	128.323	8,3	43.689	2,8	1.229.259	79,1
2004	1.646.414	364.647	22,1	165.685	10,1	153.889	9,3	45.073	2,7	1.281.767	77,9
2005	1.805.102	362.217	20,1	148.206	8,2	166.660	9,2	47.351	2,6	1.442.885	79,9
2006	1.965.314	368.394	18,7	177.232	9,0	143.636	7,3	47.526	2,4	1.596.920	81,3
2007	2.138.241	416.178	19,5	193.919	9,1	176.047	8,2	46.212	2,2	1.722.063	80,5
2008	2.336.899	538.474	23,0	211.183	9,0	282.950	12,1	44.341	1,9	1.798.425	77,0
2009	2.065.082	422.320	20,5	253.642	12,3	133.425	6,5	35.253	1,7	1.642.762	79,5
2010	2.182.229	475.884	21,8	302.359	13,9	141.413	6,5	32.112	1,5	1.706.345	78,2

Fonte: MEC/Inep

Table 3. Number of Tickets (All Forms) by Administrative Category - Brazil - 2001-2010

For INEP, enrollment is the sum of ties to a college student between studying and formed, while the number of tickets is the sum of ties to a college student who joined the Institution in the year of the Census, or 2010.

In terms of graduates, Higher Education Census of 2010 shows that there was an increase of 44% of graduates from public institutions, presenting, in 2010, 973,839 graduates, while private schools achieved a 197% increase in the number of graduates, presenting 783,242 graduates in 2010, representing 80% of graduates in general.

Given this significant increase of graduates of registered and enrolled, the role of education, the role of institutions of higher education, especially private ones, can be considered as a factor of social emancipation, for assistance in the construction of citizenship. The new institutions of Private Higher Education are public entities with private nature, and these companies should be viewed not only as institutions that prepare technically and practically for the labor market, but also, and primarily, as spaces of social inclusion and responsible of building an inclusive society, contributing to the formation of ethical citizens.

Ano	Total	Pública								Privada	
		Total	%	Federal	%	Estadual	%	Municipal	%	Privada	%
2001	396.119	132.747	33,5	65.571	16,6	55.045	13,9	12.131	3,1	263.372	66,5
2002	467.972	152.813	32,7	72.054	15,4	64.860	13,9	15.899	3,4	315.159	67,3
2003	532.228	173.141	32,5	85.461	16,1	68.237	12,8	19.443	3,7	359.087	67,5
2004	633.363	209.008	33,0	90.269	14,3	97.727	15,4	21.012	3,3	424.355	67,0
2005	730.484	203.689	27,9	92.626	12,7	88.681	12,1	22.382	3,1	526.795	72,1
2006	762.633	195.231	25,6	84.813	11,1	86.787	11,4	23.631	3,1	567.402	74,4
2007	786.611	197.040	25,0	91.152	11,6	81.522	10,4	24.366	3,1	589.571	75,0
2008	870.386	195.933	22,5	85.634	9,8	84.452	9,7	25.847	3,0	674.453	77,5
2009	959.197	206.877	21,6	93.510	9,7	93.049	9,7	20.318	2,1	752.320	78,4
2010	973.839	190.597	19,6	99.945	10,3	72.530	7,4	18.122	1,9	783.242	80,4

Fonte: MEC/Inep

Table 4. Number of Graduates by Administrative Category - Brazil - 2001 to 2010

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### 3. Brazilian National Education Plans (PNE) and Social Inclusion

PNE thus seeks integrated actions of the three levels of government, creating an intergovernmental entanglement, ie within each government, in order not to share the social policies. (PNE 2001-2010. **LEI N° 10.172, DE 9 DE JANEIRO DE 2001**)

National Education Plan in Brazil lasts for ten years (2001-2010 and 2010-2020) and presents guidelines and objective goals, followed by specific strategies for implementation. Its implementation is the responsibility of different levels of government, who need to create actions plans in order to meet the targets.

The Higher Educational Institutions have an important role in transforming the social reality of the population, this reality with characteristics of inequality, marginalization and exclusion and the National Plan of Education 2001-2010 and 2010-2020 accent in this paper in its goals.

Given the growing number of students who have access to higher education, from 2001 to 2010, from 3,036,113 to 6,379,299, private education institutions, which represent, in 2010, 74% of Higher Education Institutions have an important role as a social institution and must be committed to social emancipation and redemption of citizenship. This increase in access, by itself can now be considered an advancement in inclusion.

The National Education Plan for 2001-2010 PNE established as a goal for 2010 to provide higher education to offer at least 30% of the age group 18-24 years. The real supply hit in 2010 for this age group was 14%.

No country can aspire to be developed independently and without a strong higher education system. In a world where knowledge outweighs the material resources as a factor in human development, the importance of higher education and its institutions is increasing. To enable them its educational mission, institutional and social, public support is crucial. (PNE 2001-2010. **LEI N° 10.172, DE 9 DE JANEIRO DE 2001**)

National Education Plan PNE 2010-2020, in its target 12, has proposed to raise so qualified, gross enrollment rate of higher education to 50% and the net rate to 33% of the population of 18 to 24 years. In 2009, the situation in the Northeast, 18.4% gross enrollment and net enrollment of 9.4%, is still far from satisfactory.

Assuming the largest expansion of school places in the ES to meet the targets occur in private HEIs and taking into account that the greatest potential for new students of ES is among individuals of lower income and therefore belong families with the lowest financing capacity, there will need to expand programs providing grants and funding, as ProUni e FIES. (PNE 2010-2020)

Brasil/ Regiões	Educação Superior (18 a 24 anos)																	
	Escolarização Bruta									Escolarização Líquida								
	2001	2002	2003	2004	2005	2006	2007	2008	2009	2001	2002	2003	2004	2005	2006	2007	2008	2009
Brasil	15,1	16,6	18,6	18,6	19,9	22,6	24,3	25,5	26,7	8,9	9,8	10,6	10,5	11,2	12,6	13,1	13,7	14,4
Centro-Oeste	18,2	21,8	23,6	23,2	25,9	27,0	28,8	31,1	32,6	9,7	11,9	12,3	12,2	14,0	14,8	15,6	16,3	17,9
Nordeste	9,1	9,5	10,9	11,1	11,9	14,3	15,9	16,9	18,4	5,1	5,1	5,8	5,9	6,1	7,1	7,7	8,3	9,4
Norte	11,3	15,3	14,7	12,2	14,6	17,0	19,3	21,7	23,7	5,2	6,7	6,1	5,7	7,0	7,6	9,0	9,9	11,0
Sudeste	17,3	19,0	21,2	22,0	23,3	26,7	28,6	29,4	30,1	10,9	12,0	12,8	13,0	13,8	15,7	16,4	16,6	16,8
Sul	21,3	22,8	26,7	26,5	27,8	29,7	30,8	32,9	33,5	12,7	13,7	15,9	15,3	16,2	17,1	16,8	18,7	19,2

Fonte: IBGE/Pnad; elaborado por MEC/Inep

Nota: Para os anos 2001, 2002 e 2003, exclusiva a população rural de RO, AC, AM, RR, PA e AP.

Table 5. Foreign Gross and Net Enrolment in Higher Education - Brazil and Regions - 2001-2009

The "gross enrollment ratio" allows you to compare the total enrollment of a certain level of education to the population aged theoretically appropriate to this level, while the indicator "net enrollment rate" indicates the percentage of the population enrolled in a given level school aged theoretically appropriate for the population aged theoretically appropriate at the same level. (INEP / MEC)

The mean education can be studied as a factor of social inclusion. Looking at the average education of the country from 2001 to 2010, total, urban and rural, it is observed that the Southeast and South are still above the national average and the Northeast and North, below average. However, one notices a decrease of the difference of urban and rural middle school as well as an increase in the average number of years of study in the age range considered in the survey, approximately 19%.

Thinking in terms of increases in average between 2001 and 2010, each of the regions, the most significant increase was in the Northeast, 35%, still remains the lowest average of Brazil and can not be considered satisfactory. It is noteworthy, also, the increase in average years of schooling of 24% of the Midwest region.

According to the Brazilian Institute of Geography and Statistics, Brazil, IBGE, average schooling is the average years of schooling. The years correspond to the period of study appropriate to the grade and the highest grade or level achieved by the person considering the last grade completed approval.

Even in terms of schooling and its relation to social inclusion, there was an increase in the average number of years of schooling for some population subgroups between 2001 and 2009. Important to notice that there has been a significant increase in years of schooling of blacks, who in 2009 was 8.7 years, increasing by around 28%. The Northeast also saw an increase of 35%, from 6.3 years to 8.5 years of study.

<b>BRASIL</b>			
Localização/Anos	2001	2009	
Total	7,9	9,4	
Urbana	8,3	9,8	
Rural	5,1	7,5	

<b>NORTE</b>			
Localização/Anos	2001	2009	
Total	7,4	8,8	
Urbana	7,4	9,1	
Rural	5,0	7,1	

<b>CENTRO-OESTE</b>			
Localização/Anos	2001	2009	
Total	7,9	9,8	
Urbana	8,2	9,9	
Rural	6,1	8,5	

<b>NORDESTE</b>			
Localização/Anos	2001	2009	
Total	6,3	8,5	
Urbana	7,1	9,0	
Rural	4,1	6,9	

<b>SUDESTE</b>			
Localização/Anos	2001	2009	
Total	8,8	10,1	
Urbana	9,0	10,2	
Rural	6,1	8,4	

<b>SUL</b>			
Localização/Anos	2001	2009	
Total	8,6	9,9	
Urbana	8,9	10,1	
Rural	6,7	8,9	



Figure 1. Número Average Years of Study for the Age Group 18-24 years for the Rural and Urban Locations - Brazil and Regions - 2001 and 2009

The Bill no8035/2010 the PNE 2010-2020, his goal 8, is precisely the reduction of educational inequality, aiming at social inclusion. This Meta proposes raising the average education of the population of eighteen to twenty-four years to a minimum of twelve years of schooling for rural populations, the region of the country and less educated twenty-five percent poorest and proposes equal the average schooling between blacks and non-blacks.

Subgrupos/Ano	2001	2005	2009
1º quarto da distribuição de renda	7,4	8,4	9,2
Campo	5,1	6,4	7,5
Região Nordeste	6,3	7,4	8,5
Negros (pretos e pardos)	6,8	8,0	8,7
Branços	8,8	9,6	10,2
Média Nacional	7,9	8,8	9,4

Fonte: Pnad/IBGE; elaborado por MEC/Inep

Nota: Para calcular o 1º quarto de renda, foi utilizada a variável v4720, rendimento mensal de todas as fontes para pessoas de 10 anos ou mais de idade.

Table 6. Average Number of Years of Study for the Age Group 18-24 years for Population Subgroups Some - Brazil - 2001, 2005 and 2009

Distribution by region of the country in enrollment of undergraduate courses in the form of classroom teaching still performs unevenly and unsatisfactory. The northern region showed an increase in the percentage of enrollment of 4.7% to 6.5%. The Northeast also showed an increase in enrollment and percentage, from 15.2% to 19.3% between 2001 and 2010. The other regions, the Midwest, Southeast and South showed a decrease in the number and percentage of enrollments, rising from 8.6% to 9.1%, 51.7% to 48.7%, and 19.8% for 16, 4%, respectively.

The establishment of a policy of expansion with the aim of reducing inequalities of offerings that exist between regions of the country is a prime topic for building an inclusive society.

Brasil/Regiões	2001			2010		
	Número de Matrículas	% de Matrículas	% População <sup>1</sup>	Número de Matrículas	% de Matrículas	% População <sup>2</sup>
Brasil	3.030.754	100	100	5.449.120	100	100
Centro-Oeste	260.349	8,6	7,1	495.240	9,1	7,4
Nordeste	460.315	15,2	28,7	1.052.161	19,3	27,8
Norte	141.892	4,7	5,8	352.358	6,5	8,3
Sudeste	1.566.610	51,7	43,4	2.656.231	48,7	42,1
Sul	601.588	19,8	15	893.130	16,4	14,4

Fonte: MEC/Inep

Notas: (1) Fonte: Pnad 2001/IBGE; elaborado por MEC/Inep.

(2) Fonte: Censo Demográfico 2010/IBGE; elaborado por MEC/Inep.

Table 7. Distribution and Percentage of Participation in Undergraduate Enrollments Presential by Geographic Region - Brazil - 2001 and 2010

#### 4. Final Considerations

You must then focus on the academic discussion of the social function of private higher education institution not only in university extension projects, but also on the concept of social responsibility of the

Institution / Organization. In the case of Private Higher Educational Institutions, we must discuss the concept of corporate social responsibility, in light of the National Higher Education Evaluation (Sinaes), established by Law n. ° 10 861 of 14 April 2004 regulated by Decree n. ° 2051 of 9 July 2004.

In an interview to the Journal of Higher Education, Fabio Garcia dos Reis, Ph.D. in Social History, defends the public-private alliance: "Today, worldwide, private institutions are taking on the role of social train people alongside the State, as partners, and not against him. "Fabio Garcia complete that" the state needs to create mechanisms to monitor and ensure the quality, but not limit the actions of private bodies. Democratization through the private. "

The numbers related to the Institutions of Higher Education Private are significant. In the period 2001 to 2010 was an increase of 110% in enrollment in Higher Institutions. From a total of 6,379,299 students enrolled in 2010, 4,736,001 are in private institutions, and represented an increase of 126%, consistent with the fact that the number of these institutions have grown 74%.

The average number of years of schooling for the age group 18-24 years for rural and urban localities has been increasing since 2001 in regions of the country, reaching an average of 9.4 years Brazil. Given the results of the Technical Report on Higher Education, 2010, of the National Education PNE 2001-2010 and 2010-2020, the new Private Higher Educational Institutions, these public private in nature, should be seen as institutions / companies committed to assist in preparing a scenario for social emancipation, the exercise of citizenship and global development.

The Private Higher Education has not only informative aspects, but also aspects related to sustainable human development, occupying a prominent place in the development of an inclusive society, enabling the transformation of the individual, the region and the country.

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4<sup>th</sup> International Conference on New Horizons in Education

## Breaking the chains: autonomous learners

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### Abstract

This action research, conducted at Istanbul Sehir University, was designed to find out how students can be autonomous learners if they are given a chance outside the classroom to reflect on their learning process via keeping a learning journal. The questions of the study were “How do students perceive the role of the teacher?” “How do they perceive the role of themselves?” and “Is it possible to make them more autonomous learners?” The participants of the study were 20 high school graduates, who recently started their university degree programs. They were asked to keep a learning journal on daily basis. At the completion of the module (seven weeks), the journals were collected and the entries were analyzed. A concordance program- Antconc, was used for text analysis.

Keywords: Learner autonomy; action research; meta cognitive strategies; motivation

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### 1. Introduction

Over the past decades, the concept of learner autonomy has been a buzzword, especially in foreign language learning as language learning encompasses the learner being active and in the center of the learning process. The concept of ‘learner autonomy’ was first introduced and developed by Henry Holec, director of CRAPEL, in the early 1970s. Holec defined the notion of ‘learner autonomy’ as the “ability to take charge of one’s own learning.” and added “it is not inborn but must be acquired by ‘natural’ means or (most often happens) by formal learning, i.e. in a systematic, deliberate way” (Holec, 1981:1). It is worth mentioning that Holec’s report entitled ‘Autonomy and Foreign Language Learning’ published by the Council of Europe in 1979 focused on adult education and was based on the notions of ‘developing individual’s freedom’, ‘increasing sense of awareness’ and moving from being ‘the product of his society’ to being ‘producer of his society’ (Holec, 1981: 1-3) and thus aiming at promoting a lifelong learning. In 1990s, with the influence of ‘constructivism’ and ‘learner- centred theories’ the concept of ‘learner autonomy’ started to appear in curriculum studies and since then has become one of the indispensable goals of any curriculum. Since Holec coined the term ‘learner autonomy’, many other definitions have been offered, however, the definition we adopted for this study is it is the capacity for detachment, critical reflection, decision-making, and independent action (Little 1991:4). By adopting Little’s definition of ‘learner autonomy’, we will limit our focus to observe whether there is a change in meta-cognitive strategies that students adopt and whether their attitude and motivation towards learning has gone through a transformation. Cook states that meta-cognitive strategies “are about learning rather than learning strategies themselves”. (Cook, 1993:114) The autonomous learner shows initiative regarding learning, and shares in monitoring progress and evaluating the extent to which learning is achieved (Schunk, 2005). In that sense, aiming at fostering learner autonomy is in a way providing opportunities or an environment to lead students move from applying cognitive strategies to the second step of applying meta-cognitive strategies; integrating cognitive and meta-cognitive strategies. Fostering the development of learner autonomy rests on the pedagogical claim that in formal educational contexts, reflectivity and self-awareness produce better learning (Pintrich, 2000). Motivation

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and self-efficacy are also considered to be closely related to learner autonomy as these notions play a crucial role in either fostering or inhibiting learner autonomy. Autonomous learners are believed to be intrinsically motivated and this is mostly associated with setting personal goals. Meece (1994:25) indicates two achievement goals:

- . learning oriented/task oriented: These learners seek to improve their level of competence.
- . performance oriented/ ego oriented:...These individuals are likely to view their abilities as stable traits that can be judged in relation to others.

It is observed that performance oriented/ego oriented learners' motivation tends to be a short-term motivation and depends on the task, environment or the other individuals in class. Nonetheless, performance oriented learners still tend to be more autonomous learners and follow decision making strategies. On the other hand, inability to set personal goals which is directly related to intrinsic motivation is agreed to serve as one of the crucial reasons for underachievement or being trapped in an image of being an underachiever. Krouse and Krouse (1981) state that there are three main reasons for underachievement:

- . skill deficit
- . personality dysfunction ( impulsiveness, fear of failure, high need for approval)
- . deficiencies in self-control

As seen, the underlying reasons for underachievement are more to do with beliefs, values, attitudes and motivational aspects rather than the learner's potential to be able to do the task or perform in a foreign language. It is of great importance to lead students to comprehend and reflect on the reasons why they fail or underachieve and enable them to see the fact that personal beliefs, attitudes and values towards learning need to be deconstructed in time and with effort and decision making and independent action should follow. Teachers' guidance in this process plays the most important role in relation to creating a friendly and low threat environment to be able to work in collaboration towards the goals because it is considered that student achievement; student motivation, academic confidence and learning strategies determine learner autonomy (Thanasoulas, 2000).

## **2. The Study**

### **2.1 Method**

This study is an action research. Action research is a term used to describe the process of identifying a puzzle in the classroom, collecting, and interpreting data. This process is beneficial to teachers and students since it is concerned with improving the immediate learning environment (Finch, 2001). The puzzle in this case is the participants, who, being fresh graduates of high school, do not have many qualities of autonomous learners; instead they expected all learning to come from the teacher. As a requirement of university studies, they have to take the responsibility of their own learning, thus, a paradigm shift was needed. On the first day of their module, the instructor-researcher asked them to keep a learning journal. Throughout the module, the instruction was geared to foster autonomy.

### **2.2 Research Question**

The research question for this particular action research was: “Is it possible to make a paradigm shift in students that start their foundation program at university so as to foster their autonomy in the process of learning?” It has been regarded that students come to university with the set notion that the teacher is the owner of the teaching and learning process. The underlying rationale for this notion is that all Turkish students take a central university entrance exam to be eligible to study at tertiary level. In order to better prepare themselves for this exam, 52.97% of all test-takers attend private courses, where the teacher takes the responsibility of the teaching-learning process (MONE, 2009). This tendency continues at university level.

In order to change this paradigm, the instruction throughout the module was designed to foster learner autonomy. While doing this, four determinants of autonomy, as pointed out by Eccles & Roeser (2003; cited in Thanasoulas, 2000), was adopted as indicators of the paradigm shift. These are student achievement, motivation, academic confidence and learning strategies.

### **2.3 Participants**

20 students that started their college degree programs were asked to keep a learning journal everyday for seven weeks - until the completion of a module. However, at the end of the module, 12 students who regularly wrote entries were taken into consideration and only those students and their journal entries constituted the data of this research.

### **2.4 Data Analysis**

The data analysis process was two-fold: First, the subject pronoun change was examined through a concordance program: *AntConc*. It has been assumed that the subject/pronoun used at the beginning should be “the teacher” or “we”, meaning the class and myself. However, by the end of the study it was expected that the pronoun would turn into “I” as the participants were expected to take more action in their learning. The journal entries started as of 4 October and the last entry was 19 November. Secondly, a total of 47 days of data entries of 12 participants were analyzed using a grounded theory approach that employed further focused codes to explore connections and generate theoretical hypotheses that are discussed in the findings below. The data was examined under two headings: Changes in meta-cognitive strategies, and changes in attitudes and motivation.

### 3. Findings

#### 3.1 Change in Subject/pronoun

Weeks	Week 1		Week 3		Week 5		Week 7	
	We/ T.	I	We/ T.	I	We/ T.	I	We/ T.	I
P1	3	7	8	5	3	9	0	9
P2	14	5	8	9	3	8	2	11
P3	11	7	8	7	2	8	5	13
P4	11	12	15	9	6	9	2	11
P5	14	8	10	9	7	13	8	16
P6	5	1	5	2	3	22	5	19
P7	25	16	11	5	3	20	4	22
P8	2	8	16	7	9	14	3	17
P9	9	3	2	0	0	3	1	6
P10	4	0	5	2	0	2	2	5
P11	5	9	5	6	7	1	4	5
P12	23	0	18	4	11	6	8	8
Total	126	76	111	65	54	115	44	142

**Table 1.** Change in subject/ pronoun

Table 1 illustrates the number of the uses of subject pronouns 'I', meaning 'the class and myself' and 'we', meaning 'the class and the teacher'. In week 1, the total use of the subject pronoun by all 12 participants, 'we' or 'the teacher' was 126 times, whereas the total use of the subject pronoun 'I' was 76 times. Except for the four participants, P1, P4, P8 and P11 (P is the abbreviation for participant), the rest of them (8 participants) intimately connected their learning experience with the teacher, the classroom activities and environment. In week 3, the results show a similar tendency as the participants' total use of subject pronoun 'we' or 'the teacher' was 111 times and much higher than the use of the subject pronoun 'I'. It can be said that in week 2, the participants' dependency on their teachers and classmates continues except for two participants (P2 'we':8/'I':9, P11 'we':5/'I':6), however even these participants show a strong dependence on their teachers. In the following weeks, a different tendency can be seen as the total number of the uses of subject pronoun 'I' increased dramatically (week 5 'we': 54/'I':115, week 7: 'we'44/'I':142). In week 5, 10 out of 12 participants started to change the way they approach learning and to take charge of their own learning. In week 7, except for one participant (P12) 11 of them showed a tendency toward taking more action on their learning.

#### 3.2 Change in Meta-cognitive Strategies

With the development of autonomy, learners are expected to take action on their learning and develop some meta-cognitive strategies. As pointed out by Cook (1993) meta-cognitive strategies are 'strategies about learning rather than learning strategies themselves'. Here, we have taken into consideration three of the meta-cognitive strategies that Cook (1993) indicates: self-monitoring, self-evaluation and planning. After monitoring and

evaluating themselves, learners attempt to use a certain strategy, and come up with a plan to overcome their weaknesses.

[P1/week 1] *“Today we talked about phobias, I learnt different types of phobias such as acrophobia and arachnophobia.”*

[P1/week 3] *“There were some points that I had missed about essays last week. I completed them and I understood my mistakes about thesis statement.”*

[P1/week 3] *“After today everyday I will listen to a video to improve my listening skills and I will watch a film twice a week. I started.”*

As it can be seen above, P1 was not aware of these meta-cognitive strategies in week 1. He had a tendency to report the learning took place in the classroom. However, in week 3, he started to self-monitor. He indicated that he missed out on some points, and evaluated his learning identifying the problematic areas. In week 3, it is clear that he had a plan about how to achieve his objective.

[P9/week 3] *“Today I watched a film and I listened to new songs in English.”*

[P9/week 4] *“Today we learnt passive structures. At home I did some extra practices to learn better.”*

[P9/week 5] *“Today we did listening practice. Also we did some practice about dates and numbers. This was very good for me because I had a problem with dates and numbers but now when I hear I’ll write it down quickly.”*

As it is shown above, P9 indicated that she was doing some extra work outside the class in week 3, however she was not sure how to monitor or evaluate this. However, in weeks 4 and 5, she started to monitor and evaluate (*I had some problems with dates*) her learning process and took actions (*extra study*), and plan (*writing down quickly*) for further improvement.

### **3.3 Change in Attitude and Motivation**

Attitude and motivation are closely related terms that have an impact on student autonomy. Attitudes, as it is pointed out by Brown (1987, cited in Thanasoulas, 2000) ‘part of one’s perception of self, of others and of the culture in which one is living (or the culture of the target language)’ shape how learners see themselves and their second language learning process. Gardner and MacIntyre (1993:3) state that motivation has three parts: ‘desire to do the task, directed effort and satisfaction with the task’. Considering these views, it is assumed that as learners take charge of their own learning and become more autonomous, their attitudes will change and their motivation and self-esteem will increase.

[P3/week 3] *“...At 10 pm I am planning to exit from library with feeling happy for finished my responsibilities.”*

[P3/week 4] *"Today I wrote too bad essay in process writing. I mean I searched the topic too much I didn't have anything to write with my own words. Even though I had a good outline, I didn't write."*

[P3/week 4] *"I listened to Pink songs. Learning new words will help me I believe."*

[P3/week 5] *"Today I woke up and came to university library. I read my books until 2 pm. After that I prepared for my presentation till 7 pm. When I came to class, I looked some resources from the Internet. I don't plan to write an essay I want to be natural. I will try to speak when I close my eyes."*

[P3/week 5] *"I had an oral presentation today. I think I succeeded that because I wanted to be natural so that I didn't prepare writing a paper."*

As it is shown above, P3 indicated the effort he put into accomplishing his tasks and expressed a sense of satisfaction with his accomplishments. Also, it was clear that there was some indication of growing self-esteem as he decided how to approach some of the tasks because he would like to speak English fluently.

[P11/week 2] *"I decided to watch all the movies of one director and then I would pass the another one and I decided to do it in English; yes maybe I don't understand them all but one day it will help me; I hope so..."*

[P11/week 7] *"Back to journal because I couldn't do my homework but I love this language and it is better to write here. I was watching movies of director Tim Burton and I understood nearly all of them."*

As it is shown above, in week 2 P11 mentioned his plan of watching movies, however, he conveyed a sense of inefficiency. He was concerned about his abilities and his success in the future. In week 7, it was clear that there existed a big change in his attitude, as he expressed his sense of accomplishment and satisfaction. Even though he couldn't do his homework, he stated 'how much he loved this language', which showed a high level of self-esteem and a positive attitude.

[P2/week 3] *"I said to myself I will start tomorrow but I am saying today now. I am at class now and waiting for the lecture. I will annoy my teacher because I did not do my homework but I will do it today and I will apply my plan beginning from today. I ordered 'Understanding and Using English Grammar' yesterday from Homer bookstore. I will start reading an English book. I will read three English books per week."*

[P2/week 4] *"Today we got an essay project I am so happy because I wrote my first serious essay; it has an intro, two body paragraphs and a conclusion. I think my English is improving. The book I started yesterday can be very useful for me about planning my time. My English is getting better everyday and I am so hopeful about the future."*

As it is shown above, P2 identified his weaknesses and indicated his study plan about doing some extra grammar study and reading. He had the desire and he was ready to put his directed effort in it. In week 4, the same participant also expressed a sense of accomplishment. He was satisfied with his process, he believed that he had good writing skills and he was improving his reading skills, which indicated an increasing level of self-esteem.

#### 4. Conclusion

This action-research was undertaken to foster students' autonomy in their learning process. The action-research conducted on this sample group validates the assertion that autonomy is an innate skill that is possible to foster. According to American social psychologist Deci, for any individual to be able to reach 'a sense of self-fulfilment', autonomy is one of the three basic needs that should be addressed and satisfied. He posits that when we are 'fully willing to do what (we) are doing and when (we) embrace the activity with a sense of interest and commitment', we are autonomous or self regulated. (Deci, 1996: 2) To foster students' autonomy in their learning process, students first need to be aware of what they are doing and they should be given a chance to be able to pass this initial stage. In many cases it is observed that students are deeply attached to their passive role, which is assigned to them by traditional school system in which any major decision is made on behalf of them even for the crucial meta cognitive decisions such as 'learning targets' or 'evaluating learning outcomes' which should involve the learner. Nonetheless, submitting to this role does not necessarily mean that students lack the 'capacity for detachment, critical reflection, decision-making, and independent action' (Little 1991:4). Teachers and classroom environment should propose and enable students to foster the autonomy they already possess innately and there need to be a shift on the mindset many teachers share, which is students are not ready to take responsibility. Brown and Presley propose four major characteristics that self regulated learners share. (Brown and Presley, 1994: 158):

- . good thinkers use cognitive strategies
- . good thinkers employ meta cognitive strategies. They monitor their process closely.
- . good thinkers have other knowledge (on the other topics)
- . good thinkers possess motivational beliefs

This action research conducted on a sample group validates that students' entries in their journals shared some or in some cases all of the characteristics of a self regulated learner proposed by Brown and Presley. Given the right environment and a chance to be self-sufficient and autonomous, learners realize that they have the skills to monitor, evaluate and make their own decisions to follow certain strategies and plans to direct their own learning.

It was also evident that as participants undertook this process, it had a considerable impact on their attitude, motivation and self- esteem.

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# Bridging the gap between educational research and school practice through cooperation of university and primary school teachers

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## Abstract

The existence of a gap between chemistry education research and teaching practice has been the topic of many discussions, and in recent years many efforts have been made to overcome this gap. In the present paper, we contribute to these efforts by reporting about collaboration between researchers and teachers in the PROFILES project from the perspective of university members. In the paper, we assert that primary school teachers must receive very concise and unequivocal instructions for their work in order to ensure that all parts of the project are performed correctly. Collaboration between researchers and teachers is only prosperous if both parties value their own knowledge.

Keywords: chemistry education research, gap between research and teaching practice, collaboration between teachers and researchers

## 1. INTRODUCTION

Research in chemistry education is much younger than research in modern chemistry. It began in the 20th century, which is when journals in this branch also started to be published (J. of Chem. Ed., since ~ 1920; J. of Res. in Sci. T., since ~1960; Int. J. of Sci. Ed., since ~ 1980, etc.). Since this time, chemistry education research has provided a great deal of data and has supported particular groups of professionals, especially those involved in curriculum development or assessment design. However, the question as to the success in reaching the central core of professionals – the teachers in the classroom – remains open. Considerable evidence indicates a continuing gap between research on effective teaching and teaching practice (Robinson, 1998; Costa et al., 2000; Gilbert et al, 2002; De Jong, 2004; Nuthal, 2004). Research is often seen by teachers as too theoretical, too idealistic, or too general to relate directly to the practical realities of classroom life (Hiebert et al., 2002).

According to DeJong (2004), there are four main explanations for the gap between chemistry education research and teaching practice:

- *The need to survive issue.* Teachers believe that they do not have enough time to read research articles because they are already too busy with their teaching in the classroom. Researchers, on the other hand, are required by their universities to publish in highly ranked journals, whereas for teachers publishing in journals does not provide rewards in terms of 'research' output.
- *The mutual expectations issue.* Teachers may be prone to thinking that research should provide quick final solutions for their teaching difficulties, while researchers may believe that teachers are able to understand their reports and transform research outcomes into useful ideas for teaching.
- *The innovation strategy issue.* Chemistry education reforms have often been introduced by using the RDD-model (research, development, diffusion). According to this 'top-down' approach, research projects are launched at universities or other research institutes and the results obtained are used for developing new curricula and teaching/learning materials in separate institutes, which also oversee the further dissemination of

the end products. From this perspective, the teacher role consists only of executing the new programs, therefore creating a sharp distinction between researchers and teachers. Instead, strategies that contribute to bridging the researcher-teacher gap should be implemented.

- *The research paradigm issue.* Over the past several decades, research programs for chemistry education have been strongly influenced by ‘content-free’ theories of teaching and learning. The conclusions of this research have tended to be very general. However, most chemistry teachers are faced with specific content-related difficulties in teaching and learning. This discrepancy also contributes to the persistence of the research-teaching gap.

Anderson (2007) summarizes the barriers preventing, and the strategies promoting, the bridging of the gap between science education research knowledge and its application in teaching practice. He highlights several strategies that can be used to alleviate this problem (see Figure 1), so that more lecturers apply the results of science education research, such as translating research findings into less scientific language, publishing teaching experience, involving teachers in action research, etc.

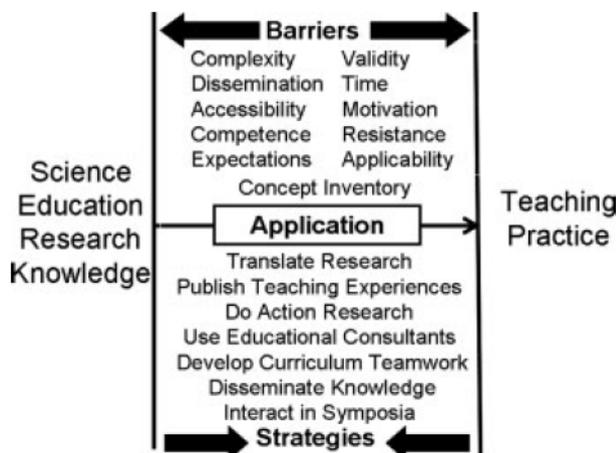


Fig. 1. Barriers preventing, and strategies promoting, the bridging of the gap between science education research and teaching practice (Anderson, 2007).

Most of the actions suggested by other researchers also refer to improving communication and collaboration between researchers and teachers (Gilbert et al., 2002). In order to improve such collaboration, numerous research projects are therefore being launched in which research teams are made up of researchers and teachers. One such project is PROFILES.

The PROFILES project is a 4-year Framework Program 7 (FP7) project funded by the European Commission of the EU (PROFILES Consortium, 2010). The PROFILES project promotes IBSE (Inquiry Based Science Education) through raising the self-efficacy of science teachers and thereby providing a better understanding of the changing purpose of teaching science in schools and the value of stakeholder networking.

Initially, PROFILES involves the development of lead teachers on four fronts (teacher as learner, as teacher, as reflective practitioner and as leader), consolidating their ownership of the context-led approach and incorporating use-inspired research, evaluative methods and stakeholder networking (Bolte, 2011).

In the present article, we report on the collaboration between researchers and teachers from the perspective of university members, based on experience gained in the first two cycles of collaboration in the PROFILES project.

## 2. METHOD

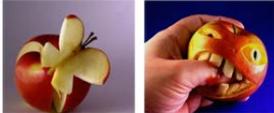
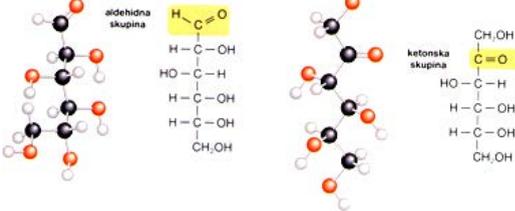
### 2.1 Sample

In the two years of the PROFILES project, 71 teachers have participated in the project, along with 10 university coordinators.

### 2.2 Instruments and materials

As result of the project, more than 35 modules have been developed over the two years in cooperation between university coordinators and school teachers, including several modules covering various learning objectives, with titles such as: “Why is vinegar used as limestone remover?”, “Why is it easier to swim in the sea than in a lake?”, “An apple a day keeps the doctor away”, “How does food containing different fats influence our body?”, etc.

As examples, some typical parts of the modules are presented in Figures 2–5:

<p>(1) Zakaj se to učim?</p>  <p>»Eno jabolko na dan odžene zdravnika vstrani. Jabolko je vir prehrane človeka, mu daje potrebne snovi za gradnjo telesa, energijo, vsebuje snov varujejo zdrave. 100 g jabolka (odvisno od sorte) vsebuje približno 85 g vode, 10,9 g ogljikovih hidratov 3 g vlaknin. Jabolko vsebuje tudi do 40 mg vitamina C, vsebuje tudi vitamin A, E, B1, B2, B6 betakaroten. vsebuje tudi številne minerale, kalija (100 do 180 g), kalcij, fosfor, magnezij in železo. Uživanje jabolka in jabolčnega soka lahko zaščiti možgane od oksidativnega stresa. Raziskava na univerzi Massachusettsu je pokazala, da lahko jabolčni sok zaščiti možganske celice za spomin oz. zmanjša izgubo spomina zaradi staranja.</p>											
<p>Fig. 2. “An apple a day keeps the doctor away”</p>	<p>Fig. 3. Models presenting fructose and glucose molecules</p>										
<p>1. DELOVNI LIST</p> <p><b>HRANILA IN ŽIVILA</b></p> <p>V človeški prehrani najdemo množico različnih živil. Med najpomembnejšimi so žita, iz katerih izdelujejo kruh in testenine, pomembni pa sta tudi sadje in zelenjava. Ta živila so po svojem izvoru rastlinska. Večina živil je tudi živalskega izvora, mednje spadajo meso, mleko in mlečni izdelki ter jajca. Kaj vsebujejo vsa živila, zakaj jih jemo? Pogledaj na embalažo nekaterih živil in skušaj ugotoviti glavne sestavine. Te so navedene v preglednici z naslovom »hranilna vrednost«. V spodnjo preglednico vpiši sestavine živil in daj pomembne podatke.</p> 	<p>Tabela 2</p> <table border="1"> <thead> <tr> <th>Cisti vitamin C</th> <th>Št. kapljic jodovice</th> </tr> </thead> <tbody> <tr> <td>Vzorec 1 (10 mg vitamina C)</td> <td></td> </tr> <tr> <td>Vzorec 2 (10 mg vitamina C)</td> <td></td> </tr> <tr> <td>Vzorec 3 (10 mg vitamina C)</td> <td></td> </tr> <tr> <td>Povprečno št. kapljic jodovice/10 mg vitamina C</td> <td></td> </tr> </tbody> </table>	Cisti vitamin C	Št. kapljic jodovice	Vzorec 1 (10 mg vitamina C)		Vzorec 2 (10 mg vitamina C)		Vzorec 3 (10 mg vitamina C)		Povprečno št. kapljic jodovice/10 mg vitamina C	
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<p>Fig. 4. “What does our food contain?”</p>	<p>Fig. 5. “Vitamin C determination”</p>										

### 2.3 Procedure

The collaboration between researchers and teachers in the PROFILES project can be summarized in four crucial steps, which are presented in Figure 6 and described later in the article.

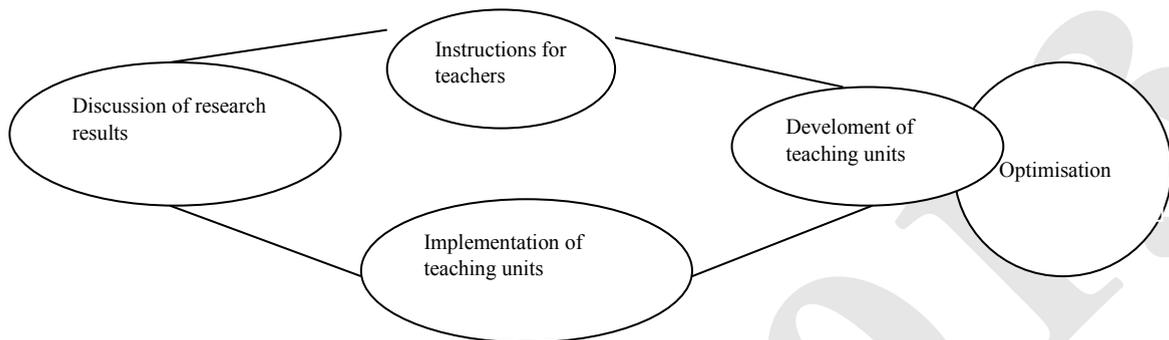


Fig. 6. Crucial steps of collaboration between researchers and teachers in the PROFILES project

#### 2.3.1 Instructions for teachers

Since teachers had to design and implement four precisely structured documents (Instructions for Teachers, Instructions for Students, Pre-Test and Test), the university coordinators provided them with accurate instructions for each document separately, following particular project requests. Teachers received several sample teaching units (modules) on which they could base the design of their own modules. They also received written instructions for designing some specific parts of the module (e.g., experimental work).

#### 2.3.2 Development of teaching units and optimization

The design of each teaching unit had to undergo several steps. Firstly, an initial draft had to be created in cooperation between the primary teachers and the university coordinator.

Each subsequent version of the teaching unit (module) designed by the group of primary teachers was sent to the university coordinator for the first revision. The university coordinator had to revise all of the teaching material belonging to a particular module, as well as giving the primary teachers appropriate feedback, focusing on both the content and the teaching methods included in the teaching unit. Based on the feedback provided by the university coordinator, the primary school teachers had to adapt all of the materials and submit them once more for final revision. The entire optimization process was performed several times in this way for each of the teaching modules conceived.

In the process of optimization, each teacher in the group had an opportunity to take part in a common discussion, and each part in the module was carefully examined together with the university coordinator. The university coordinators did their best to meet teachers' expectations and requirements regarding their common cooperation.

### 2.3.3 *Implementation of teaching units*

After the demanding process of module optimization, the resulting modules were finally implemented in school classrooms. Implementation of the modules was undertaken at different times in different schools. In the present research, classes in which designed and optimized modules were implemented as experimental groups were considered, while all of the other classes, in which teachers taught their students in their usual way, were regarded as control groups. During the intervention in school practice, several questionnaires were completed by all of the students involved in the research. Some of the questionnaires were completed in computer classrooms, while the teaching process was carried out in regular classrooms.

### 2.3.4 *Discussion of research results*

In general, significant differences were detected between groups of teachers regarding the process of further discussion and dissemination of the results obtained. Some teachers only discussed the results within their own group, while some of the groups gave public presentations of their work. The handling of the dissemination of project results was not determined in advance, but several recommendations were given regarding the importance of project result dissemination.

Participating teachers have an opportunity to continue with the work implemented, as in the following year they can become leading teachers in the PROFILES project. In this way, they have an opportunity to share their experience with the new teachers in the project, and to continue and enrich the work already done. Consequently, all of the teachers involved in the project have an opportunity to present the results of their work in public.

## **3. RESULTS AND DISCUSSION**

Based on the experiences of the university coordinators, the following issues should be pointed out regarding effective collaboration with primary school teachers in the process of the development and evaluation of learning units:

### 3.1 *Principal permission for cooperation in the project*

In line with primary school protocol, primary school teachers must provide their principal with evidence of having gained permission for the students to collaborate in the PROFILES project.

### 3.2 *Arrangements before the start of cooperation between primary school teachers and university members*

University members are aware that primary school teachers need to receive well-structured and accurately written instructions in order to start developing teaching units. The instructions must be presented in a way that offers very concise step by step instructions, but at the same time must permit a broad enough perspective for the primary teachers to gain an insight into the global concept of the study, according to the “PROFILES philosophy”. However, based on the experience obtained in the two years of project implementation, university members have recognized that it is of the utmost importance to go into further detail at every step of the project.

### *3.3 Design of the students' and teachers' material*

Due to a lack of time, primary teachers sometimes constructed teachers' and students' instructions at the last minute. In practice, this resulted in students' and teachers' instructions that were not written simultaneously and concisely. Since they were written separately, delayed teachers' instructions caused several inconveniences for university coordinators in terms of receiving the relevant information for the evaluation. When they failed to receive documents on time, university coordinators were frequently in doubt as to what exactly teachers meant with a specific task in the instructions for students. Consequently, the implementation of the module had already been completed before the discussion between the university coordinators and primary teachers could take place.

### *3.4 Design of the pre-tests and tests*

Designing pre-tests and tests requires a very accurate and precise picture in the teacher's mind. We have to know what the desired result of the teaching unit (module) is. More precisely, we need to be clear about what we really want the students to have learned after performing the teaching intervention. As soon as this perception is clarified, we can start considering the test design. Before we can start structuring the individual test tasks, however, the key words from the module content must be determined at the very least. In designing every single task in the test, teachers must be very aware of keeping in line with the content of the teaching unit. They have to consider very precisely all of the new information students encounter in the implemented unit, so that the test covers all of the relevant content included in the module. The pre-test must be constructed in a similar way, taking into account the teaching content students have already learned.

### *3.5 Respecting the members involved in the project and consideration of revisions*

In the development process of the teaching units, the material designed by the primary teachers underwent several optimizations, carried out by university members. Regardless of the work on both sides being time consuming and quite demanding, the desired result was sometimes not achieved in the end. In some cases, modules were brought into the classroom with complete disregard for the final revision of the university coordinator. In future, it would be beneficial to put together a simple code for teachers' cooperation, stating that the process of development and optimization of the teaching unit will be repeated until consensus is reached on the teaching module. Only in this way can we achieve the common goal of bringing a revised and adjusted teaching unit to the classroom.

### *3.6 Blank forms for the evaluation of project results*

In general, primary school teachers are experts in their own field. Considering this fact, university members must pay special attention to providing them with concise instructions for the specific phases of the research project work. Primary school teachers like to receive concise and complete forms that they can complete with the research results obtained in the project. However, they are also pleased whenever university members can assist them in completing various tasks.

### *3.7 Organizing meetings of all of the teachers involved*

In spite of the fact that we live in the Internet era, it is very important to provide an opportunity for all of the teachers involved in the project to meet “live”. Such meetings provide an appropriate atmosphere for teachers to have a chance to talk to each other, to share their experiences and to overcome the difficulties confronted along the way, in order to successfully fulfill their project expectations.

Over the two years of the project implementation, over 15 such “live” meetings were held. Nevertheless, e-mail communications and web-based learning were provided from the start of the PROFILES project implementation and continued throughout.

### *3.8 Encouraging primary school teachers to write a portfolio*

During the PROFILES project implementation, primary school teachers were encouraged to keep a written record whenever they felt the need to make note of a specific observation, perception, hesitation or conclusion, regardless of the phase of the project. In their portfolios, teachers expressed their views and concerns, as well as their positive experiences with the development and application of the modules. The portfolio serves two purposes. The first is procedural, developing science teachers’ reflection, encouraging their professional development and self-concept, and improving the quality of learning and teaching. The second is evaluative, with the portfolio functioning as a tool for science teachers to present their pedagogical competences and knowledge of the new professional experiences related to the project goals, through a process of action research following the main principles of the PROFILES approach (Devetak et al, 2012).

### *3.9 Stimulating primary school teachers to disseminate their work*

Primary school teachers were encouraged by the university members to present their work throughout the PROFILES project. Some of them have also had the opportunity to contribute to the 1<sup>st</sup> International PROFILES Conference, which was held in Berlin in 2012 (Šket, B., 2012).

## **4. CONCLUSION**

From the perspective of the university members, the experience of collaboration between researchers and teachers in the PROFILES project in first two cycles has been encouraging.

In order to ensure smooth collaboration, we found that primary school teachers must receive the instructions needed in a complete, concise and entirely determined form. There is a large group of different people involved in the project, including students, primary teachers, university members and other collaborators. All of them have their own expectations, needs, timetables, styles of working, attitudes, etc. Therefore, not a single stage of the

project can be left to chance. Consequently, the appropriate conduct of all of the members involved is needed in order to carry out all of the phases of the project correctly and completely. Common tasks must be determined in advance, so that all of the people involved are aware of what they have to do to reach the common goal.

Although the university members were aware that the primary school teachers needed to receive well-structured and accurately written instructions, the modules designed by the teachers indicate that the instructions need to be even more concise. In order to develop teaching units that are more “user friendly” – primarily for the students, but certainly for the teachers as well – very concise step-by-step instructions should be provided by the university coordinators. The result should be modules that are brief, concise and provide students with intelligible explanations of the learning and teaching content.

Regarding the preparation of the evaluation material in the future plans of the PROFILES project, it would be beneficial to include the aim that teachers should acquire basic knowledge of test design. Given that teachers have to prepare evaluation instruments on their own for use in the classroom before and after the intervention, they would probably be grateful for the insight provided by such knowledge.

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# Building networks of care: Volunteers partnering with teachers in supporting vulnerable children

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## Abstract

In this paper we argue that community volunteers may partner with schools to holistically support vulnerable children, as well as their families and community members on a broad level. More specifically, we present a case where community volunteers (n=35) have been partnering with primary school teachers in developing and implementing school-community supportive plans, focusing on prevention, health promotion, counselling and intervention initiatives. In mobilising this school-community partnership, partners – as lay counsellors – relied on sound networks amongst themselves, yet also on other eco-systemic levels. Our paper stems from a participatory action research study, involving researchers, teachers and community volunteers (society) as research partners.

*Keywords:* Community volunteers; networking; participatory action research; school-community partnerships; school-community supportive plans; SHEBA project; supporting vulnerable children.

## 1. Introduction and contextualization of the study

In this paper we report on a study that explored the development of supportive school-based plans by community volunteers, for which purposes volunteers – amongst other things – relied on networking and their own networking abilities. The study forms part of a broad research project, SHEBA (Supporting Home Environments in Beating Adversity), where the focus falls on the manner in which community volunteers can utilize the asset-based approach (Ebersöhn & Eloff, 2006; Kretzmann & McKnight, 1993) in supporting vulnerable individuals, including children in schools. The SHEBA project builds on another research project, STAR (Supportive Teachers, Assets and Resilience), which was initiated in 2003, and focuses on the manner in which teachers can promote resilience in schools (Ebersöhn & Ferreira, 2011; Ferreira & Ebersöhn, 2011; Ferreira & Ebersöhn, 2012).

Both the STAR and SHEBA projects follow a participatory action research (PAR) approach. For both projects, an intervention is facilitated with the participants, where they become aware of their own strengths, assets and resources, and then plan and initiate school- or community-based initiatives in support of their communities. These initiatives typically result in social change and communities coping with the risks they face in a more effective way. Our approach in conducting research therefore implies the assumption that individuals are able to deal with challenges and face risks by relying on what is available to them – not only in terms of skills and attributes amongst themselves, but also in terms of resources in their immediate environment.

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In South Africa, many communities deal with challenges such as high incidences of poverty and unemployment, HIV and Aids associated risks, abuse, child-headed households and high occurrence of orphans on a daily basis. Many of these communities face the additional challenge of limited resources and support from external agencies, requiring of communities on ground level to find solutions to the problems they face in their own manner. In resource-scarce communities, the relationship between schools and communities is thus often an important one – perhaps because both community and school may need to rely on one another for support, mutual development and educational advancement (Elliott, Arthurs & Williams, 2000; Torgeson, 2002). As such, the possibility of volunteers extending the hands of teachers and initiating supportive plans in schools becomes more of a reality.

## **2. Purpose of the study**

The study we report on explored the development of school-based supportive plans by community volunteers, in collaboration with primary school teachers. Secondly, we investigated how and to what extent the community volunteers relied on networking and their own networking abilities, in performing this supportive function. As such, our study focused on community volunteers and their potential role in this sphere of life.

For this purpose, we explored and gained insight into how community volunteers collaborated with schools in developing and implementing supportive plans. Our overall aim was to determine the existence or non-existence of a stipulated scope of practice for community volunteers in the school, and furthermore what the potential of networking may be during such endeavours.

## **3. Community volunteers supporting vulnerable communities within the South African context**

Wilson and Musick (1997:695) define volunteer work as “productive work that requires human capital, collective behaviour that requires social capital and ethically guided work that requires cultural capital”. As volunteer work often implies work that is unpaid for, community volunteers typically offer their time and effort free of charge for the benefit of those who need help. Although many volunteers may feel a sense of social responsibility, aspiring to give back to their communities, others may be involved in volunteer work as a way of spending their leisure time or gaining experience (Galindo-Kuhn & Guzley, 2002). In our view the collaboration between teachers and community volunteers (as seen in the SHEBA project) may in this way positively impact on learners’ achievements.

South Africa as a country is marked by the incidence of phenomena that may leave citizens vulnerable and in need of support. This country is comprised of multiculturalism and other forms of diversity. As stated, many communities and settlements in South Africa experience poverty, lack of service delivery and external support, resulting in the members of these communities facing challenges on a variety of levels. Such communities are often characterized by high incidence of child-headed households, single parent families, challenges associated with diseases such as HIV and Aids, and increased levels of abuse and crime (Page, Louw & Pakkiri, 2006). Furthermore, phenomena such as malnutrition, child neglect and abuse may also increase the levels of vulnerability.

However, regardless of limitations in terms of resources and literacy in this country of diversity, teachers and community members are mostly willing to impact positively on the lives of children and to make a difference in the lives of other community members. Against the background of limited intervention from government authorities in South Africa, specifically in resource-scarce communities, the participants in our study took the initiative to establish partnerships with schools in their proximity and their communities in order to develop and implement supportive plans.

Partnerships between schools and community members have always implied the possibility of benefiting both children and the community at large (Strom & Strom, 1999). Community volunteers possess the potential of providing individualized attention to children – something that is often not offered to children in the general classroom, based on the high teacher-child ratio in South African schools. According to Elliott et al. (2000) many parents may be unable to provide assistance at school or to children in terms of activities such as homework, due to factors such as illiteracy or un-involvement. Thus, according to Russel, Blatchford, Bassett, Brown and Martin (2005), as teachers act *in loco parentis* to children, community volunteers may extend this role by assisting children with homework or by providing other support to children and/or teachers that may be required (Russel et al., 2005), such as learner support, improving and safeguarding the school's property, being involved in children's physical activities and assisting with after school care (Strom & Strom, 1999).

#### 4. Research methodology

We relied on interpretivism (Patton, 2002) as meta-theory, thereby embracing participants' own construction of meaning of their reality. As researchers we thus did not impose what we think is right for the kind of context or situation the participants find themselves in (Mack, 2010). As methodological paradigm we relied on participatory action research (PAR) (Chambers, 2005), involving the participants in seeking knowledge for social action. In line with our selected paradigm we assumed that society is relational, contextual and co-constructed in the sense that aspects that took place in the past have an influence on the present, and that individuals do not exist in isolation but are rather related to one another and to their various environments. Throughout, we embraced the nature of collaboration and participation within the PAR approach (Walter, 2009).

As research design, we selected a case study design (Maree, 2007). For selecting the participants we combined convenience and purposive sampling (Maree, 2007). We namely selected the case conveniently (as this study forms part of a broader existing project) and the 35 community volunteers purposefully.

For data generation and documentation, we employed PAR-based workshops, observation, visual data techniques, field notes and researcher diaries. PAR-based workshops are interactive sessions, focusing on problem solving (Chambers, 2005). We, in collaboration with teachers who have been participating in the STAR project since 2003, co-facilitated six workshops over three field visits, during which participants worked in small groups of six to seven participants, documenting their ideas on posters and then reporting back on these in the larger group. During the first field visit, we aimed to determine the participants' prior knowledge and practices at the time, in terms of their contributions towards a supportive environment for schools and also how they relied on networking to accomplish this goal. In addition, we facilitated a workshop session during which community volunteers discussed South African policy documents that could support them in their supportive task, after which they developed action plans to implement when initiating additional or building on existing school-community supportive plans. Some of the policy documents that were discussed are the Inclusive Education policy, Children's Rights document, Child Justice Act, HIV/AIDS and TB policy, Sexual Offence Act and Divorce Act. During the second and third field visits, PAR-based workshops focused on monitoring and evaluation, follow-up discussions on the potential implementation of relevant policy, and additional strategies to further implement the proposed school-community supportive plans and network in providing such support.

We recorded all workshops and transcribed the reports and discussions of the participants. We relied on observation to document what transpired and used field notes to document our observations, the research process and ideas that emerged. We reflected on our personal experiences in our research diaries. For data analysis, we thematically interpreted the raw data by following the steps suggested by Braun and Clarke (2006).

Throughout, we considered relevant ethical guidelines. As the study forms part of the broader SHEBA project, informed consent had already been obtained from the teachers who acted as facilitators and from all the

community volunteers prior to the study. We respected the privacy of the participants and treated all information as confidential. We did not disclose the participants' identities and data are kept in a secured place, Even though the study did not imply any physical or mental harm to participants, we ensured that any potential of emotional or psychological harm was limited. If harm would have occurred in the form of emotional upset, for example, we were prepared to deal with this in a professional and confidential manner (Barret, 1995), by debriefing the participants and then referring them for professional support. During the course of our study, participants were also reminded that they were involved in the study voluntarily and could withdraw from the study at any time, if they wished to do so (Barret, 1995). In seeking trustworthy findings we implemented suitable strategies to meet the criteria of credibility, confirmability, transferability, dependability and authenticity (Patton, 2002).

#### **4. Results**

We discuss the results of the study in terms of the two main sections of investigation, namely community volunteers' development of school-community supportive plans, and the manner in which they utilized networking during this process of collaboration and support.

##### ***4.1 Establishing school-community supportive plans***

In terms of the school-community partnerships that the volunteers established subsequent to their involvement in the SHEBA project, we identified four main themes. First, community volunteers clarified the purpose of their involvement in school-community partnerships prior to initiating supportive plans. Secondly, community volunteers relied on their relationships with other role-players in forming school-community partnership – thereby utilizing networking as basis for such plans (as discussed in the next subsection). Thirdly, community volunteers followed a specific process of approaching their fellow partners, in order to be accepted and appreciated by other partners. Finally, some obstacles in school-community partnerships influenced the establishment of supportive plans.

Regarding the purpose of community volunteers' involvement in school-community partnerships (Theme 1), volunteers aimed to (i) prevent obstacles that could hinder community and school prosperity, (ii) support the community and schools in dealing with challenges, (iii) fulfil a significant role in co-developing the said plans, and (iv) convey income generation endeavours. Concerning the role-players that community volunteers relied on in establishing school-community partnerships (Theme 2), volunteers identified (i) themselves, (ii) role-players within the school context (such as teachers and school principals), and (iii) role-players outside the school context within the larger community, as key agents in supporting the establishment of school-community supportive plans. When explaining the process of establishing school-community partnerships (Theme 3), community volunteers referred to an (i) initiating phase (involving the establishment of relationships and identification of potential plans), an (ii) implementation phase (during which their ideas and proposed action plans were employed), and a phase of (iii) sustaining intervention measures. Lastly, in relation to the challenges that community volunteers experienced in school-community partnerships (Theme 4), they referred to (i) challenges which involved physical constraints and (ii) challenges brought about by an unsupportive environment.

##### ***4.2 Community volunteers' use of networking skills***

Concerning community volunteers' use of networking and networking abilities, we identified the following four themes: the purpose of volunteer networking, career values and skills, processes involved in volunteer networking, and volunteer network partners. In terms of the purpose of volunteer networking (Theme 1), the (i)

pursuit of personal happiness seemed to be an important reason why volunteers networked with others, which implied the experience of positive emotions (such as accomplishment and personal pride), less emphasis on the negative, immediate satisfaction when seeing positive outcomes, and ultimately an engaged and meaningful life. Besides personal happiness, the volunteers referred to (ii) a sense of collective usefulness as another important purpose of networking. To them, being useful in a collective manner entailed a sense of belonging, the sharing of resources and building relations with constructive institutions in the community, in order to include marginalized people, bridge social divides and address challenges in life.

With regard to career values and skills (Theme 2) community volunteers referred to local (i) networking anchors and (ii) skills. Examples of networking anchors include local wisdom, cultural concepts such as ubuntu and “unity is power”, commitment, dedication and perseverance, and mutual support and self-development. Examples of the skills needed for networking relate to basic counselling skills and include effective listening, empathy, communication and reflection.

Processes in volunteer networking (Theme 3) comprised of (i) learning chain processes and (ii) connecting. Learning chain processes refers to the way in which people shape networks, and conversely how networks shape people, while the process of connecting to others involves interpersonal sharing and support, and forming communities of practice, with the implied role of social media. Finally, networking partners that were identified (Theme 4) included (i) volunteer partners (in the form of local community workers, volunteers from other areas, and friends and clients of the volunteers), (ii) partners within the school (specifically leadership – the school principal, management and other committees), and (iii) partners from outside the school (such as charity agencies, the community at large, churches, businesses, the parents and family of children, political representatives, and governmental departments).

## 5. Discussion

The findings reported in this paper demonstrates how community volunteers may support vulnerable communities by relying on the pool of strengths that they possess, as well as those they can access within their immediate environment. In addition, networking (specifically social media) enabled the volunteers participating in our study to access strengths beyond those found in their immediate environment, stretching the conventional belief that the asset-based approach (Ebersöhn & Eloff, 2006; Kretzmann & McKnight, 1993) entails the mobilization of assets, skills and resources within the immediate environment. As such, the participants in our study did indeed employ the asset-based approach in fulfilling their task of supporting vulnerable individuals (in this case children).

Despite this stretch of boundaries to utilize assets beyond those that are immediately available, our study therefore indicates that the asset-based approach may be applied by community volunteers in fulfilling their supportive tasks on a daily basis. The participants in our study were able to specifically support schools and vulnerable children, by working hand in hand with teachers and schools. Their involvement entailed the establishment of school-community supportive plans, such as information evenings, extra-mural activities for children and skills development workshops for parents, which could assist schools and teachers in creating networks of care, where vulnerable children and their families could be supported. In this manner, supportive plans focused on prevention, health promotion, counselling and intervention initiatives.

In initiating school-community supportive plans, the participants in our study first established relationships with the schools and teachers in their areas. After identifying potential support initiatives, they introduced these in schools and implemented them according to the action plans they developed as part of the SHEBA intervention. This phase was followed by one of continuous monitoring in an attempt to sustain and improve on the support they were providing. Throughout the process, they relied on their own assets, amongst other things on

their own and others' networking skills. They namely partnered with people inside and outside the schools in order to be able to initiate the supportive plans they proposed. In this manner, their implementation of the asset-based approach and utilization of networking in this context emphasizes the idea of people (community volunteers) realizing what they have and capitalizing on this (Nelson, Campbell & Emanuel, 2011). This allowed them to achieve their goals and address challenges in collaboration with others.

In addition to relying on the asset-based approach as theoretical framework, in interpreting the results of our study, we relate our findings to network theory. According to Van Dijk (2006) networks can be defined as a collection of links between elements of a unit. A single link of two elements is called a relationship whereas networks comprise of at least three elements and two links. This includes people, groups, organizations and societies. Against this background, the community volunteers in our study can be viewed as social agents linked by communicative interactions, with volunteerism forming part of networking at the various levels and in collaboration with sub-systems such as teachers, schools and the broader society (Van Dijk, 2006).

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4<sup>th</sup> International Conference on New Horizons in Education

# Can education help to reduce information asymmetry?

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## Abstract

One of the current phenomena is the asymmetry of information that may generate profit to one party in a commercial transaction but can also cause market failures. With increased advancements in technology, asymmetric information has been on the decline as a result of more people being able to easily access all types of information. One of the ways to reduce information asymmetry on the client side is by increasing their competencies.

Keywords: asymmetric information, communication, information barriers, competence, information literacy, financial literacy, disability

## 1. INTRODUCTION

This time is characterized by its dynamics, i.e. speed of the changes, and by an increase in competition. Significant role in the economy is played by information and communication. In life we meet with asymmetric information, which means, that one party in the mutual relationship has more information than the other party. Asymmetry of information can generate benefit to one side, but may also cause so-called market failures.

It is necessary to find a solution to this problem. The essential role in this is played by government interventions in the economy, respectively to society as a whole, for example by introducing the disclosure requirements. Nevertheless, education may also contribute to reduction in volume of the information asymmetry.

## 2. ASYMMETRY OF INFORMATION

Asymmetry of information is a relatively broad term and is determined mainly by economists. Information asymmetry means that one party in the transaction is better informed than the counterparty. This means that he has more information or different or better information. We can also understand the term as the transaction participants do not have complete information about the situation in which they are situated whether it relates to characteristics of the other transaction participants, information about the results of previous transactions or possible alternatives to the process at that time. Asymmetry of information is one of the causes of uncertainty in decision making. We can also talk about an unequal distribution of information.

The information asymmetry occurs despite the general availability of modern technologies that allows fast transmission of information. However, various information barriers cause imperfections in this transmission. Transmission of information itself represents the time that influences relevance of information and in short-term transactions is a risk that the information does not arrive on time. Therefore, people are looking for ways to shorten the time needed for transmission of information from source to user.

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Information asymmetry can be divided in two areas (causes of origin):

- covert activities, i.e. those activities which cannot be identified and observed at no additional cost;
- hidden information, where one party has access to better sources of information than the other, one side of the market has more technical know-how etc.

Asymmetric information is associated with problems of moral hazard and adverse selection. Moral hazard is associated with dishonest or other inappropriate behavior when one market participant is maximizing his profits and simultaneously reducing utility of others. For example the insured persons tends to bear more risk than they would bear if they were uninsured (this may lead to greater profits for that persons, but also to excessive transfer of risk to an insurance company). Adverse selection is related to inability to choose a better option out of several possible variants, which may cause extrusion of high quality services from the market. For example the client does not have enough information about the quality of service towards the price, and therefore prefers to buy lower quality service at a lower price. This lack of awareness is moreover associated with a lack of competence to locate and select the appropriate service. Thus there is a crowding of better service out, leading to a deterioration of the quality of service on the market and resulting in an imperfect state of the market environment. This situation occurs particularly in specialized services, where the client should have essential knowledge and skills to be able to identify quality solutions.

Generally, asymmetry of information is unfortunately rather on the rise than on the decline. This happens due to the fact that while increasing the amount of information that is available, finding information that is relevant (indeed essential) is therefore more and more difficult. Information is also dispersed i.e. not concentrated in one place. Moreover with increasing amount of information it is harder to assign relevant information together, that in mutual interaction form a new higher type of information. In addition it is not always taken in account who created the information and who receives it.

Asymmetry of information is used in different fields of activity from times immemorial, in politics, warfare, gambling, etc. Simply, wherever one party needs to gain advantage over the other. We can specify several examples of this use:

1. Probably the most typical situation is that the seller knows more about products they sell than the buyer. But the opposite case can also occur. E. g. an insurance agent may not be aware of all the relevant facts about the client, etc.
2. An example of bilateral asymmetry might be a relationship between the loan applicant and the bank. The applicant for the loan is fully conversant with his financial situation, but the bank is not. On the contrary, the bank has much better information about the products they offer. In addition, information is time- and place-based and can be interpreted differently by individual entities depending on their experience, knowledge and motivation.
3. In the tourism industry the asymmetry lies in the transmission of information among service providers, intermediaries and customers. In most cases, subjects are mutually distant and negotiation of services is realized on the basis of limited information about the location, level of service, etc.
4. Asymmetry of information associated with a difficult control of qualified personnel in the performance of their work activities may be the cause of inadequate compensation (payment).
5. In elections, voter has no idea if a politician says the truth; moreover he does not examine in detail the electoral program. Decisions are therefore usually based on a limited set of information in the electoral campaign. This results to adverse selection in terms of voters.
6. The asymmetry of information can be found also in education. Candidates respectively their parents are not able to assure themselves in advance about the real quality of the education provided in a particular school.

The main reason, that there is asymmetry of information, is information barriers. They are obstacles in the flow of information. They can be divided down into:

- architectural (spatial), i.e. barriers that prevent certain groups of people to get to the means of providing information, such as people with disabilities (wheelchair users, blind people, etc.), some social groups (pensioners, children, mothers with strollers, etc.), etc.;
- economic, i.e. the costs of obtaining information, limited resources to fund expansion of information, development of provided services, technology innovation, costs of barriers reduction, etc.;
- language, when user communicates in a language other than the provider;
- time, where we can include the providing of outdated information, eventually delay in providing outputs;
- knowledge, that is caused by a lack of information or technical literacy;
- communication, based on various problems in communication (speech disorders, hearing or visual impairments, shame, etc.) or prejudices (e. g. provider's decision is based on the general awareness of the capabilities of a given social group, etc.);
- cultural eventually religious difference in the perception of information, etc.

It is in the public interest to reduce information asymmetry. In economics, it is possible to achieve by regulatory actions against service providers and intermediaries. It is also about setting information duties for market participants, such is the definition of compulsory content of management reports, etc.

Maintaining too large asymmetry of information is even not always in the best interest of better-informed parties; sometimes it is better to share with part of information to counterparty. This will lead to an increase in confidence, better relationships and therefore the flow of new information could increase the partner's interest and thus better-informed party profit.

To reduce information asymmetry on the side of ordinary clients (citizens) contributes clearly improving their competencies by education.

### **3. INCREASING THE COMPETENCIES**

It results from the foregoing that the requirements for the competence of clients are constantly rising. In addition to continuous technological development, there is the steadily growing number of services offered, which carries a number of diverse data. Thereby are also increasing demands on the client's ability to process information at a level to be able to choose high quality services. They must learn to overcome information barriers. Increasing competencies in a particular area means obtaining some kind of literacy.

We can encounter with a number of key phrases that contain the word literacy. These are for example:

- information literacy;
- financial literacy;
- media literacy;
- energetic literacy;
- natural science literacy
- political literacy;
- reading literacy etc.

From the perspective of the topic of this article are probably the most important information and financial literacy.

Definition of information literacy (CILIP,2011):

“Information literacy is knowing when and why you need information, where to find it, and how to evaluate, use and communicate it in an ethical manner.

This definition implies several skills. We believe that the skills (or competencies) that are required to be information literate require an understanding of:

- A need for information
- The resources available
- How to find information
- The need to evaluate results
- How to work with or exploit results
- Ethics and responsibility of use
- How to communicate or share your findings
- How to manage your findings”

Information literacy therefore implies the skills and knowledge that allow you to:

- use ICT for different purposes and in different contexts;
- recognize the need for information;
- identify, collect, analyze, critically evaluate and effectively use information obtained;
- responsibly and safely use ICT.

Place of information literacy in the process of lifelong learning is specified in the Prague Declaration (UNESCO, 2003), which states: “Information Literacy encompasses knowledge of one’s information concerns and needs, and the ability to identify, locate, evaluate, organize and effectively create, use and communicate information to address issues or problems at hand; it is a prerequisite for participating effectively in the Information Society, and is part of the basic human right of lifelong learning.” Information literacy is thus not only objective, but also the tool.

Crucial role in increasing information literacy is played by schools, colleges and other educational institutions.

For ordinary life is also needed financial literacy. The financial sector is characterized by a significant lack of transparency, which implies requirement for some financial education. In The National Financial Education Strategy (MFČR, 2010) is financial literacy defined as a set of knowledge, skills and abilities that are necessary for the citizen to financially secure himself and his family in contemporary society and to actively participate on the market of financial products and services. Financially literate citizen is familiar with the issue of money and prices and is able to responsibly manage personal / family budget, including the management of his financial assets and liabilities, all with regard to changes in his life situations.

Financial literacy is a specialized part of a broader economic literacy, which also includes things such as the ability to secure income, to consider the consequences of personal decisions on current and future income, to be acquainted with the labor market, to make decisions about spending, etc.

Financial literacy includes:

- money literacy, including skills required to manage cash and non-cash money and transactions with them as well as management tools for this purpose (e.g. current account, payment instruments, etc.);
- price literacy, representing the competencies necessary for understanding the mechanisms of price and inflation;
- budgetary literacy, representing competencies required to manage personal / family budget including the ability to manage different life situations from a financial point of view.

Czech Republic Finance Minister Miroslav Kalousek stated: "So, as is the responsibility of the state to educate citizens in reading, writing or mathematics, so logically should be his duty to provide adequate education in the issue of handling with their own money." It is necessary to say that the minister had truth. It is necessary to implement appropriate lessons at primary and secondary schools, but also we cannot do without further education. Here they should play its significant role e.g. information and advisory centers in banks or independent information portals that would work either under the auspices of the Ministry of Finance, Czech National Bank or the Czech Banking Association.

#### **4. SUPPORT OF EDUCATION OF PEOPLE WITH DISABILITIES**

In more complicated situation are people suffering from some kind of disability, such as impaired vision or hearing. In everyday life, these people encounter a number of barriers, including in obtaining information and communication. Consequently, we can say that they suffer from asymmetry of information much more than the general population.

Therefore it is necessary to create special conditions for communication for this group of people, such as in the Czech Republic where is obligation set by legislation to observe the rules of accessibility of information, thus that form of published information must ensure, that with information related to public administration and enabling remote access could be in necessary extent familiarized persons with disabilities. If this information is published in a version that is not in accordance with the regulations, there must be access provided to web sites that meet the requirements. (Czechia, 2008). In appendix to this document there are rules for creating accessible websites described in detail.

Another, equally important area is the creation of special education programs, taking into account the needs of these people. A few years ago various organizations joined forces and with the support of the European Social Fund they are creating special education programs for young people with hearing impairment.

In the period of 2010-2012 the project CZ.1.04/3.3.05/31.00021, OP HRE 3.3 "Minimizing communication barriers of deaf people when entering the labor market" was solved.

Beneficiary was The Union of deaf people Brno, c.a. and the project solution involved Silesian University in Opava; Janáček Academy of Music and Performing Arts Brno; Free Art, Ltd. (the organization operating in the field of multimedia production); Czech Union of the Deaf, c.a. regional organization Ostrava; Confederation of Disabled People in the Czech Republic, Brno municipal organization; and Moravian Unity of deaf people, c.a.

Under the project for the Deaf training course "Fundamentals of business for people with hearing disabilities" (DVD textbooks) was created (Veselý, 2011). Furthermore were also created computer courses for deaf people ECDL START with the certificate (DVD textbooks). ECDL courses are being held by The Union of deaf people Brno, c.a., Czech-Moravian Unity of deaf people c.a. and Czech Union of the Deaf, c.a. regional organization Ostrava. "Telecommunication Center of The Deaf" (TKCN) was founded and run, whose task is to minimize the communication barriers between the hearing impaired persons and mainstream society, which allows persons with hearing impairments, as well as persons with speech impairments, blinded persons, etc., to use telephone connection in the visual, voice and text form. Four operators are working in it. They were selected after

completion of accredited courses of call center operators for persons with disabilities (also carried out in the project). Details can be found out on <http://www.tkc.cz/>.

CZ.1.07/1.2.08/02.0007 project "Equal opportunities for children and pupils, including children and pupils with special educational needs" has been solved in the period 2010 to 2012. The beneficiary was the Free Art, Ltd.; the project involved Silesian University in Opava and Kindergarten, Primary school and Secondary school for the hearing impaired persons in the Wallachian Mezirici.

The aim of the project was to help students, future graduates of Kindergarten, Primary school and Secondary school for the hearing impaired persons in the Wallachian Mezirici with the transition from the protected environment of special education into the open labor market world.

Multimedia interactive learning tool for deaf pupils was prepared substantively (Veselý, 2011a), applied and put into the pilot operation. This tool approaches pupils in easily understandable form and contains basic, simply memorable principles of successful entry into the labor market, both in the form of self-employment and in the form of employment. In both cases deaf people can be helped to overcome communication barriers arising from the fact that the deaf have limitations not only in voice communication but also in writing. These limitations are strikingly evident in understanding the laws and norms, in job interviews, etc. Moreover, methodological material has been also processed for this tool.

On the website <http://www.praceiproneslysci.cz/> it is possible to found amongst others:

- the final version of the educational material "Do not be afraid of the labor market ... even if we do not hear" in PDF format;
- complete script and layout for software processing in PDF ;
- the final teaching product in the form of the installation file (Veselý, 2011b);
- methodology including video record of exemplary workshop using educational drama in teaching students with hearing impairments.

Project CZ.1.07/1.2.39/01.0004 "Teaching financial literacy for hearing impaired students of secondary schools in the Zlin Region" was launched on 1.5.2012 and will be completed in late 2014. Well as in the previous project the beneficiary is Free Art, Ltd. and partners are Kindergarten, Primary school and Secondary school for the hearing impaired persons in the Wallachian Mezirici and Silesian University in Opava. The aim of the project is to prepare substantively, produce, validate and implement interactive multimedia tool for teaching financial literacy (on DVD) for secondary school students with hearing disabilities.

In this stage of the project material content has been processed in the text form (Vaněk, 2012) for:

- household economy (personal finances);
- prices and inflation;
- money;
- financial products and markets;
- consumer protection.

On the basis of this content, literary script and layout for software processing for this tool has also been prepared. Currently, work is in progress to create animated and live-action motion pictures and text and graphics segments processed into thematic modules, etc. After this, software processing of this multimedia teaching tool is going to happen. Tool will be complemented with a booklet summarizing the main points of methodology in printed form. Handbook in electronic form will also be created. Details about the project can be found at [www.financeproneslysci.cz](http://www.financeproneslysci.cz).

The common characteristic of all mentioned tools is that the individual chapters are solved at several levels.

The first level is solved through dialogue or debate played by a larger group of deaf people inducing the topic (e.g. I want to get married, have a baby, buy a house or car, and yet not to get into financial trouble, so what costs

can I afford at certain income?; Should I go after the high school to college, to work or should I start a business or should I stay home and take rent? etc.). The aim of this is to induce discussion under the guidance of a teacher in which students themselves critically assess the situation and come to the conclusions. Then, they are confronted with the educational materials that offer different solutions - correct but also misleading ones, which are then being explained.

Further optional levels provide the necessary theory, glossary of technical terms, links to other relevant sources of information and, if appropriate, useful explaining numerical tasks (e.g. calculating interest on a mortgage, creating the payment schedule etc.) There are also be model forms (e.g. an insurance contract) and their explanations. All chapters are being linked by cross-references and explanatory notes.

All items are being implemented with a high degree of interactivity and audiovisual elements and provide space for individual development of each topic by both the students and their teachers through the open chapters allowing students with the teacher's help supplementing different played scenarios on the base of their own experience.

## 5. CONCLUSION

One of the solutions of reducing information asymmetry is by increasing the competencies of citizens as market participants. Special attention deserves people with disabilities. In the final chapter of this article, there are mentioned three examples of projects in which there were created specially designed teaching tools for people with hearing impairments.

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4<sup>th</sup> International Conference on New Horizons in Education

# Cinematography education in Turkey: current situation, new perspectives and suggestion

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## Abstract

The cinematography progressively adding up new horizons due to digital technological possibilities; the dimensions of production, fiction and presentation are taken new forms. This formation under the basis of different expression qualities constitutes a new artistic restructuring. In other words, digitalization in cinematography by redrawing aesthetic boundaries of visualization has already started to create an original cinematographic aesthetic. Performing some changes and transformations in the curricula of conventional cinematographic education appears as a mandatory necessity as digitalization is a distinct technological expression (lingo) and, as an extension to this, a distinct aesthetic structure. This study trying to scrutinize the current status of Turkish cinematographic education and the projections for future is constituted of two main complementary axis: one is the reactions of digital technology in cinematographic art and the other is in which vision and to what extend these reactions are considered in cinematographic education.

Keywords: cinema, digital technology, aesthetic, cinematographic education in Turkey, curriculum

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## 1. INTRODUCTION

The essential property determining cinema ontologically is that it is an art telling about feeling and experiences concerning life in the context of a narration founded on the ground of images. Films have presented to their audiences different vision forms and emotions which they find intensively pleasing since they created themselves as a language (Bordwell &Thompson, 2008).

With the beginning of the twenty first century, cinema technologically entered a quick transformation process. When the technology of digital images production entered cinema, optic films disappeared; films even happened achievable by means of images produced only in the computer media without needing any camera, and this change led to occur a structure passing beyond traditional narrations.

Digital cinema, with its most general and understandable definition, comprises the production, distribution and screening processes of motion pictures by using digital technology instead of 35 mm film tapes being a traditional method.

### 1.1. Scope and Limitations of Study

The study was established on the argument that digital vision technology and cinema have the perspective of impacts in dimensions of shooting, montage and screening and that digitalization is a different technological language and -as an extension of this- a different aesthetic structure.

The contribution the digitalization brought along to cinema art is that it adds new dimensions to vision,

narration and sense correlations and this tends both artist and audience to change their viewpoints. As a natural extension of this, telling about new design methods together with traditional visual design methods education in universities giving cinema education and depending on this, making changes and transformations in conventional cinema education curriculum appear as an obligation.

This study, the aim of which was to examine the situation of cinema in our country and projections of it towards the future, was established on the undergraduate education, and specialties of associate and postgraduate education couldn't be handled. The study comprises two main axes completing each other: The first is impacts of digital technology on cinema art, the other is which vision these impacts take place in and to what extent they take place in cinema education in universities of our country.

## **2. MEDIUM IS THE MESSAGE: DIGITAL IMAGES, NEW DIMENSIONS**

Since digital technology entered cinema world much, as the language of computer technologies, changes and transformations started to be lived in semantic and syntax structure of cinema. The limitlessness the digital brought about has radically changed the concrete making-production conditions and the conditions of getting images being the object of cinema completely have changed. While the re-presentation of the existent reality was available in the stock term, this obligation disappeared in digital term and an absolutely new reality was produced through computers. This both led the narration forms in cinema to differentiate and also caused new narration forms to occur. Moreover, audiences started to change their positions across new narrations and narration forms and this revealed the necessity of handling reception aesthetics.

## **3. DIGITAL TECHNOLOGY AND NEW MODULATIONS IN CINEMA**

Cinema, which is ontologically in absolute relationship with technology, has continuously renewed and developed its own narration language every time with technological developments within development process. Digital cinema also makes transformations in conventional narration forms. Monaco (2010) states that "when images, audios and texts are digitalized once, everything is possible. The struggle between things we want our communication tool makes for us and the capacity of the running of these has ended".

With quick development and wide use area of the computer technology, techniques of digital transfer, record, re-production and presentation, cinema started to transform into artistic media that can be deemed "new". This transformation is so great that it is shown as the most important change after the discovery of sound in cinema (Erkilic, 2006).

### **3.1. Modulations in Production Dimension**

In conventional production style, images of objective world were recorded onto the film called the stock by means of the camera, and then given to the screening by passing through chemical and optical operation processes. Images occurred by the camera through recording real scene one to one. In the montage stage, the narration was founded by aligning the shot parts side by side.

In digital recording technology, if wanted, the narration can be established as objective world through digital cameras or through images created in the computer media. The greatest difference here is that the image can be got in ontology dimension without camera. Another primal property is in the dimension of the narration construction. That images are aligned successively, namely relationships between images are separate (from algorithms) presents the facility of making variations in the construction of the montage or narration.

The most apparent face of digital technology in the production dimension of cinema has occurred in animation area. A new type of motion picture made with three dimensional computer animations has come out (Wands, 2006). Another dimension necessary to be mentioned is that real people and virtual characters, who are produced in the computer media, take place as partners in the same film. These are the concrete examples showing that limits have disappeared and become vague in cinema aesthetics.

### **3.2. Modulations in Dimension of Screening**

Digital screening puts audiences into the centre more in contradiction to the before conventional production shape and this creates changes in the perception aesthetics of audiences. With the presentation of the real and virtual together and of the combination of the dominant perception and emotion loss, classical dramaturgy's identification, catharsis and enjoyment concepts take a new appearance in terms of the watching experience.

For example, in the result of that images, the getting of which is not possible with conventional ways, are got with digital image technology, James Cameron's 'Terminator 2: Judgment Day (1991)' or Wachowsky Brothers' 'Matrix (1999)' films present a new perception aesthetics by creating immersive and perfect environments for the audience.

The leading modulations in the dimension of screening are new presentation techniques like three dimensional (3-D), real-D and IMAX. In conventional cinema, images have two dimensions as width and height, but objective world has three dimensions. In cinema, the illusion of the third dimension is got by a technique based on the pattern matching of two eyes. While both two dimensional (2-D) and three dimensional (3-D) films can be shown with Real-D technology, 3-D films have more realistic three dimension illusion creation and so they give a better watching pleasure. IMAX technique presents very high quality of image and the experience of watching on very largest screen as well. In IMAX technology, 3-D films occur by two special projectors through reflecting image onto the screen; audiences can watch by converting this image to the normal through using glasses having polarization property.

### **3.3. Modulations in Narration Dimension**

It was said before that digital technology, with limitless facilities it presents, creates new narration forms with the combination of image, animation, sound and text. In other words, media such as film, photograph, text and graphics that could exist only as separate before can be used hereafter in one common platform with digital technology and thus sharp limits between them vanish. This necessitates a new aesthetics as far as cinema undergoes changes in terms of language and grammar.

This new aesthetics is named with the term of liquescence. Because it has a narration form not being linear and hierarchic. Linguistic context is not simple and static; with its complex and dynamic characteristic, it has a projective structure not reflective like conventional aesthetics.

For example, the artist called Toni Dove trying to establish a hybrid structure describes an application he realized: "My works are in a Bermuda triangle between plays, theatre and film. Sometimes I feel as though I make buildings from films or I am an automat creator or puppeteer both being non-living and giving reaction. I always had a feeling of making cinema spatial, namely making it dimensioned in a way of opposing the linearity of successive story time by allowing it into the process as an experience. My motors help me analyze time, memory and story and re-edit them and constantly keep them in a fluent and unsteady line (Wands, 2006).

The most important name in this area is doubtlessly Peter Greenaway. According to Greenaway stating that "We must save cinema from the dominance of literature; cinema can get rid of the service of storytelling only thanks to this", cinema must be a thing passing beyond presenting moving pictures providing a perspective on the screen; and must be interactive. He points out that thing, which have been made until now as cinema, are not deemed cinema; thanks to digital technology, cinema is possible now. Greenaway gives creating numerous images in the same time on the screen, breaking the frame space and re-arranging it as a series of samples of new narration forms necessary to occur, instead of linear movement of the film, thanks to digital technology. His most known study is called 'Tulse Luper Suitcases'. This study/experience comprises three feature-length films, one Internet site, one computer game, numerous stories and books published on various places, ninety two DVDs, sixteen episode TV series and exhibitions.

3-D films, narrations based on interactive relationship and narrations founded in virtual reality can be given as examples to modulations which will be widespread in the near future.

It was said before that three dimensional cinema experience has a potential of creating more effect on the audience than conventional technologies within the context of identification, catharsis and enjoyment concepts. Therefore, film is realized by figuring out reactions audiences will give while it is in the production stage yet, and this means shaping reactions of audiences.

Interactive cinema describes that the audience and the watched film are in reciprocal relationship and this relationship is structured in a way that allows the facility of affecting each other. While in other production forms of cinema there is distance feeling and one-sided relationship between the audience and film, interactive cinema is conspicuous because this relationship is reciprocal and this is a narration form giving a chance of being subject to its audience first time. Based on reciprocal interaction, since narration is determined according to preferences of the audience, the audience is positioned as one of important subjects determining film. However, since the mentioned preferences are determined by the director and film production team, the audience really doesn't give direction to the narration at will and plays one of subject roles defined for themselves. The first example that we can give for interactive cinema is 'Kinoautomat installation' realized by Czech director Raduz Cincera in 1967. In this installation there are two buttons on a special remote control on each of 127 seats prepared peculiarly in cinema hall. Each of these buttons one of them is green and other is red has been put to give a separate direction to the film. In the end of every scene watched by audiences, the director or the determined person get on the stage, presents two options concerning what Mr. Novak, who is the main character of the film, will do, and wants from audiences to choose one of these two options. The film goes on according to what audiences choose and the final realizes with the end which audiences determine. The important difference of this project is that audiences being in the interaction are designed as individuals not as a community and the whole watching process is a personal preference voyage. In other words, in interactive cinema the watching experience has quite personal characterizations and in this sense, interactive cinema has the potential of creating important changes in cinema watching culture (Oz, 2012).

Virtual reality is three dimensional simulation models providing reciprocal communication facility with a dynamic medium created by computers, and creates a feeling of being in virtual world in its users in a supernatural way. The designed systems significantly increase the comprehension and perception power of the audience/user. That is to say that they create an experience, in which the user feels himself as a physical part of the world represented in all emotional levels, rather than presenting a world to see and hear like cinema does.

### 3.4. Position of Digital Technology in Turkish Cinema

The Turkish cinema, which has lived technical and economic woes for long time, has started to benefit from opportunities of digital technology. While young directors prefer low-budget digital equipments, the leading film producers use the cutting-edge system technologies for expensive and spectacular effects. For example, Ugur İcbak, as a vision director, in many films, has brought systems like Digital Betacam or High Definition into the application. Therefore, he calculates changes the film lives in the postproduction stages, can provide most truly and at the shortest time necessary preparation and material for every kind of digital effect during the shooting in the film set and so can drop high costs wanted at the postproduction stage to the low as possible.

In Turkey, a great number of films have been shot with digital cameras for the last 10 years. Umit Unal's 'Nine (2003)', Ahmet Ulucay's 'Making Ships from Watermelon Zest (2002)' or Ugur Yucel's 'Heads or Trails (2004)' films are a few of the first samples shot with digital cameras. Nuri Bilge Ceylan's 'Three Monkeys (2009)' film is a leading film which has been shot with digital camera and the screening of which has been realized with digital projection. Another sample we should mention is Biray Dalkiran's 'Hell (2010)' film and it carries the property of being the first three dimensional film of Turkey.

## 4. CINEMA EDUCATION AND DIGITAL TECHNOLOGY IN TURKEY

Cinema education in Turkey is a relatively new phenomenon in Turkey. Cinema education firstly has been started in Cinema-TV Institute taking place in the body of Istanbul State Fine Arts Academy in 1974. That education in this area greatly delayed is understood when compared with the foundation of the cinema school in the Soviet Union in 1918.

In Turkey, cinema education is given within the 3 primary types today. These are direct cinema education, educations given from visual image creation and cinema courses and such applications.

Educations in 'Radio-TV-Cinema' departments of 'Cinema-TV', Communication Faculties and Fine Arts Faculties form two principal axes of direct cinema education. Education in cinema faculties usually has curriculums towards communication and broadcasting area and on growing individuals who have gained a notion towards this. As understood by its name, topics of radio, TV and cinema are taught in the context of broadcasting and communication. Cinema education in fine arts faculty handles the art phenomenon in primary plan, mostly has lessons towards art notion in the curriculum and goals to grow individuals towards this. Despite the fact that its name is Cinema-TV, the taken education is mostly towards cinema because lessons towards television stay in the background\*.

Education modulation from visual image creation is a very new area. It gives education, in which students

\* Schools and departments giving the similar education can take different names. The name 'Faculty of Art and Design' is given to faculties newly opened as equivalent to Fine Arts Faculties. Another change necessary to be mentioned is that the name of Cinema-TV departments in Fine Arts Faculties of Dokuz Eylul University and Yasar University has been changed as Film Design. Another thing necessary to be mentioned is an apparent differentiation hasn't been formed in visions and missions of these departments in these faculties. For example, when looked at the Cinema-TV curriculum of Fine Arts Faculty of Afyon Kocatepe University that it is very close to curriculums of the Communication Faculties is seen.

can establish relation between different contemporary disciplines such as graphic design, cinema, photography and animation, under the name of Communication Design, Visual Communication Design or Media and Communication founded in the body of the communication faculties in the beginning of 2000s. Students continue main branch program in the direction of their own abilities as of the second year and also can take lessons of different departments. They widen their experiences by taking compulsory and optional lessons from areas varied with sub-modules like Photography, Graphics, Cinema (Producing-Directing-Vision Directing and Scriptwriting) and Animation Cinema.

Radio and TV Programming in vocational high schools has been founded to meet intermediate staff need of this area. Photography and Cameraman programs are designed in the way to include professions such as digital image processing, advertising photography, architectural photography, large format photography and cameraman and aim to give a notion of getting profession by means of digital equipments.

With respect to cinema, course and likewise educations, it's seen that private education of cinema as well as cinema education given in universities presents an appearance becoming widespread. These can be linked to institutional structures or can totally be private enterprises. For example, while courses like TURSAK (Turkish Cinema and Audiovisual Culture Foundation) and Mithat Alam Film Centre or Cinematheque Film School taking place in the body of Bogazici University are based on institutional structure, the course carrying on activities under the name of Digital Film Academy has private enterprise structure<sup>†</sup>.

The first structuring, which has the relation between cinema education and digital technology and made this a private education area, is 'Cinema and Digital Media' department taking place in the body of Izmir Economics University. The only lack of this positive development is that curriculums of them still a lot resemble general tendency of communication faculties. They seem far from replying requirements of a new cinema language for now.

## 5. SUGGESTIONS FOR NEW MODULATIONS

With the increase in the diversity and quality of images produced in digital cinema, images started to be produced with collective working of engineers and directors. Because these films necessitate high technical profession and occur as a result of many steps. So, the staff must have quite high level of technical knowledge as well as comprehension concerning both potential and limits of using digital instruments (Wands, 2006). Doubtlessly, with continuous change of digital cinema technology, this brings about the problem how the required education of technical staff will be shaped. When looked at the OSYM (Student Selection and Placement Centre) catalogue of the 2012 year, it is seen that any of universities in Turkey (except one school) hasn't an attempt about digital cinema.

<sup>†</sup> A good example of private courses is the education that Modern Music Academy gives to 'Film Music Department'. The reason is that both it is the first in Turkey and also there isn't any education given in this area. Given there aren't many musicians who have taken film music or music education towards visual production, the difference of this education can be understood immediately. In parallel with cinema's both sector and art development in many countries, film music education has been started to be given place in institutions giving music education for the last 30 years.

## 5.1. Problems Concerning Available Education Programs

- In cinema education area the vacancy numbers of the Communication and Fine Arts Faculties are quite many and this greatly indicates the lowness in the quality of education as a problem. For example, cinema academy of Munich educates in classes of about 10 students<sup>‡</sup>.

- It's seen that programs giving this education mostly take place in the body of Communication Faculties. Cinema departments of Fine Arts Faculties have a claim that they raise candidates as cinema staff, but Communication Faculties are places making science education in the main sense. In these faculties, lessons towards 3 various profession areas as radio, television and film studies are given within cinema education and this creates a serious axis shift about what the given education is.

- While cinema education in Turkey has quantitative largeness, its qualitative highness doesn't exhibit any bright appearance. One of main reasons of this (as real politics) is the form of high school education and university entrance exam. Students win these departments by entering central exam system through constantly doing tests at ages of 17-18. Abroad, people, who have got undergraduate degree and determined their way on this, are accepted to the film academies with the talent exams and given to them education focused on profession areas<sup>§</sup>.

- Since technical equipments are both very expensive and have short semi-annual life, students take education with inadequate technical equipments.

- Curriculums generally have a conventional structuring which doesn't take the future into account. Communication Faculties and Fine Arts Faculties have similar curriculum programs within their inside. In these programs, in which information of lots of disciplines are given, both enough flexibility and specific visions/missions differentiating themselves from others are not seen.

- Education in both two areas can't bring the theory and practice together; in this sense, the incongruity with the sector is in huge dimensions. Because that education is not in the academic understanding towards the occupation but in the body of the university reveals the necessity of giving lessons in wider areas to students.

- When looked at curriculums, the continued cinema education comprises some general culture, some theory and some a few productions not passing beyond the in-class working. Awaiting another thing from students, who have taken cinema culture from this curriculum model, is not possible. Already students have mostly this tendency. A great majority of students coming to these schools say they want to be directors. The number of one's wanting in the areas such as vision, montage, etc. is extremely less. That this model can't take the country cinema to anywhere seems clearly.

- People, who are working in this area now and reply to the requirements of the market, are obliged to learn

<sup>‡</sup> Those indicated here are educations in the undergraduate degree. Numeric data are like those according to 2012 OSYS (Student Selection and Placement System): *Undergraduate Degree*: Fine Arts Faculties, Cinema-TV. (360 persons); Communication Faculties, Radio-Cinema-TV Departments (2720 persons); Communication Design, Media Design, Visual Communication Design Departments (947 persons).

*Associate's Degree*: Vocational High Schools, Radio and TV Programming Departments (1810 persons); Radio and TV Technologies Departments (945 persons); Photography and Cameraman (552 persons).

<sup>§</sup> For a few years some faculties have left the central examination system and started to get students through the talent examination. Dokuz Eylul University Fine Arts Faculty Film Design Department is one of these examples

their information in different disciplines and occupations and transfer into this area.

- When looked at the technology-art language correlation of cinema education in Turkey, it is seen that this is nearly ignored in programs of the State universities. In this sense, it can be said that the education can't pass beyond patterns of the twentieth century.

## 5.2. Suggestions

- Since the image production technology constantly renews itself and starts to transform to a more complex structure, developing education programs according to this is an obligation. Because in order to better comprehend reflections of digital technology on cinema, knowing its affections with both technology and other modern arts is necessary.

- The current situation in cinema education (relevant departments in Fine Arts Faculties and Communication Faculties) lives certain compressedness in terms of missions and visions of their faculties. It is necessary to remove education from this structuring and to take it into a private structuring model like cinema faculty/academy. As in samples in Europe and America, education must be made via a cinema academy\*\*.

- As in all art branches, the most important property separating cinema education from the education model of other universities is that it should be based on application by depending on disposition and ability rather than information transfer. This principle should take place as determinant in curriculums.

- Since all processes of the cinema of the future (from production to distribution) will be produced within digital technology, in education programs, digital image production information (in the context of hardware and software) should constitute the skeleton of the curriculum. After the graduation of students, technological innovations and substructure must be continuously updated for them to find job opportunity as full-equipped and ready. For example, the sector has demands like “we want people, who know using High Definition and can apply this in cinema” and so education should be designed according to this. The only department towards this is ‘Cinema and Digital Media’ department taking place in the body of the Communication Faculty of Izmir Economics University. When looked at the curriculum of this department having a vacancy of 40 people (despite this positive development), that lessons concerning the communication theory are intensively available and lessons, which will give information about today and future of digital technology, are in the limited number seems as an important lack.

- Visual effect design is an indispensable application area for today's cinema. For example, decades of people have prepared the effect images on digital media in the film called ‘The Conquest’ (2012) being one of the most expensive productions of Turkish cinema. In cinema education there isn't any sub-module towards this area. This ignored area should be taken into cinema education.

- Another element is that not only the production aspect but also the screening aspect of digital cinema should be taken into account. In Vocational High Schools, technicians, who will be able to use special software and

\*\* Munich Film Academy in Germany, VGIK in Russia, Lodz in Poland and FAMU in Czech Republic can be shown as examples of these schools. The equivalent of these in Turkish university education system may “Vocational school”. Vocational schools giving four-year undergraduate degree towards occupation seem a structuring model which most easily will be able to adapt into higher education system.

screening instruments such as 3-D, Real D and IMAX, should be raised <sup>††</sup>.

- Since raising new ones, instead of the available academicians not knowing digital technology, will take time, a calendar study towards this should be done.
- Given the fewness of the number of both academicians and applicants in real meaning, special programs must be realized for professionals of the occupation to take place absolutely within education process.
- It is seen that in cinema, with respect to new technologies, the foundation universities produce a mission much more beyond of the State universities. For example, Bahcesehir University presents an appearance adapting new generation technologies in cinema world into education platform and assuming a leading role in this area.

## AS RESULT

Cinema has passed through many stages thanks to technological developments. Sound cinema, color cinema and three dimensional cinema are a result of technological developments. Films using innovative technologies and making a breakthrough have accelerated this advancement. Digitalization, which has started to develop at the end of the 20<sup>th</sup> century and provided a great advancement at the beginning of the 21<sup>st</sup> century, affects cinema art as well as many areas. This technology taking place of analog technology leads systems like the production-screening and distribution in cinema area to change.

Although digital cinema hasn't started to give its most mature products now and shows all indications of conventional cinema, it is seen that tendencies different from the narration language in traditional sense are entered even with the results got. This new art, which is dimensioned with the use of sound, movement and text, gains cinematographic properties and is made interactive by various methods, transforms into cinematographic narrations that are multi layered and convenient to new readings by moving away from linearity. For example, today in many films, real people share the same stage with virtual characters created through computers.

Knowing the image processing techniques well but applying these techniques to digital media (shooting, effect, montage etc.) without evaluating them in a scientific, artistic and conceptual frame makes the result of the narration unqualified aesthetically. In the same context, only building a conceptual background well without knowing the image processing techniques doesn't happen adequate for the result of the design.

When students have notions of developing the cinema education they took together with digital technology ability and of putting it to application easily, they can reveal easier and multi-alternative works. In this context, a Turkish film, which has been shot in digital standards, will be able to be screened and watched all around the world.

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<sup>††</sup> In Turkey, nearly 1700 cinema halls regenerate by transforming to digital system with a gradually increasing speed. Similarly, the number of halls doing 3-D screening quickly increase. Although the numbers of Imax and Real-D halls are less in large cities today, it is predicted that the numbers of them will gradually increase.

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# Collaborative strategic reading practice with adult EFL learners: a collaborative and reflective approach to reading

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## Abstract

Collaborative Strategic Reading (CSR) involves the use of four reading strategies in collaboration with peers and facilitates the comprehension of the text and

leads to gains in terms of student achievement, participation, and motivation. The present study aims to find out the effects of this approach on adult EFL learners' reading comprehension and reading-related problems. 40 prep-class university students, having three hours of reading classes per week, participated in the study and they were labeled into two groups as experimental and control groups. The results revealed that CSR affected the comprehension and reading related problems of adult EFL learners positively.

*Keywords: reading, reading comprehension, comprehension strategy instruction, Collaborative Strategic Reading, adult EFL learners*

## 1. Introduction

Reading is a process of problem solving in which the readers make an effort to comprehend meaning not only from words but also from ideas, information, claims, and arguments in a text. On the importance of reading in a second language learning or teaching environment, Bright and McGregor (as cited in Brusch, 1991) state that "where there is little reading, there will be little language learning" (p. 156). Besides, reading is one of the first steps to enable learners with language input, and an opportunity to understand the structure of target language.

As Almasi (2003) and Grabe (1991) state, good readers monitor their reading process attentively and progressively, and implement different reading strategies to achieve comprehension on the ongoing text. According to Wenden (1991), reading strategies are "mental steps or operations that learners use to process both linguistic and sociolinguistic content" (p.19), which can show differences between proficient readers, and poor readers in terms of strategy use. To stress the importance of reading strategies, Palinscar and Brown (1984)

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suggest that strategic reading helps students, especially low-achieving ones, avoid comprehension failure, and enhance their retention of the text.

In the field of reading, the importance of training language learners to be strategic readers has been underscored by many researchers (Klingner, Vaughn & Schumm, 1998; Palinscar & Brown, 1984; Paris et al., 1983) in the past decades. Considering the significance of reading strategies and changes in language education, many researchers and educators have tried to develop different reading approaches varying in terms of characteristics, context, opportunities, and implementation etc.. Among the reading approaches or methods developed by researchers, and educators, Collaborative Strategic Reading (CSR) was developed and designed to facilitate reading comprehension for students with learning, reading and behavior problems included in general education classrooms (Vaughn, Klingner & Bryant, 2001). What is aimed with CSR is to teach learners how to monitor reading comprehension, and how to use clarification procedures to understand a text clearly (Vaughn et al., 2001). While implementing this approach, cooperative learning plays a crucial role since the students support their learning with their peers, and teachers.

The strategies included in CSR practice are: (a) preview (before reading), (b) click and clunk (during reading), (c) get the gist (during reading), and (d) wrap-up (after reading). *Preview* is a pre-reading activity aiming to motivate students' interest in reading, to activate prior knowledge, and to help students in generating questions about the text (Klingner & Vaughn, 1999). During the process of previewing, students are taught how to scan the text quickly by looking for clues about the context, setting, characters, and crucial features of what they will read. *Click and Clunk* is a strategy implemented during reading with the purpose of teaching students how to monitor what they are reading, and to identify the information that they know more about, and information that causes students to experience difficulties in understanding (Vaughn & Klingner, 1999). *Get the gist* is another strategy practiced during reading which intends to teach students how to identify the main idea of a passage, and exclude unnecessary details (Vaughn & Klingner, 1999). Through this strategy, students are taught to determine the most important point in the text by rephrasing it in their own words. *Wrap-up* is an after-reading strategy aiming to provide students an opportunity to review what they read, which is expected to assist with understanding and remembering what is learned from the text. (Vaughn & Klingner, 1999). The goal is to generate questions about the text and summarize the key points to check the understanding the whole text.

Research has been interested in the implementation of CSR from different perspectives, and with participants from different contexts. Klingner and Vaughn (1996) investigated the effect of two approaches to reading comprehension strategy instruction- reciprocal teaching in combination with cross-age tutoring, and reciprocal teaching in combination with cooperative grouping-with seventh and eighth grade ESL students who were disabled in terms of comprehension of English language text. The findings of the study reported significant gains in reading comprehension of both groups. The results also revealed that minimal adult or teacher support as in reciprocal teaching can help ESL students with learning disabilities improve their comprehension.

In a subsequent study, Klingner et al., (1998) claimed that "one challenge in developing an intervention was to adapt previously successful strategy instruction models to be appropriate for heterogeneous classrooms in a way that would balance strategy instruction, and content learning, motivate a range of students, and seem feasible to classroom teachers" (p. 5). They achieved that by incorporating a cooperative learning phase in their CSR model with the aim of fostering strategic reading, and facilitating social studies learning in heterogeneous, culturally and linguistically diverse classrooms with learning disabilities. The study was carried out with fourth

graders in three heterogeneous classrooms. The results revealed that the students in the experimental condition made greater gains in reading comprehension but did not show difference in content learning. Also, the findings suggested that the strategies of click and clunk, and get the gist were used most consistently, and effectively.

In another study, Klingner and Vaughn (2000) investigated the effect of implementing CSR on helping behaviors of fifth graders. The aim was to see the frequency, and means by which bilingual children helped each other, and their peers with limited English proficiency in content classes. Trained teachers, the nature of group discussions, and students' verbal interactions were analyzed to examine the application of reading strategies, and how students supported each other while practicing CSR. The remarkable point of the findings is that the overall amount of time students spent on academic-related strategic discussion was much more than that found in previous studies. Besides, they were observed to help one another to understand the meanings of challenging words, to get the main idea, and to formulate and answer questions on what they read. According to findings of the study, it can be suggested that although scaffolding can be particularly challenging for bilingual students helping their peers with limited English proficiency, it can be achieved if students are self-motivated, know how to provide assistance, and they are provided guidance on how to interact effectively.

A similar study was conducted with the aim of determining the effectiveness of CSR for enhancing reading comprehension of learning disabled, average-, high-achieving students and low-achieving students. Klingner et al., (2004) implemented CSR in ten classrooms and with their teachers. The five of teachers and their classes were assigned to the CSR condition while the other five teachers with their classrooms were assigned to a control condition. The teachers in CSR condition were trained in terms of not only how to implement CSR but also why to do it. After feeling competent enough in CSR, the teachers started to practice it in their classes, and they were observed, and given constructive feedback. The findings revealed that the students in CSR classrooms had greater improvement in reading comprehension than the students in control group. That study draws attention to the fact that teachers can be trained to implement strategies in their classrooms and suggest that some variables related to teachers such as prior knowledge and confidence may affect the quality of CSR implementation as well as the gains in terms of students.

Vaughn et al. (2011) addressed the questions related to efficacy of CSR with adolescent readers when implemented by well-trained and supported novice CSR implementing teachers, the effect of prior knowledge of meta-cognitive strategies on moderating the effect of CSR on reading comprehension and lastly its efficacy with struggling readers. The findings indicated great differences in favor of the treatment students in reading comprehension but not on reading fluency, which suggests that CSR is an effective and feasible method that can be integrated into reading and language arts instruction with positive impact.

Although previous research of CSR has added to our understanding of how it effects reading comprehension process of students from different levels, age groups and with diverse abilities, much remains unaddressed. First of all, the reading-related problems of the target group has not been determined clearly as to see whether the practice of CSR helps students overcome their problems or difficulties. Also, the previous studies have generally been conducted with elementary or secondary classrooms and with L1 readers or L2 readers from different countries. However, the practice of CSR has not been applied with adult Turkish EFL learners in a university context. To understand the feasibility of CSR with adult Turkish EFL learners, research is needed to bridge the gap, and enable empirical results for university English teachers who are interested in improving the reading comprehension of their students, and also in increasing their repertoire of reading instruction models. Besides, the

present research adds the notion of reflection into process as the previous studies mostly depended upon just standardized reading comprehension tests, and interviews with participants. However, the present study takes the perceptions, ideas, suggestions, criticisms, and feelings of learners into consideration via reflective learning logs to make students fully involved in the process, and encourage autonomy.

Bearing the research gaps in mind, the present study probes to investigate possible effects of the Collaborative Strategic Reading (CSR) practice on the reading problems and reading comprehension of adult EFL preparatory class students.

## **2. Method**

The present study was conducted within a descriptive and experimental research design aiming to gather information about the effects of practicing CSR with prep-class adult EFL learners.

### *2.1. Participants*

Identified by convenience sampling strategy, 40 prep-class undergraduate students attending different departments of Kahramanmaraş Sutcu Imam University participated in this study. Two groups were conveniently selected from already existing fifteen classes and they were appointed as experimental and control groups. There were twenty one participants in experimental group and nineteen participants in control group. The participants were of different age, gender and backgrounds but the present study did not take these variables into consideration.

### *2.2. Instruments*

In this study, five types of instruments were utilized to collect the data: pre- and post- reading comprehension tests, minute papers about their reading related problems, Collaborative Strategic Reading Learning Log, Reflective Learning Log and field notes taken by the researcher.

### *2.3. Data Analysis*

The data, obtained through data collection tools employed in the present study, were analyzed by using both qualitative and quantitative analysis techniques. The pre- and post-reading comprehension tests were analysed by using SPSS 17.0 in order to determine the comprehension level of participants in the experimental and control groups. The reflective learning logs and minute papers of students were analysed through content analysis.

## **3. Findings and Discussion**

The findings obtained through statistical analyses and content analysis in accordance with each data collection tools are presented under three headings.

### *3.1. Findings from minute papers*

The minute papers about reading-related problems of adult EFL learners in the experimental group were collected and analysed through content analysis. The frequencies and percentages were calculated out of twenty four students since there were twenty four students at the beginning of the study. The results obtained through content analysis are presented in Table 1 below.

Table 1. *Reading Related Problems of Adult EFL Learners*

Item no	The common problems related to reading in a foreign language	f	%
1	Unknown vocabulary	23	95.8
2	The type of the text ( expository, narrative etc.)	12	50
3	How to answer the questions	8	33.3
4	The length of the text	8	33.3
5	Comprehending the text or passage	7	29.16
6	Having to deduce from the text to answer the questions	7	29.16
7	Grammar	6	25
8	Feeling inefficient to comprehend what is asked for in questions	6	25
9	Feeling incompetent	6	25
10	Time limit	5	20.8
11	Spelling of the words	4	16.6
12	The topic of the text (appealing to the interests and background knowledge)	4	16.6
13	Dislike for reading or reading classes	4	16.6
14	The level of the text ( in terms of difficulty)	3	12.5
15	Dislike for English language	2	8.3

Table 1 suggests that the basic problem or difficulty of the students in the process of foreign language reading is unknown vocabulary, which is claimed to hinder their understanding (Item 1). 95.8 % of the students think that when the number of unknown vocabulary increases, they become biased towards reading the text as they feel that they will not certainly understand. The second problem that gets the most point in Table 1 is the type of text. 50 % of the students claim that when the texts are expository, they lose their interest, and so they do not comprehend anything. Especially if the expository text is out of their studying field and too scientific, they have no interest in reading. On the other hand, the text is claimed to draw their attention mostly when it is in the form of narrative text.

As for Item 4, the length of the text in hand reflects that the students get bored when they read a long text, and they get lost in the content. Also, 33.3 % of the students claim that they forget what they read if the text is too long. Besides, the problem of not knowing how to answer the questions gets the same point as the length of the text. That is to say, 33.3 % of the students in the experimental group state that not knowing how to answer the questions hinders their reading comprehension. On the other hand, Item 3 shows that 29.16 % of the adult EFL learners in the present study can not comprehend the reading material even if they can read with ease. Also, deducing from the text is a burden for them which is stated by 29.6 % of the students. The students claim that it is very difficult to make deductions in English as they can not relate the events or situations in the text and that what they deduce does not become true in general.

Table 1 also points out that the students raise their concerns about grammar in order to comprehend the text. 25 % of the students feel that they can not understand the meanings of sentences and create a coherence between the sentences in a text when they do not know the grammatical structure used through sentences. As for two other items, the problems related to feeling incompetent in foreign language reading and feeling inefficient to comprehend the questions about the text (Item 8) have the equal percentages (% 25) with the problems related to grammar in the text. The problem of feeling incompetent in foreign language reading may stem from the problems related to unknown vocabulary and grammar. The inability to comprehend what is asked for in questions may result from the fact that the students prefer questions whose answers are given directly in the text, which they feel easier than making deductions.

Another problem of EFL learners is the time limit, which 20.8 % of the students claim to demotivate them. The students' views in terms of time limit reveal that since it takes time to fully comprehend the reading material, they become too excited when feel the time pressure on their shoulders. Furthermore, 16.6 % of the students in the experimental group stated that spelling of words makes the process of comprehension difficult for them. In fact, this problem can be examined under the title of vocabulary problem. But, the students especially emphasised the issue of English spelling, which they claimed to create confusion in their minds while reading and to result in failure in understanding the meanings of sentences. The problems related to the topic of the text and dislike for reading and reading classes have the same percentages with the problem of spelling (% 16.6) as shown in Table 1. The students in the study suggest that topic of the reading material should appeal to their interests and background, and if not, they do not want to read. They especially state that the topic isolated from their backgrounds and interests lead to disinterest in foreign language reading. Besides, the students do not like reading and reading classes, which may stem from problems or difficulties they encountered with reading before. The level of the text also creates problems for EFL learners in foreign language reading which is stated by 12.5 % of the students. Because when the level of the text is not suitable enough for learners, they may lose their interest as they think that they will experience failure.

Finally, Table 1 indicates that 8.3. % of the students do not like English language, which affects their foreign language skills and how they regard them. Students state that they do not want to read in a foreign language, and they can not achieve comprehension as they do not have an interest in English language.

### 3.2. Findings from Reading Comprehension Tests Supported by Field Notes

The results of the pre- reading comprehension test were utilized to shed light on the equivalence concerning the reading comprehension level of participants in both experimental and control groups. Table 2 presents the findings about pre-reading comprehension test results of the experimental and control groups.

Table 2. The *Pre-Reading Comprehension Test Results of the Groups*

Group	N	Mean	Standard Deviation	Minimum	Maximum
Experimental Group	21	10,47	5,89	5	25
Control Group	19	9,47	4,97	5	20

**p= . 567 (p>.05)**

The interpretation of Table 2 reveals that there was not a significant difference between two groups before the launch of the study ( $p > .05$ ). Even though there is a slight difference in the mean values of two groups, it is not a level to signify the inequality between the experimental and control group students. Table 3 illustrates the findings from post-reading comprehension test of the experimental and control groups.

Table 3. The *Post-Reading Comprehension Test Results of the Groups*

Group	N	Mean	Standard Deviation	Minimum	Maximum
Experimental Group	21	18,09	3,70	10	25
Control Group	19	11,05	5,15	5	25

**$p = .000$  ( $p < .05$ )**

As presented in Table 3, the results of post-reading comprehension tests illustrates that there is a significant difference between reading comprehension level of the experimental group and control group. Although there was not a huge gap between two groups at the beginning of the study as presented in Table 3, there seems a change in favour of the experimental group in pursuit of the implementation of CSR practice.

The results regarding the pre- and post comprehension level of adult EFL learners in the experimental group were also supported by the field notes that were kept by the researcher during collaboration process and discussion process. The field notes of each week showed that the students in each group took part in the process and contributed to progress of each other. While working with their peers, the students made conversations to fill in collaborative learning logs. The students were also observed to regard the other groups as rivals, which seemed to encourage them. The field notes of each week showed that the number of correct answers to the questions about the texts that were read increased, and the students were observed to be more motivated when they did the exercises correctly.

### *3.3. Findings from Reflective Learning Logs about Reading Related Problems of Adult EFL Learners Supported by Field Notes*

The reflective learning logs were analysed by using content analysis. Some headings were created according to the statements of the students in terms of what they thought CSR contributed to them. There were 168 papers that were filled by twenty one students for eight weeks. The similar statements in terms of CSR's contributions were summed according to how many times they were stated, and the percentages of total numbers were calculated in 168 papers. The students' statements in regard to CSR's contribution to their reading related problems and their percentages are presented in Table 4.

Table 4 illustrates that the students in the experimental group stated mostly their ideas on collaboration which constituted 94.04 % of the statements in 168 papers. Their logs also suggest that the students thought that collaboration made the process of comprehension and reading easier. Via group discussions, they pointed out that they could understand the texts easily, and also they could find the meanings without looking up any dictionary. One of the students in the experimental group supported this finding in his reflective log as: "any word that is unknown to me may not be unknown to my peers and discussing with my peers provides me to make predictions about the meaning of sentences". Collaboration was also stated to eliminate the problem of being shy about asking the teacher the meanings of words frequently by some of the students in the experimental group.

As for another issue, the minute papers had shown that the students had regarded unknown vocabulary as the biggest problem in their reading as presented in Table 1. In the same vein, Item 2 and 3 reveal that the students maintained that CSR contributed to their vocabulary knowledge (80.95 %) and thus supported them in dealing with unknown vocabulary during their reading process in a foreign language (85.71 %). Besides, they claimed that CSR contributed to the improvement of vocabulary knowledge, and memorability of words (72.2 %), which in fact can be attributed to discussions they maintained with their peers. Besides, 69.04 % of the statements indicate that the students could concentrate more on the reading texts with the help of collaboration, discussion and using strategies. Especially the strategies of ‘get the gist’ and ‘wrap-up’ were claimed to require concentration in the reading process. Furthermore, CSR approach was argued to help to improve the reading comprehension, and to understand the questions or exercises easily which were observed to constitute 67.85 (equal for both items) of the statements in 168 reflective learning logs. Similarly, the students specified that the strategy of ‘preview’ helped them to have an opinion about the text, and helped them to use their background information actively, which constituted 64.28 % of the statements observed in 168 reflective learning logs.

Table 4. *CSR's Contribution to Overcome Reading Related Problems*

Item no	Students' Statements in Reflective Learning Logs	f	%
1	Collaborating with peers	158	94.04
2	Helping to deal with unknown vocabulary (Click & Clunk)	144	85.71
3	Improving the vocabulary knowledge (Click & Clunk)	136	80.95
4	Helping to the memorability of vocabulary (Click & Clunk)	121	72.02
5	Concentrating more on the reading text	116	69.04
6	Helping to improve reading comprehension (Wrap-up& Preview)	128	67.85
7	Understanding the questions easily (Wrap-up)	128	67.85
8	Using background information actively (Preview)	108	64.28
9	Helping to summarise the text in their own words (Wrap-up)	103	61.30
10	Finding the main idea easier than before (Get the gist)	94	55.95
11	Feeling comfortable and confident (Due to collaboration)	92	54.76
12	Supporting group discussion	91	54.16
13	Helping to make inferences from the text (Preview & Get the gist)	83	49.40
14	Increasing interest in reading texts in English	81	48.21
15	Feeling more competent	69	41.07
16	Keeping the record of learning via CSR logs	66	39.28
17	Increasing interest in English language	44	26.19
18	Improving the grammar knowledge	24	14.28

Item 9 illustrates that through collaboration, CSR approach helped the students to summarise the text in their own words (61.30 %). The strategy of ‘wrap-up’ both required students to generate questions about the text, and make a summary of the text in their own words briefly. In reflective learning logs, the students stated that although at the very beginning, it seemed a bit difficult to summarise the text with their limited English proficiency, they later found it useful to summarise what they understood from the text in a few words. In addition, 55.95 % of the statements in reflective learning logs review that CSR approach helped the students to find the main idea easier than before. The strategy of ‘get the gist’ was stated to make it easier to find the main idea.

Furthermore, the students in the experimental group were of the opinion that CSR together with logs supported group discussion. The students also stated that group discussion made them feel more comfortable and confident in comprehension. These two items were found to have approximately equal percentages (about 54.5 %). As observed in the field notes, discussion within groups and between groups made students to understand the text comprehensively, and so decreased the rate of mistakes in exercises related to reading text. As the students could do the exercises correctly and comfortably, they seemed more confident.

As observed in reflective learning logs, the students found the strategy of 'get the gist' for each paragraph a bit difficult in the first weeks. However, as time passed, they seemed to overcome that problem with the strategies of 'preview' and 'get the gist'. Parallel to this finding, 49.40 % of the statements in reflective learning logs suggest that discussions within group and between groups in CSR help the students to make inferences from the text and overcome their problems in the reading process. Moreover, Item 14 shows that CSR approach increased the students' interest in reading texts in English (48.21 %). This finding may also be attributed to collaboration, peer discussions, and feeling more competent. Besides, 39.28 % of the statements indicated that the students were of the opinion that they could keep their record of their learning via CSR learning logs. This means that they could follow their improvement, see where they were less competent, and where more.

Besides, 26.19 % of the statements revealed that CSR approach was stated to increase the students' interest in English language, which was a surprising finding. That finding can be attributed to the fact that when students experience failure in one aspect of language learning, they may develop negative attitudes towards the whole process. Therefore, students having problems with reading comprehension may start regarding English language very difficult and boring, which was observed in the minute papers of the students about their reading related problems.

Finally, the Item 18 shows that the statements related to improvement of grammar knowledge constituted only 14.28 % of the 168 reflective learning logs. This finding may result from the fact that groups' ideas on CSR logs were written on the board, and their ideas were discussed between groups. While writing the suggestion or ideas on the board, the teacher corrected the sentences, and the students may have corrected their sentences on the logs. Through collaboration and fix-up strategies, the students may have improved their grammar knowledge.

As a conclusion, the findings have shown that many of the reading related problems of adult EFL learners are observed to be eliminated or at least decreased with the help of CSR approach. Those findings suggest that CSR has effects on reading related problems of adult EFL learners in the process of foreign language learning.

#### **4. Conclusion**

The results of the minute papers collected from the students on problems or difficulties they experience with reading in a foreign language indicate that majority of the students have difficulties with reading comprehension. They attribute their failure in reading comprehension to the lack of vocabulary knowledge, grammar, inability to comprehend the text and questions, time limit, feeling of incompetency, and disliking English language and reading in English etc. In this sense, Salataci and Akyel (2002) suggest that most of the problems or difficulties

experienced during the process of reading in a second or foreign language stem from unawareness of reading strategies and lack of training on them. The students heavily depend upon the teacher, and so have no control over their learning. However, collaboration with peers may teach the students to take responsibility for their learning. Moreover, strategy training and practicing cooperatively may enable teachers and the students to eliminate the problems concerning reading comprehension in EFL classes. Following the practice of CSR with adult EFL learners, the students in the present study have been observed to be in favour of implementing CSR in reading classes. The participants account that CSR is effective in terms of improving reading comprehension and overcoming vocabulary related problems and affective factors such as feeling incompetent and uncomfortable. Each strategy employed in CSR approach was observed to make a contribution to one specific aspect of comprehension. For example, the students could use their background information and make inferences with the help of *previewing*, deal with the vocabulary via *click and clunk*, generate questions and answering them by using *wrap-up* and find the main idea with the help of *get the gist*.

Bremer, Vaughn, Clapper and Kim (2002) suggest that CSR approach provides benefits for the students in terms of developing skills related to working in groups or collaboration. Parallel to this suggestion, the present study found that students liked the idea of collaboration and group discussion as they stated that collaboration and group discussion made the process of comprehension easier and more comfortable. Therefore, the findings from the present study indicate that CSR approach encourages cooperation and working together in EFL reading classes. Furthermore, collaboration and strategies embedded in CSR approach are claimed to help the students overcome vocabulary related problems during their reading process in EFL classes. Besides, instead of depending too much on the teacher, the students were observed to learn from each other, and supported each other's learning, which facilitates autonomy among students. In this way, their awareness was also observed to raise in terms of how they can deal with problems during comprehension process and what they can do to improve their reading comprehension. To conclude, despite challenges and concerns, CSR seems to be a convincing answer to many problematic areas of reading comprehension in a foreign language.

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# Commercialization of education in Russia in the first decade of the 21st century

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## Abstract

The study is based on a methodology proposed by European Association for Education Law and Policy for their research conducted in 2009 and devoted to commercialization, competition and corruption in European education. In the article, the attempt is made to apply their methods to analyze the extent of commercialization of Russian education system which existed before the adoption of new educational legislation (coming into force in 2013). The subjects of examination in this article are: competition law in education, case law in fair trading concerning commercialization in education, instances of educational liberalization and standardization in Russia from 2000 to 2009.

Keywords: commercialization, education in Russia, educational policy, educational legislation, liberalization of education

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## 1. Introduction: Purpose and Method

The new law "On education in Russian Federation" that was adopted in December 2012 is considered by public opinion and by some experts as the law on commercialization of education (BBC, 2012). Under contemporary circumstances, an urgent academic issue is the question of commercialization of Russian education system which is on the world Top-20 (Pearson, 2012). Does the new legislation bring any novelties into this field? To answer this question, we need first of all to understand to what extent Russian education had been commercialized before the new legislation started to be worked on. This article is an attempt to assess the level of commercialization of education in Russia in the first decade of the 21st century.

Some scholars have already done their research of some aspects of this problem. E.G. Popkova, V.V. Chashchin, and D.V. Bogdanov (2013) point out that the amplification of the requirements for quality and level of education of the labor force leads to the formation of modern mechanisms of interaction between the labor market and educational services, which is put into practice in using of personnel marketing, which fundamental task is the creation of an attractive image of an enterprise, as an employer, to ensure its human resources activities with optimal quantity and quality. M. Esyutina, C. Fearon, and N. Leatherbarrow (2013) highlight some of the quality issues associated with the Bologna process and reflect on how the statements underpin quality of learning and mobility in a European higher education area context. They explore some of the issues raised from the documentation and examine some early experiences and challenges from a leading Russian university as part of a wider examination of higher education in a Russian context. M. Luk'lanenko, O. Polezhaev, and N. Churliaeva (2013) explain that engineering education in Russia is undergoing reforms, but the history of this

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form of higher education does not indicate that it will succeed in bringing it into line with current world standards, or even making it more able to contribute at a high level to Russian economic growth. But there are no works specially devoted to the whole issue of commercialization of Russian education yet. Academic discourse provides us with no specific conclusions about the extent of commercialization of education in Russia under the circumstances of the former educational legislation.

Meanwhile, one can find some works devoted to the assessment of the level of commercialization in some other countries during that period of time (Wang, Kok, McClelland, Kirkbride, 2011; Greaves, Scicluna, 2010; Rukhadze, 2010). Many of them are based on methodology proposed by the European Association of Education Law and Policy (ELA). Before its annual conference in 2009, this association sent out a questionnaire concerning different aspects of commercialization of education to interested people in European countries. The answers helped some academics who were members of the association to make their conclusions relevant for different European countries. Russia was not in that list. Here we make an attempt to answer the questions put by ELA meaning Russia as the object of research.

## 2. Findings and Interpretation

Is providing free education a commercial service according to national legislation? This was the first ELA's question.

The term "educational service" is found in the Law of the Russian Federation (RF) "On education" № 3266-1, dated 10 July 1992, in the articles and clauses devoted to paid education. Only three times in the text of the Law use of the term concerns not only paid education, but also a free one. In part 8 of Article 19, it was stated: "Educational institutions according to agreements and together with enterprises, institutions, organizations may provide training to students as an additional (including paid) educational service." Similarly, in part 4 of Article 50, one can read that students of all educational institutions have right to "receive additional (including paid) educational services." Thus, paid services are only a part of a more general notion of "educational services". So, free education could be regarded as a service as well, and it's providing, according to part 8 of Article 19, was possible "with a license (permission) to the specified activity" only. In addition, parts 16 and 17 of Article 28 placed the general principles of financing of educational services and financing of educational institutions and educational services by the federal government.

It turns out that education belonged to the sphere of services, rather than to the social sphere, regardless of being paid or free.

However, as the Law stipulated that educational organizations might be established in the legal forms provided by the civil legislation for non-profit organizations only (Article 11.1 of the RF Law "On Education"), commercial organizations were not allowed to carry on educational activities and, therefore, education was not regarded as a commercial service.

The second question of the questionnaire was whether providing paid education was a commercial service according to national legislation or not.

RF Law "On education" № 3266-1 dated 10 July 1992 stipulated the right of educational institutions to attract additional financial resources, within the limits of the procedure established by RF legislation, by selling additional educational and other services specified in the statutes of educational institutions (part 8 of Article 41). But the fact of providing paid education services did not mean their commercial nature. To become commercial, they were necessary to be provided not just for attracting additional financial resources, but for profit. According to part 2 of Article 46, paid educational activities were not considered as business, if the derived income was used

for covering costs of the educational process (including salaries), its development and improvement in the educational institution. If there was no business activity, one could not speak about commercial services.

Article 46 was relevant only for non-governmental educational institutions. Federal and local government agencies were not free at the disposal of revenues from providing paid educational services at all. Revenues might be used in accordance with the statutory objectives only. Therefore, such institutions generally could not be considered as ones carrying out commercial activities by means of paid educational services. Their services, rather, should be recognized as non-profitable ones. In addition, Article 47 of the Law «On Education», which determined the list of business activities of educational institutions, did not include the paid educational services in this list.

In the question number three, ELA asked to describe other activities provided by educational institutions and their qualification as (public) services or otherwise.

In addition to the purely educational activities, educational institutions in Russia carried out research and development work, library services, publishing and printing activities, they were involved in organizing recreational activities, including theatrical shows, sport, cultural, educational, and recreational events, etc. Educational institutions might also have non-commercial educational enterprises for students doing industrial practical work. All these kinds of activities were considered as non-commercial ones only if received income was reinvested in the educational process of the institution, and if such activities were stipulated by the institutions' charters (part 3 of Article 47 of the RF Law "On Education").

ELA asked also, were schools allowed to have commercial activities, and if affirmative, under what conditions.

The RF Law "On Education" determined that educational institution was a legal entity. And according to the norms of civil law, it might be a party of economic transactions, i.e., to run business within the limits prescribed by the Civil Code of Russian Federation and other Federal Laws.

These limits were listed in Article 47 of the Law "On Education". Educational institutions might be engaged only in business activities stated in the Law. There were only a few activities from the entire spectrum of civil transactions: the transfer of property rights (lease), commercial representation (commission, agency), purchase and sale (in the form of retail sale), participating in particular partnerships. However, here were added indefinite "other profitable secondary operations not associated directly with the production and selling of goods, works and services that are mentioned in the statute". This significantly extended the range of possible types of business activity. Educational institution might be engaged only in the types of business activity specifically stated in its charter. By this fact, educational institutions significantly differed from other legal entities that have the right to carry out any activity not prohibited by the Federal Laws, unless it contradicts the object and purpose of the activities, stated in the Charter of legal entity. Educational institution was eligible to participate in the establishment of any commercial and non-profit organizations as a founder, shareholder, partner or co-investor.

Along with the general (educational) activities, state or municipal educational institution might also provide additional paid services: supplementary education programs, special courses and cycles of disciplines, tutoring, advanced study, other services not stated in appropriate educational programs and state educational standards.

These services could not replace the general educational activities funded from the respective budgets. Otherwise, the money earned through such activities, must be withdrawn by the founder (by state and / or municipal authorities) to its budget.

In addition, the founder or local government had the right to suspend business activity of educational institutions up to the court decision on this matter, as a lever that could restrain educational institutions managers enterprise, if it caused damage to the educational activities determined by the statute.

As a general rule, income from any activity of state or municipal educational institution must be used by it in accordance with the statutory objectives, i.e. for organization and provision of educational process.

The next question was, whether there was any case-law on the applicability of competition law to activities of HEIs.

Strictly speaking, there was. Although it probably should be a matter of the activity of education and HEI related authorities, not of the activity of HEIs themselves.

Private HEIs, which were licensed by the Ministry of Education or, later, by Ministry of Education and Science, had the same rights as state-operated ones. Ministry occasionally issued acts that limited competition in higher education that impaired the rights of private HEIs, in comparison with state universities. In such cases private institutions sent the requirements to check such acts to Federal Anti-monopoly Service (FAS). For example, in practice, as a result of the adoption of certain regulations which were issued by former Ministry of Education or the Ministry of Education and Science, it turned out that private educational institutions might participate in the competition for governmental grants and funds, but even if they won, they could not get budget money, because the Law «On Education» and the Budget Code contained certain amendments that did not allow to provide private institutions with such grants and funds. FAS responded to such appeals, explaining the contents of Article 15 of the Law "On Protection of Competition". This article prohibits to limit competition in governmental, ministerial and departmental decisions.

Such decisions were contained in the Protocol #4 of the Expert Council of the Federal Anti-monopoly Service of Russian Federation on the development of competition in education and science dated 4 June 2007, and Protocol #6 of the Expert Council of the Federal Anti-monopoly Service of Russian Federation on the development of competition in education and science dated 29 April 2008. Amendments to the RF Law "On education" and the Federal Law "On Higher and Postgraduate Professional Education" based on these decisions were drafted and referred to the Ministry of Education and Science and the Ministry of Economic Development of Russian Federation for further joint elaboration and introduction to the Government of Russian Federation.

In particular, with the help of FAS, they succeeded in liberalization of participation of private universities in the competition for state support of innovative universities in the framework of national project "Education".

The next question was as following: are state funded HEIs selling courses at market prices which are also provided by commercial educational institutions operating on the market?

The average cost of education at the state universities was in Russia higher than in private ones. Brands of state universities were created, as a rule, in Soviet times, and, in recent years, administrations of the universities actively used these brands, regularly raising tuition fees. Private universities, as a rule, did not possess such resource as a recognizable brand name.

ELA asked also, has there been case law on the extent of the activity of public interest of HEIs?

In Russian legal system, social relations are not regulated by case law. Therefore sources of legal support of non-profit activities of educational institutions were not court precedents, but the Constitution of Russian Federation (Articles 43 and 44), Federal Laws "On education" and "On Higher and Postgraduate Professional Education", Presidential Decrees that were settled to solving urgent problems of the system ("On urgent measures of state support for undergraduate and graduate students of higher educational institutions", "On some measures to strengthen public support for science and higher educational institutions", "On some measures to strengthen state support of young candidates of sciences, and their supervisors", etc.), the RF Government Decrees (which approved such major acts as State educational standards for higher and professional education, Regulations on the licensing of educational activity, "Standard regulations on educational institution of higher professional education (on HEI) of Russian Federation"), Programs, Concepts and other documents of a conceptual nature (the

priority national project "Education", the Concept of modernization of Russian education until 2010, the Concept of State Youth Policy, etc.), departmental acts issued by the Ministry of Education and Science ("The procedure for admission to universities" and others), acts of regional authorities (the rules relating to higher education in the Law «On education» of the Republic of Adygea, Karelia, Tatarstan, Chuvashia, Stavropol region, Kurgan, Novgorod and Sverdlovsk regions, although the higher professional education in accordance with Article 24 of the Federal Law "On Higher and Postgraduate Professional Education" was related to the jurisdiction of the Federation, not of regions), administrative agreements (between the Federation and regions, between the federal executive authority and the education authorities of the regions, between founder and university), acts of non-governmental agencies of educational governing (All-Russia Union of Rectors, regional councils of rectors of universities, associations of universities, etc.), local acts taken by universities within the limits of their competences (statutes, regulations, orders of rectors, decisions of Academic Councils, etc.).

A case law might regulate the activities of universities only in one case, if it is processed as the act in the form of resolutions or decisions of the Supreme Court, Supreme Arbitration Court or the Constitutional Court of Russian Federation. Such case law, in particular, were the rule of maximum age of head of department of HEI was repealed (the Decision of the Constitutional Court of Russia №19-P dated 27 December 1999 in the case concerning the constitutionality of the provisions of part 3 of Article 20 of Federal Law "On Higher and Postgraduate Professional Education"), and allowance to enter the postgraduate and doctoral programs of some universities in case of having a diploma on higher education not acknowledged by the state (the Decision of the Supreme Court of Russian Federation №GKPI 99-563 dated 1 September 1999 on the application by S.A. Chernyshev on recognizing partially illegal parts 38 and 71 of the Regulations on the preparation of academic, pedagogical and scientific personnel in the system of postgraduate professional education in Russian Federation).

The next question was, which commercially attractive activities were performed by state funded HEIs.

There were three types of such activities: letting property on lease, supplementary educational services, and expertise.

ELA also asked whether liberalization of the education market meant that in the country universities and member states were losing their freedom to cooperate and to stimulate cooperation between institutions.

The competitiveness of universities in a liberalized market of educational services is substantially determined by the level of development of inter-university – especially international – contacts. Therefore, there are special sections devoted to international cooperation on the websites of most universities, which show how well universities are engaged in this type of activities. In addition, the lack of budget financing (which accompanied liberalization of the education market) encouraged universities to open up foreign markets, and this might also encourage cooperation with foreign universities. That is why there was no lack of incentives for cooperation.

However, the same could not be said about the cooperation of universities within the country. Indeed, the situation of competition for applicants was not conducive to cooperation of universities which provided educational services for the same national market. So news about examples of such cooperation were actively discussed in the academic community, and such news often became sensations. For example, news about the agreement on strategic partnership between Lomonosov Moscow State University and St. Petersburg State University was actively discussed in blogs by representatives of the university community in August 2009. As a rule, if such cooperation was carried out, it was based on international projects but not on bilateral agreements.

Cooperation of universities in Russia sometimes took the form of integration (as a result, a federal or a national research university was established on the basis of several universities). However, this was not due to market mechanisms, but rather to state control of education. The market did not motivate strong universities to integrate, particularly if they would lose their brand names in case of integration. In addition, the integration of HEIs could change the nature of the education market from competitive to oligopolistic one.

Further, ELA asked whether there was any case law on unfair clauses (clauses abusives) in school contracts by national Fair Trading agencies in state funded education and in private non-state funded education.

There were such precedents. Anti-monopoly authority repeatedly made judgments and determinations on the violation of the Law «On protection of the consumer rights» for universities, providing paid educational services. These judgments were based on unfair terms of the educational services agreements. The most famous precedents were related to the following three conditions. The first one concerns reasons for terminating the educational services agreement at the initiative of the university. These reasons were formulated without regard to the university statute and student's obligations contained therein and these reasons went beyond the educational process and can infringe on consumer legitimate rights. The second one was that student fee for the current school year or semester (paid as a deposit not refundable in case of termination of the agreement on the initiative of the student). The third one concerned the additional payment for the retaking of tests and examinations.

Such decisions and determinations of the Anti-monopoly Service were sometimes appealed by the universities, but judicial authorities usually left without changes the invalidation of the agreement terms, infringing the rights of consumers, and confirmed the prohibition of obtrusion of additional works and services that met parts 1 and 3 of Article 16 of the RF Law №2300-1 "On Protection of Consumer Rights" dated 7 February 1992.

Corresponding Decisions were made, mainly, in respect of private educational institutions. The most famous precedents were the Decision of the Federal Arbitration Court of the Northwest District, case № A56-21085/01 dated 21 January 2002 (for Private Educational Institution "St. Petersburg Humanitarian University of Trade Unions"), the Decision of the Federal Arbitration Court of the Northwest District case №A26-5499/03-27 dated 22 March 2004 (for Autonomous Non-commercial Association "International Slavic Institute"), the Decision of the Federal Arbitration Court of the Far Eastern District case № F03-A73/03-2/492 dated 26 March 2003 (for Private Educational Institution "Far Eastern Institute of Legislation and Jurisprudence"), the Decision of the Federal Arbitration Court of the East-Siberian District case № A33-20033/02-S6ao-F02-1921/03-S1 dated 2 July 2003 (for Private Educational Institution "Joint Institute for the Humanities").

It's hard to find such decisions of the Anti-monopoly Service in respect of state universities, as well as other precedents relating to unfair agreement terms with state universities.

The next question was following: is there any case-law on publicity and advertising by educational institutions, eventually by the national advertising standards authority?

There were such precedents. Among them the following cases are best-known. The decision of the Federal Arbitration Court of the Volga-Vyatka Region case № A29-3090/02A dated 9 September 2002, according to which, when promoting an educational institution, advertisement distributors must require submission of a license to educational activities to indicate its number and the authority which issued it. The Regulation of the Tatarstan Regional Office of the Federal Anti-monopoly Service of the Russian Federation dated 9 October 2008 on amercement of the Private Educational Institution "Profession Plus" for improper advertising (advertising goods for production and (or) realization of which a license or other special permits are required, in the absence of such permits). The Decision of the Omsk Regional Office of the Federal Anti-monopoly Service of the Russian Federation, case № 03-10.3/04-2007 dated 25 December 2007 concerning signs of violating the Law of Russian Federation "On Advertising" in the fact of distribution by the Ministry of Economy of Omsk Region advertisement of educational services of Private Educational Institute "Omsk House of Knowledge" on the official website of the Omsk region [www.omskzakaz.ru](http://www.omskzakaz.ru) (by advertising, the requirements of the legislation of Russian Federation on the placing of orders were violated).

ELA also put two following questions. Is there any case-law on publicity in educational institutions? Is there a special controlling organization?

The Federal Law "On education" prohibited political agitation and political organizations activity in educational institutions. However, such prohibition was not supported by sanctions. Therefore, the courts' decisions on such matters were reduced to prescriptions to stop violating the requirements of the legislation.

More common were cases of the application of the Law "On advertising" to the distribution of beer advertisements at a distance less than one hundred meters from educational institutions, their buildings and structures, which were contrary to parts 2 and 3 of Article 22 of the Federal Law № 38-FZ "On Advertising" dated 13 March 2006. Violators of these rules, under decisions of courts, were usually brought to administrative responsibility.

The duties of supervisory organization on the matters were performed by the Federal Anti-monopoly Service of Russian Federation.

Was there any case-law on commercial activities by educational institutions? Such was the next ELA's question.

There were a lot of such judgments. And they were pronounced by very different courts. During the first decade of the 21st century, the Constitutional Court pronounced judgments on cases related to taxation of educational institutions (the Ruling of the Constitutional Court of Russian Federation №366-O-P dated 4 June 2007 on the recognition of justified costs of the educational process, the Ruling of the Constitutional Court of Russian Federation №396-O dated 20 November 2003 on the exemption from Value Added Tax (VAT) any research and development activities by educational and academic institutions on the basis of commercial agreements). Judicial practice on disputes about providing of paid educational services to citizens was concerned in the application of the RF Law "On Protection of the Consumer Rights", making a mutual educational services agreement, providing paid educational services without a license, violations of cash discipline during providing paid educational services, during advertising paid educational services. Judicial practice in disputes related to taxes in education concerned responsibility for educational institutions to pay income tax, VAT, property tax, unified social tax, personal income tax, land tax, transport tax, regional peculiarities of taxation of educational institutions, the responsibly for providing tax returns, the consequence of the illegal use of the tax benefits, the provision of tax benefits for educational institutions (in particular, there were decisions concerning granting tax exemption to educational institutions in case of their non-commercial activities, granting tax exemptions to educational institutions which reinvest earned revenue in the educational process, granting tax exemptions to educational institutions which keep separately income accounting for principal activity income and business activity income). Judicial practice concerned in the disputes arising from leases in the area of education, the right of educational institution to serve the tenant and lessor of property, observing the procedure of letting transferred to operative management property on lease, observing the purpose of the property leased by the educational institutions, rental fee, lease agreement, rights of the owner to lease property assigned to the educational institution for operative management, especially the leasing of federal property, peculiarities of the leasing of land lots by educational institutions. Judicial practice on disputes related to real rights and rights of obligations in education concerning the property right and right of self-disposal of income from permitted activities, privatization of state and municipal property in the area of education, the right of operative management, limits of property disposition laid down for educational institution for operative management, property rights of the owner of an educational institution, vicarious liability for the obligations of the educational institutions, property accountability of educational institutions as the principal debtor.

The next ELA's question was as following. Have there been any rulings by national offices for fair trading?

National Authority, which regulates trade, is the Ministry of Industry and Trade. It does not concern education. And national body that regulates competition (including fair trading) is the Federal Anti-monopoly Service (FAS). It served as a supervisory organization in the sphere of providing educational services, too. The

FAS managed the Expert Council on Development of Competition in Education and Science. The Expert Council was composed of market participants, representatives of non-profit associations and regulatory authorities. This practice allowed the FAS to estimate the situation in respective markets objectively and increased the transparency of decisions made by FAS. FAS decisions on the issues related to education can be called rulings. In particular, in 2009, the Expert Council decided to begin developing recommendations for insurance (or provision of other forms of guarantee) of responsibility of educational institutions and organizations of secondary and higher vocational education in providing paid educational services. These recommendations could also be some kind of ruling.

One of the last ELA's questions regarding commercialization of education was as following. What legal and practical changes in the organization, governance and funding of universities have been introduced? ELA meant the context of European law.

Changes in the management of Russian higher education were not associated with the European directives, although society definitely associated them with the Europeanization of Russian education.

In November 2006, Federal Law № 174-FZ "On autonomous institutions" was adopted. Part 2 of Article 5 stated that autonomous institutions may be created by being established, or by changing the type of existing state or municipal institution.

In April 2007, Federal Law № 63-FZ amended the Budget Code of Russia. Paragraph 5 of Article 41 ("Types of budget revenues") indicated that the revenues from the use of property which is owned by the state or municipality, and fee-based services provided by budgetary institutions, as well as grant revenues and revenues from other income-generating activities must be included in the budget revenues after preparation, approval, budget performance and after a budget performance report.

These two laws placed budgetary and autonomous institutions in unequal conditions regarding the use of the non-budget funds they have earned. In accordance with Articles 3 and 6 of the Law "On autonomous institutions", an independent institution was entitled to deposit money and other property into the authorized capital stock of other entities, or otherwise transfer its property to other entities with the approval of their founder (by approbation of its own founder). Budgetary institutions were deprived of this right according to Paragraph 1 of Article 6 of the RF Law "On the budget for 2008-2010". Hence, they were prevented from establishing joint ventures with business structures and from connecting R&D personnel with production. The funds received from income-generating activities were not allowed to be used by federal budgetary institutions to establish other organizations, purchase securities nor should it be deposited in credit institutions.

According to Federal Law №18-FZ dated February 10, 2009 "On Amendments to Certain Legislative Acts of Russia on the activities of federal universities", HEIs of new type (federal universities) were established as autonomous institutions. And according to Law №217-FZ "On amendments to Certain Legislative Acts of Russia on business entities established by budgetary, research, and educational institutions with a view to practical application (implementation) of the results of their intellectual activities", universities got the right to independently set up small businesses for the practical implementation of the results of their intellectual activities. Previously, such companies were semi-legal.

ELA asked also which legal changes were brought to the core activities of research and teaching.

According to Federal Law №232-FZ dated October 24, 2007 "On Amendments to Certain Legislative Acts of the Russian Federation (with regards to the determination of higher vocational education levels)" a two-level system of higher professional education was introduced in Russia: a bachelor's degree was the first level and a master's degree or specialist's diploma was the second level.

Bachelor's degrees, master's degrees and specialist's diplomas were considered independent levels of higher education with different state education standards and independent final examinations, the results of which lead to awarding the qualification (degree) of "bachelor" or "master", or the qualification of "specialist". Admission to higher educational institutions for study according to curricula set forth by the RF Government, and to undergraduate programs was available for those who had completed secondary education or secondary vocational education, on a competitive basis, based on the unified state examination. Those who had successfully completed an undergraduate program were allowed to apply for admission (on a competitive basis) to a master's degree program. This law also regulated the terms for full time study in the main higher education programs. It took four years to obtain a bachelor's degree, and no less than five to obtain the qualification of "specialist". It took no less than two years to obtain a master's degree. Other term regulations were allowed to be established for some areas of learning and specialties. Access to PhD postgraduate study was available for those who had a master's degree or "specialist" qualification only: not for those with bachelor's degree.

According to Federal Law №18-FZ dated February 10, 2009 "On Amendments to Certain Legislative Acts of Russia on Federal universities' activities", programs of higher professional and postgraduate education might be based on educational standards and requirements which might be set by the federal universities themselves or by national research universities, as well as by other federal governmental educational institutions of higher professional education that should be listed in a presidential Decree.

Requirements for educational standards, for the conditions of realization and for the mastery of basic educational programs might not be lower than the corresponding federal governmental educational standards. Previously, all universities had implemented higher professional education programs based on a unified national standard.

The terms and conditions of the research activities of universities were not fully defined.

The very last question in the part of the questionnaire devoted to commercialization of education was as following. What is the legal framework for control of research and higher education?

To the end of the studied period of time, legislation considered licensing, state accreditation and quality control to be elements of state control. The Ministry of Education and Science set federal licensing requirements for the conditions of the educational process based on educational programs of various levels and directions, as well as minimum standards for learning and material base required for a candidate to obtain a license, and the educational qualifications of teaching staff, and staffing. However, recommendations for the order of interaction between federal and regional bodies in relation to audits of non-state universities and their affiliates in the subjects of the federation were not developed.

An important element of the functioning of higher educational institution is the compliance of its educational activities with the requirements and standards. It is determined by means of certification and state accreditation. State accreditation meant in Russia in the first decade of the 21st century a comprehensive evaluation of educational activities, including external expertise which determined the compliance of the content, as well as level and quality of educational activities with the requirements of state educational standards. It also included examination of the characteristics of separate educational institutions that were needed to determine their type according to part 18 of Article 33 of the RF Law "On Education". Accreditation of HEIs was conducted by the Federal Service for Supervision in Education and Science on the basis of an examination of the various components of the HEIs and the accreditation criteria for HEIs of various types which were approved by the accreditation body. Accreditation was both state and public, because it was entirely constructed on principles of transparency and openness. However, representatives of educational institutions, employers' associations and the public, as a rule, did not really take part on the accreditation process.

The functioning of higher educational institutions, in addition to the above mentioned elements, also included the necessity to fulfill the official requirements for learning and educational programs, which also determined the quality of education. The quality of the educational activities of an HEI was determined at the regulatory level by their compliance with educational standards. The standards served as indicators of the targeted and functional legal capacity of educational institutions and were defined as a socially recognized form when referring to specific educational content.

Legal regulation of university research activities and the control of such activities was effectively absent.

### 3. Conclusion

We can see that the legislation and court practice in Russia in the first decade of the 21st century enabled educational institutions to do some kinds of business activities. But the legislation and the corpus of case-law was too complicated. Some laws and decisions made by courts and authorities might contradict one another. Besides that, state-operated and private educational institutions had different rights and abilities. Thus, Russia needed to gather all the norms concerning commercial activities in educational sphere into one law. This law was adopted in 2012 and is coming into force in 2013.

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# Communication of School and Family in Relation to the Form Teacher

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## Abstract

This paper sums up the results of one part of a research, which deals with the problems of the communication between school and parents. This partial topic contains the results of the questionnaire research, which was realized in February 2013 and there were ascertained the opinions of secondary school students aged 11-15 about their relations with their form teachers. The results show that students regard their teachers as providers of social support and trust them. Nevertheless, the area of social communication among students and between the student and the teacher is marked by a sort of awkwardness and lack of experience with effective self-assertion or adequate solution of conflicts.

Keywords: family, elementary school, form teacher, communication, social relations, student, subject matter

Motto: “ *I give you,*

*I get from you,*

*Together we share*

*And from that we live“*

*(Kubičková)*

## 1. Introduction

Social transformation must necessarily affect the area of education. It is important to preserve all that has been proved efficient by time and to accept new information concerning the curriculum and the extent and content of the subject matter of various courses. However, the transformations should have a far deeper impact on the sphere of education and social efficiency and the student's competences which make life in contemporary society easier.

A change of the teacher's role within the education process is expected. The student should move to the centre of an active education process and s/he should be led by the teacher, acting as a guide, to reach considerably greater independence in cognitive learning process, actively participating on the definition of objectives and effective methods. The success of such an education process requires friendly and relaxed relationships between schoolmates, between the students and the teacher and between the teacher and the students' parents (Swanson, Edwards, Spencer, 2010). It is the area of class and school climate which becomes the centre of interest and

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which has long been an object of research in the Czech Republic (Bosma, Jackson, 1990, Lašek, 2001). Social system climate is a long-term phenomenon, which Grecman (2003) describes as consisting of “*stable modes of perception, experience, assessment and reactions of all the people in a certain environment to the past, present and future events in the environment*”. It is the subjective dimension which is crucial because everyone’s subjective perception of a phenomenon is more important than the objective view. One of the aims of this research is to learn about the experience of the student’s role at school.

We focused on the figure of **form teacher**, mainly on his/her students’ view of him. The actions of form teacher represent an important part of the student’s school life as form teacher can exert a considerable influence over his/her students’ well-being, health and their mental, physical and social development. The role of form teacher is very demanding and it raises many expectations. Form teacher is an important factor influencing the individual students as well as the whole class.

## 2. Method

### 2.1. Research objective

The objective was to learn about the **secondary school students’ perception of their form teacher and of their own role at school**.

We examined the students’ emotional attitude to school environment: the quality of the atmosphere between the students and teachers, mainly the relationship of students with their form teacher. We intended to find out whether teachers spare some time for their students’ problems, whether they help them, to what extent they respect the students’ feelings, whether they talk to them enough, think about their wishes, and look after them and have the individual approach to the student.

The second area of our interest was the teaching. We focused on the motivation, activation and didactic skills of form teachers. We asked the students about the following: their understanding of the teacher’s instructions, the sufficiency of his/her explanations, his/her help with students’ difficulties, the diversity of teaching, the clarity of explanations and instructions, use of good examples, the effort to find a good explanation and organize the subject matter well. We mapped the teacher’s effort to help the students with study matters.

### 2.2. Method

We opted for the quantitative approach, using a non-standardized **questionnaire** comprising 31 items. We worked with Licker’s six point scale (1. strongly disagree – 6. strongly agree). Every respondent also answered basic personal questions concerning his/her age and sex.

### 2.3. Research sample

We focused on the students of secondary schools in the Czech Republic. We addressed 883 students (440 boys and 443 girls) aged 11-15.

## 3. Results

The obtained data was transformed into numeric form (data matrix coding) and analysed statistically using the software STATISTICA 9.0, NCSS. The next section gives some of the questions which were subject to **factor analysis**, which showed the following common variables and denominators of the statements. We give examples of some of the questionnaire items under each factor.

**Factor 1 – TEACHER'S CARE FOR THE PUPIL:**

Sparing some time for the student, the willingness to talk to him/her, to be his/her friend, care for his/her problems, respect his/her feelings and wishes, give help.

Form teacher cares for his students' problems.

The answers suggest that 20,48 % of respondents think that their form teacher does not care much for their problems, while 54,22 % claims the opposite. More than one half of the respondents perceive the care for their problems on the part of their form teachers.

Form teacher helps us as a friend.

34,94 % of respondents have a positive perception of their form teacher's help, which means that s/he can provide social support. A slightly lower number of respondents (31,33 %) think that their form teacher does not help them.

Our teacher usually spares some time to talk to us if we do not like something.

Almost one half the children (48,20 %) believe that their form teacher is willing to talk about their disagreement with the situation in the class. 10,48 % of them think that the teacher spares no time to deal with their problems.

If students want to talk about something with their form teacher, s/he spares time to do it.

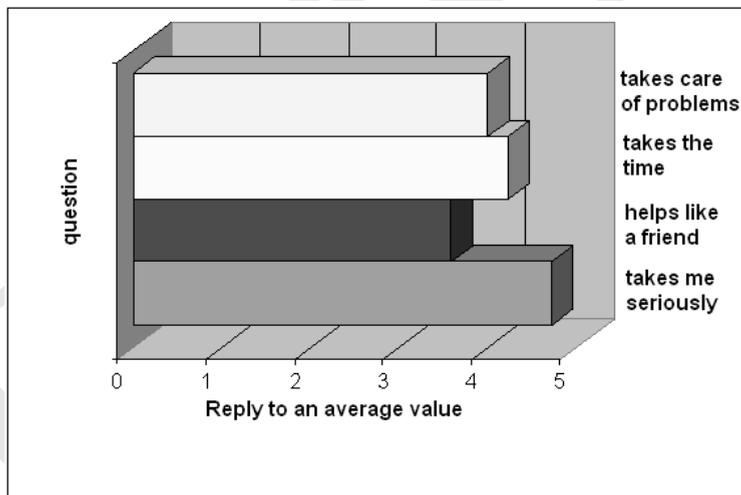
The answers suggest that 62,65 % of respondents agree with this statement. Merely 6,02 % expressed disagreement, so more than a half of the respondents claim that their form teacher has time for them if they want to deal with something.

I feel that my form teacher takes me seriously.

42,38 % of children agree with this statement and feel as partners of their form teachers, while a considerably lesser part of the respondents think that their form teachers do not take them seriously.

Form teacher does not show enough respect for the feelings of his/her students.

Almost one half (45,78 %) of the students think that their form teacher notices their feelings, while 12,05 % think that s/he has no regard for them.

**Factor 2 – THE ABILITY OF COMMUNICATING WITH THE TEACHER**

The child's ability to speak with the teacher outside school, not to give up communication because of a

momentary misunderstanding.

- If there is a misunderstanding between me and my form teacher, I give up soon.

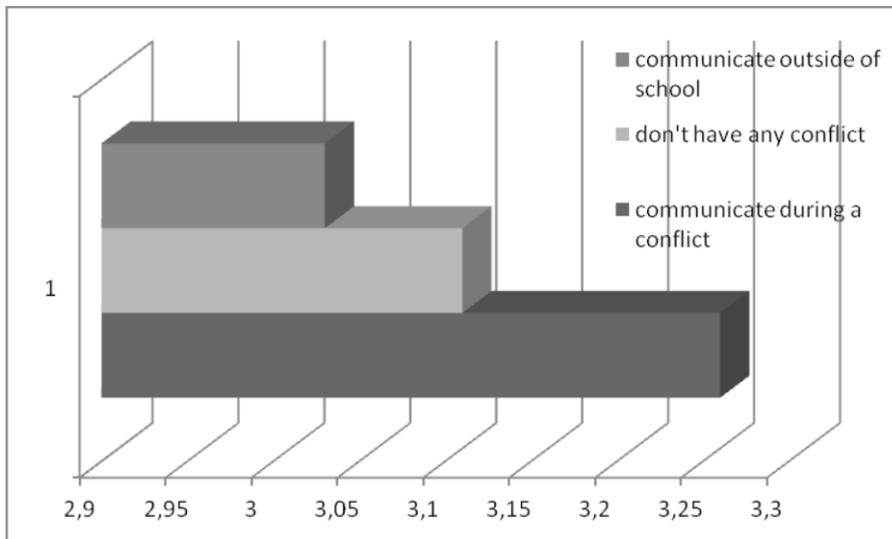
20,48 % of respondents agree with this statement, however, more than a half of the children (51,81 %) are not afraid to make contact with their form teacher despite the misunderstanding.

- If I am in a conflict with my form teacher I quickly lose confidence.

14,45 % of the respondents experience disagreeable feelings and fear because of a conflict with teachers, nevertheless, 32,53 % of them feel no loss of confidence.

- If I accidentally meet my form teacher outside school I do not know what to speak about with him/her.

The percentage of respondents who think that they have something to talk about with their teacher outside school and those who claim the opposite is the same (27,71 %). This means that almost one third of the children manifest a kind of awkwardness in communication with teachers.



### Factor 3 – PERSONAL FEELINGS ABOUT THE RELATIONSHIP WITH THE TEACHER – THE STUDENT, CONTACT WITH THE TEACHER

The student's perception of criticism on the part of the teacher, discussion of personal questions, the ability to be in contact with the teacher.

- I have a disagreeable feeling that my form teacher judges me critically.

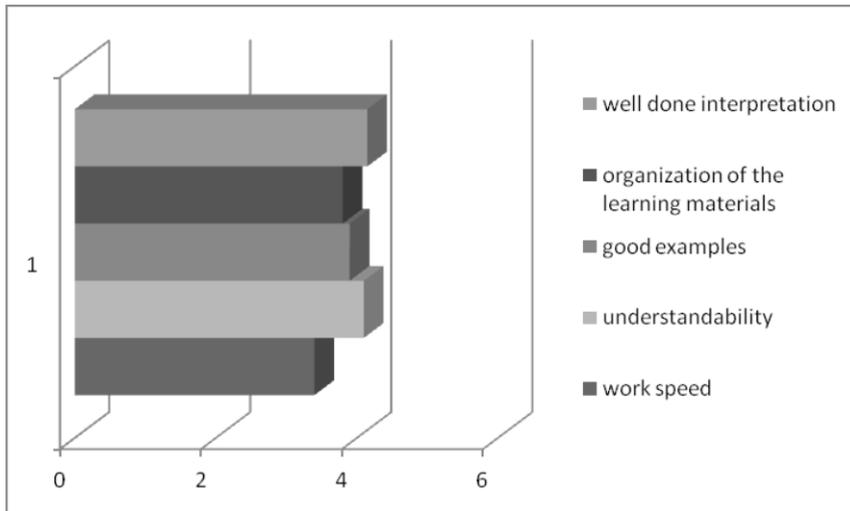
Mere 10,82 % of children believe themselves to be judged critically by their teachers, a far greater part of the respondents (49,40 %) think the opposite and do not share the feeling.

- We often talk about questions which touch us personally during the lessons.

More than one half (55,42%) of the respondents think that personal questions are not discussed often. 21,69 % of children claim that they talk about such questions.

### Factor 4 – THE PUPIL AND THE TEACHING

The ability to give understandable explanations, precise instructions, good examples, the ways of presenting the subject matter, the pace of work, the effort to give good explanations.



- We can manage difficult tasks in the lessons of our form teacher, if we try.  
43,38 % of respondents expressed their agreement with this statement and 19,27 % their disagreement. This means that almost one half of the students believe in the success of their work conditioned by the guidance of their form teacher and their own effort.
- Our teacher can organize the subject matter very well to make it understandable.  
The answers suggest that 44,58 % of children think the subject matter to be well organized, while 18,07 % believe that it is not so. The lessons are difficult for them.
- Form teacher tries hard to explain everything very well.  
More than one half (50,60 %) of the respondents believe that their teacher tries hard to give quality explanations. 14,45 % of children think that their teacher does not exert much effort to do so. The answers suggest that the majority of students are satisfied with the presentation of the subject matter.
- Students are given precise instructions for their work.  
This statement is thought to be true by 27,71 % of respondents, while 20,48 % disagree with it. The majority of them (more than a half) claim the guidance and instructions to be of average quality.
- Good examples enabling better understanding are given often.  
40,97 % of children are satisfied with the examples, while 15,66 % feel a lack of good examples.
- We do not start to go over a new topic before everyone has understood the current one.  
The pace of work seems satisfactory to 33,73 % of students. The percentage of those who are not satisfied is almost the same (34,94 %). They feel that the teacher moves on although not everyone has understood the topic yet.
- The explanations are intelligible enough to make me understand even a difficult topic.  
Presentation of the topics does not seem understandable to 39,76 % of respondents. A much lesser part (18,07 %) of the students understand the explanations.
- Our former teacher cares for everyone to understand the subject matter.  
The greater part (56,63 %) of the respondents think that the teacher cares for his students to understand, while 22,89 % think the opposite.

Variation variables: age and sex

The results concerning the item – I get along well with my form teacher – revealed that boys get along with their teachers much better than girls ( $F = 4,90 / p < 0,05$ ).

The differences in other items were statistically insignificant.

We were also interested in the differences in the students' perception of their form teacher depending on their age. The research showed that the younger the students are the more they agree with the following statements:

Our form teacher:

- cares for everyone to understand:  $r = - 0,32$  ( $p < 0,05$ );
- takes me seriously:  $r = - 0,32$  ( $p < 0,01$ );
- I can speak with him/her outside school:  $r = - 0,23$  ( $p < 0,05$ );
- I get along well with him/her:  $r = -0,43$  ( $p < 0,01$ ).

#### 4. Conclusion

The research demonstrated that Czech students believe that their form teachers usually spare some time for them if it is needed. Approximately one third of the respondents regard their form teacher as a friend and the majority of respondents think that s/he cares for their problems. The students realize that their teacher is aware of their feelings and one half of them are not afraid to make contact with him/her. Personal matters are not discussed much in our schools. Approximately one half of the children believe that they get along well with their teachers, who take them seriously and do not judge them with too much criticism. Almost one third of the children are able to talk to their teachers outside school, however, they find communication at school easier. Many are able to deal with a conflict with their teacher on their own. The feeling of getting along well with the teacher was expressed more by boys than by girls in our research. The younger the students are, the more they perceive their teachers as providers of support and help. On the other hand, higher level of criticism of the communication between the teacher and his students expressed by older children might suggest that teachers are less skilled in individual work with older students, since the one-way communication (from teacher to students) that the older pupils have violated.

Students are aware of the teacher's effort to present clear explanations and most of them are satisfied with them. Still, a mere third of the students find the teaching completely intelligible. The greater part of students are not satisfied with the pace of work, which they think to be too quick, thinking that the teacher makes them move on before everyone has understood the current topic. Although the children believe that teachers care for them to understand the subject matter and try to help them, a great part of the respondents have the impression that the pace is too quick for them, they do not completely understand the assignments and tasks and do not have a good command of the subject matter. One of the causes of this could be the lack of questions asked by the teacher (Havigerová, Haviger, 2012). More than one third of the respondents appreciate the quality of examples.

We think that according to the students' view, the current situation is quite positive. The relationships of students and their form teachers seem to be relatively good. Students regard their teachers as providers of social support and trust them. Nevertheless, it is necessary to pursue the improvement of work with the student all the time, as it is an essential part of the lifelong professional development of every teacher.

Finally, we may say that students' experience of their role in its form required by the school is positive; the school does not err much in this area. Nevertheless, the area of social communication among students and between the student and the teacher is marked by a sort of awkwardness and lack of experience with effective self-assertion or adequate solution of conflicts.

Czech children focus on their school performance and they are able to subject much to it even despite a lack of support of their parents (parents often regard school results as a standard which is naturally required). However, students have little will to excel and show that they are the best.

They often lack the skills of social behaviour, they are unable to formulate and defend their own opinion before their teacher or schoolmates, they cannot deal with conflicts in an adequate manner, the presence of the teacher makes them lose self-confidence and they fear to express themselves. This can have only slight negative

effects at school, however, once the student leaves school, his/her low level of social skills may become one of the many negative factors affecting interpersonal behaviour for the rest of his/her life.

Květenská, Truhlářová and Levická (2010) suppose that this factor may also put the child in the danger of being harmed by his/her environment. Therefore, we may state that the acquisition and improvement of social skills in children is something to be definitely taken into account in the education process. Social skills can be divided into several categories. The first category of the so-called interactive skills (Smékal, 2004) enables the individual to form, maintain and deepen meaningful relationships with other people. The sphere of quality communication and its development in students is a challenge for all educators. Symmetric and intensive communication with the parents is of no less importance.

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# Community support of schools: what kind and with what success?

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## Abstract

Among currently popular education reform ideas are school-community partnerships that link the educational mission of the school with the needs of the whole child, their families, and the broader community. However, a review of the research reveals diverse partnership models. To develop clarity and advance research on this reform agenda, we have developed a typology of four categories organized from the least to the most comprehensive: Family and Interagency Collaboration, Full-Service Schools, Full-Service Community Schools, and a Community Development Model. In this paper, we explain the four partnership models and the empirical evidence of successes and challenges for each.

Keywords: school-community partnerships; community schools; full-service schools; community development

## 1. INTRODUCTION

School-community partnerships are currently in the forefront of educational reform efforts. But the literature on these partnerships indicates a variety of models, strategies, and purposes that require different commitments and resources. After reviewing hundreds of articles by using a range of key words and search approaches, we narrowed our review to 37 conceptual, empirical, and research synthesis sources that met high standards of research and reporting rigor (AERA 2006, 2008). The empirical research included a broad range of qualitative, quantitative, and mixed methods research, including case studies of single-site partnerships, survey research, longitudinal evaluations, and quasi-experimental comparative designs. Most studies included more than one data source: test scores, attendance records, satisfaction surveys, interviews, and observations. From this literature, we developed a typology consisting of four categories organized from the least to the most comprehensive in purpose and design: Family and Interagency Collaboration, Full-Service Schools, Full-Service Community Schools, and a Community Development Model. We argue that such a typology is a necessary tool to guide systemic educational reform, especially those that go beyond traditional school dimensions (Valli, Stefanski, & Jacobson, 2013). The four categories provided the framework necessary to analyze the theories of action implicit in the partnerships and enabled us to comparatively examine the processes necessary to establish and sustain various types of partnerships, their purported outcomes, and reasons for implementation successes and challenges. (See Table 1 for a summary of sources in each category).

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Table 1: Summary of Study Types by Category

	Family & Interagency Collaboration	Full-Service Schools	Full-Service Community Schools	Community Development	Total
Conceptual Studies	1	2	3	2	8
Empirical Studies	7	9	4	4	24
Research Syntheses	5	0	0	0	5
Total	13	11	7	6	37

### 1.1. Family and Interagency Collaboration

We name this first institutional partnership “*Family and Interagency Collaboration*” because its primary purpose is to increase family and community involvement in schools by coordinating delivery of services. Partnerships within this category make “family and community involvement an expected part of district and school life” (Epstein, 2010, p. 21) and require an organizational commitment on the part of the school and parents and/or participating agencies. One criticism of this model, however, is that even with the intent of “two-way” communication and reciprocity, families and community agencies tend to serve the more limiting role of merely supporting rather than helping to shape the mission and goals of the school (Schutz, 2006).

We reviewed one descriptive, seven empirical, and five research synthesis sources in this category. The common theory of action within this partnership model is that coordinating the delivery of educational, health, and social services is key to strengthening families and meeting the learning and developmental needs of students. To be successful, these partnership models required attention to relationship building; human, fiscal, and material resources; school leadership that valued this extended role of the school; and an evaluation system that was implemented early in the partnership. As Blank, Melaville, and Shah (2003) argue from their evaluative review, successful partnerships are built on more than good intentions; they are characterized by effective leadership and resources beyond those typically found in traditional schools. Of the studies reviewed for this model, Community in Schools (CIS) exemplified the best evaluation practices. CIS was able to assess not only a broad range of outcomes, but how and why the model worked, and in what situations it worked. The five-year, national evaluation design included a data inventory, a quasi-experimental study, a natural variation study and case studies, a comparative study, and an experimental study (CIS, 2010).

While there was some empirical evidence that these partnerships improved students’ attitudes toward school and that teachers and parents found them beneficial, the evidence was stronger for improvements in student achievement indicators such as standardized test scores, grade point averages, attendance, and graduation rates. One of the strongest examples of an effective family and interagency collaboration was found in the Communities in Schools (CIS) model. CIS works within the public school system, establishing relationships with local businesses, social service agencies, health care providers, and parent and volunteer organizations to provide needed resources based on student needs. Researchers found that CIS schools, especially high-implementing CIS schools, consistently outperformed comparison schools on state achievement tests (CIS, 2010).

### 1.2. Full-service schools

Similar to the collaborative model described above, “*Full-Service Schools*” seek fruitful partnerships with community agencies to serve the needs of the whole child and families. Sometimes referred to as a “wrap-around” school, this model expands the school day and sets aside space within the school building, literally wrapping social, family, and health services around the educational time and space dimensions of the school. The difference between this model and the previous one is that the school attempts to offer full-services. It is a comprehensive, school-based, integrated approach to service delivery, requiring both organization commitment and organizational change. Its theory of action is that such on-site, integrated services will strengthen the support network essential to meeting the needs of children and families.

In this category, we reviewed two sets of conceptual and nine sets of empirical sources, suggesting the prominence of this model in the field. To be successful, these partnerships had to find ways to institutionalize change, to engage in processes that coordinated resources and communication. Numerous challenges had to be overcome in this regard and most studies found that some elements of the Full-Service model were only partially implemented. Cook, Murphy, and Hunt’s (2000) study of 10 Comer elementary schools in Chicago, for instance, indicated considerable variation in implementation of the model, with no school “faithfully following all the program guidelines, although some were rated as close” (p. 564). Implementation and sustainability problems fell into four general areas: organization, communication, resources, and leadership. Surveys and interviews unearthed a host of problems including lack of central decision making, ad hoc role specifications, redundancy of data requests, absence of Memoranda of Understanding, high turnover of key staff, disconnect between teachers and full-service staff, and inadequate funding and fiscal autonomy. A common element across studies that helped implement and sustain the full-service model was typically the presence of a site-based coordinator (Dryfoos, 2000; Leone, Lane, Arlen, & Peter, 1996; LFA, 2005a, 2005b, 2006).

If the myriad implementation and sustainability challenges were met in these partnerships, positive outcomes occurred for schools, families, and students. Most of these outcomes were found in improved academic performance (Cook et al., 2000; Impact of City Connects, 2010; Fox, Leone, Rubin, Oppenheim, Miller, & Friedman, 1999; LFA, 2005a, 2005b). But there were also indications of improvements in students’ behavior and attitudes (Impact of City Connects, 2010), teacher and parent satisfaction (Cook et al., 2000; LFA 2005a, 2005b, 2006), and the school climate (Impact of City Connects, 2010). Although reported outcomes did not consistently indicate increased achievement as a result of the Full-Service School model and effect sizes were often small, the accumulated evidence suggests that Full-Service Schools generally have a positive impact. This impact increases the longer students participate in the Full-Service School’s services and the more the reform model is faithfully implemented (Impact of City Connects, 2010). One study in this category raises an important cautionary note: that school conditions associated with improved achievement are not necessarily the same conditions that improve students’ social outcomes (e.g., improved attitudes toward school, better relations with peers and parents). In this study of James Comer’s School Development Program, researchers found that without a strong academic climate in the school, academic performance was unlikely to increase even if the social climate improves (Cook, Habib, Phillips, Settersten, Shangle, & Degirmencioglu, 1999).

### 1.3. Full-service community schools

Differing from Full-Service Schools, “*Full-Service Community Schools (FSCSs)*” seek to democratize schools by opening them, not only to greater involvement, but to greater decision making, on the part of the neighborhood community. As such, community schools require greater attention to changing the culture of the school. Although the model also emphasizes partnerships with community agencies to expand the resources available through the school, and thus require some organizational change, democratic decision-making is what differentiates it most from a full-service school and what requires a cultural shift in the way schools are operated. No longer are families simply clients to be served, but essential partners in the operation of the school. As its

category name implies, “*Full-Service Community Schools*” have the ambitious goal of changing both the structure and the culture of the school. Their theory of action is that incorporating community and family voice in partnership decision making will further strengthen the full-service school model. Although it is possible, in theory, to have community schools that do not also aspire to be full-service schools, in practice, these types of school-community partnerships seem to be an anomaly. The examples we found had the dual goals of being Full-Service and Community Schools: places that offered a full range of services to students, families and communities, as well as places that incorporated a full range of voices in decision-making. In this model, not only are schools charged with the task of providing comprehensive services, but the community is charged with the proper course of action in the community school ideal (Rogers, 1998).

We analyzed three conceptual and four empirical sources in this model. To be successful, partnerships had to find ways to democratize school structures, school practices, and school leadership. This was not an easy task, as evidenced by the limited number of exemplars. For FSCSs, the process elements are reflective of both its organizational and cultural purposes. So in addition to many of the organizational themes found in the other models, such as ensuring adequate resources and building a sound evaluation system from the start, considerable emphasis is placed on the cultural theme of relationship building, especially building trust and democratizing the school with community input. To that end, a variety of forums and committees are used to develop and sustain a partnership model of shared decision making. Using a successful example of a Children’s Aid Society partnership, Keith (1999) similarly highlights the importance of the professional educator’s role shifting from simply “bringing specific skills and knowledge to the table” to “recognizing that others at the table also have contributions to make” (p. 231). This shift is needed to cultivate reciprocity and trust but also requires difficult work: “building alternative mediating institutions that are truly democratic; intensive personal interaction, including one-on-one meetings; a strategy of social action that understands the importance of conflict properly addressed; and a long-term commitment to broad-based community empowerment” (p. 232). Implications for leadership also become a major theme. Based on his evaluation of the three schools in the Polk Bros. initiative, Whalen (2002) recommends assistance for principals in developing more collaborative leadership styles.

When successful FSCS partnerships were in place, there was evidence of improved student academic performance, attendance, and attitudes. These partnerships also positively changed the school’s climate and increased its capacity. The strongest indication of the FSCS potential to impact academic achievement comes from a comparative study of 18 FSCS to 18 matched “regular” schools (Adams, 2010). Although the initial comparison of the schools revealed no significant math and reading achievement differences, when the researchers controlled for level of diffusion (i.e., bringing the FSCS model to scale; fidelity of implementation), students in the FSCSs significantly outperformed students in comparison schools. Important intervening variables for academic achievement were levels of model diffusion (Adams, 2010), family engagement (Castrechini, 2011), and trust in the schools (Adams, 2010). These trusting relations were, in fact, stronger predictors of math and reading achievement than the schools’ SES. The authors caution, however, against rushing to causal claims. Although this body of research often accounts for student attitudes from previous surveys and reports of classroom experiences, student positive attitudes could be the result of factors not in their model such as parental attitudes toward school.

In their descriptions of exemplary FSCSs, Melville (2004) and Williams (2010) also note the increased capacity of participating schools to address a variety of health and adult education needs such as dental, hearing, and vision screenings; health fairs; and GED, literacy, cooking, and nutrition classes.

#### 1.4. *Community development*

The last and most comprehensive model described in our typology is that of “*Community Development*.” As evident in our choice of title, this model goes well beyond the other three in its goals and vision. Not content to serve the individual needs of students and their families, the aim of initiatives in this category is to push beyond the school walls to transform whole neighborhoods and communities, using schools as a primary base. The

theory of action underlying this reform model is that strengthening the community infrastructure is an essential component in child and family development and school improvement. Evoking Dewey's (1902) century-old conception of the school as a social center, schools become not only places of continuous intellectual growth for both children *and* adults, not only sites for extended agencies and social services, but also points of contact for community members to deal with pressing political, economic, and cultural matters. According to the Coalition for Community Schools, community development means that participants work together to strengthen social networks, the physical infrastructure, and the community's economic viability (Samberg & Sheeran, 2000).

We reviewed two conceptual and four empirical sources on this model. Echoing some of the findings from previous models, to be successful these partnerships required committed leadership that could facilitate a shared vision of community development and the school's role in that vision. They also needed a comprehensive evaluation system, put in place during the planning process, as well as a long-range sustainability plan. What is most striking is the convergence of themes across the articles and how closely they echoed recurrent themes in other models. As in previous models, the elements of leadership, vision, evaluation, and sustainability are not treated as discrete or linear, but rather as interconnected webs of supports. Authors see the need for someone to be both a seasoned school-based leader and a "catalytic" partnership leader who can anticipate opposition and build consensus around viable, research-based theories of change (Proscio, 2004). They discuss the importance of developing leadership within the community (Gold, Simon, Mundell, & Brown, 2004; Warren, Hong, Rubin, & Uy, 2009) and helping communities become more self-reliant through this leadership development (Oppenheim, 1999). In their theory of change, Gold and colleagues (2002, 2004) view leadership development, community power, and social capital as the essential components of a community's capacity to effect school reform. Consistent with this model's theory of action, Proscio (2004) finds that place-based community development drives school reform, not necessarily the other way around.

At this point in time, outcome findings for this model are relatively weak, with some promise of sustained improvements in housing, health, employment, and transportation in the community as well as the more typical school-level improvements such as increased attendance and higher academic achievement. As indicated above, the Community Development sources focused broadly on strengthening the community partnership, institutions, and infrastructure by renovating schools and improving housing options; creating safer neighborhoods, improving traffic patterns, and making public transportation more accessible (Gold et al., 2002; McKoy et al., 2011; Proscio, 2004). These partnerships have trained teachers to use new and presumably better curricula (Proscio, 2004), have taught parents how to help their children with homework (Warren et al., 2009), and offer wrap-around programs, including bi-lingual services, health clinics, counseling, mentors, and advocates (Gold et al., 2002; McKoy et al., 2011; Oppenheim, 1999; Proscio, 2004; Warren et al., 2009). But what have these changes in institutions and services meant for children, families, and community members? Once again, the strongest evidence is on academic achievement, with positive findings (Oppenheim, 1999; Proscio, 2004; Warren et al., 2009).

The most carefully designed study is the analysis of those selected to participate in the Harlem Children's Zone (HCZ) by lottery compared to those not selected. Researchers examined the differences between HCZ lottery winners and losers and found improved academic achievement in elementary and middle school English language arts (ELA) and in middle school mathematics in the lottery winners (Dobbie & Fryer, 2011). According to the authors, the magnitude of the gains in both reading and mathematics is greater than that of reforms found to be most effective in improving achievement among poor children: smaller class sizes, improving teacher quality, and Head Start. And although the researchers claim that the achievement gains are attributable to the high-quality Promise Academies the students attend, and not the broader network of community services, these academies were, in fact, full service community schools, providing free medical, dental and mental-health services, nutritional meals, incentives for achievement, and food and transportation support for parents. Even for the Harlem Children's Zone, which is often held up as the Community Development model to be emulated, outcome

data beyond test scores are surprisingly hard to find, and even the academic achievement outcomes are, at times, highly contested.

## 2. Discussion

Evident in these four school-community partnership model descriptions is the fact that as their purposes expand, so, too, do the requirements for success. The more comprehensive models (e.g., full-service community schools and the community development model) require significantly greater inter-organizational work and commitment than do the models with more limited scope. (See Table 2). Our analysis of the research within each of these categories provides evidence that approaches such as full-service or community schools can promote academic success and meet targeted family and community needs. However, there is not yet compelling evidence of sustainable models with enough power to transform whole communities. One reason might be that these models have not yet had enough time to both implement and document their success.

Table 2: Summary of Model Purposes and Requirements

Model	Purpose	Requirements
Family and Interagency Collaboration	Coordinate service delivery	Organizational commitment
Full-Service Schools	Deliver school-based, coordinated services	Organizational commitment and change
Full-Service Community Schools	Deliver school-based, coordinated services and democratize the school with community input	Organizational and cultural change
Community Development Model	Transform the community	Inter-organizational and cultural change

In addition to strength of evidence for findings, structuring the review as we have helped us determine similarities and differences in the models. Most evident to us was the outcome focus on achievement scores. This is not surprising given the current emphasis in the US on improved student achievement scores on standardized tests in mathematics and reading. But the broader interests in improving student and family health, for example, so often seen as critical to student learning, often went unexamined. The lack of outcome data in these areas is particularly surprising given the subtitle of Dryfoos's (1994) early book on the Full-Service School model: *A Revolution in Health and Social Services for Children, Youth, and Families*. Few partnerships seem to have created the type of integrated databases that enable comprehensive, systematic, and rigorous evaluation such as the School-Based Youth Services Program developed in Iowa almost two decades ago (Walker & Hackmann, 1999).

The other obvious commonality was the focus of all four models on the process of developing and maintaining partnerships. This preoccupation suggests both the importance—and the continuing difficulty—of partnership work. This is apparent even in *Family and Interagency Collaborations*, which require the least change. While scholars and activists have learned a great deal about the mechanisms necessary to put these partnerships in place, acting upon this knowledge requires great capacity and commitment. So although the review we have conducted generally supports prior research and provides justification for embarking on school-

community partnerships, it does not necessarily mean that any particular partnership will be able to accomplish those outcomes. The institutional, resource, and relational contexts of partnerships are simply too varied, even those within prescribed models such as NNPS or CIS, to assume replicability.

In addition, the external evaluators of the Comer SDP schools point to two types of implementation problems relevant to each of these partnership models: site conditions and model specification. While not totally absolving the schools and school district for insufficient model implementation, Cook and colleagues (1999) point out the responsibilities of the reformer to provide a clear guide for action, saying that a practical theory of reform must contain enough specificity for schools to implement well. The authors talk about failure to differentiate the SDP model from other reform efforts underway in the school district as well as role conflicts the model created for the principal, who was the person officially accountable to the school district for both overall school management and for implementing a shared decision-making model.

Another obstacle to model implementation is site conditions. From their study of SDP schools in Detroit, Millsap and colleagues (2000) argue that, in addition to developing a shared understanding, three other conditions facilitated efforts of the schools that were full implementers: (a) small school size—under 600, (b) the principal's facilitative leadership and positive working relations with team members, and (c) staff members who want and believe in the reform effort. Of the two types of problems, the latter seems even more difficult to address. How are positive team relations and facilitative leadership developed? What prompts school staff to welcome reforms? And how does one reform large schools, or break large schools into smaller schools? Although research on organizational change and school improvement begins to offer some answers, these remain daunting challenges for school-community partnerships.

### 3. Conclusion

Advocates of school-community partnerships have reviewed the lessons of the past 100 years and argue that the involvement of all stakeholders and broad-based, comprehensive services are essential for the development and education of school-aged children, especially those growing up in poverty. They claim that removing barriers for learning and providing supports for target populations will generate the conditions for learning that will lead to improved outcomes. We believe that these reform efforts are assisted by a clearer understanding of the various types of partnerships, such as we have provided, and an analysis of the requirements for their success. The literature still lacks empirical studies of sustained partnerships. This shortcoming is not surprising. These efforts are often led by community activists and educators who spend their time doing the work and have little time or expertise to engage in systematic data collection and analysis. But the well-funded, large-scale efforts that have been studied (e.g., CIS, SDP) show the difficulty in faithfully implementing these models. The more complex and multi-layered the reform effort, the greater the likelihood of weak links. Models that appear to be worth replicating, such as Communities in Schools and Harlem Children's Zone, require carefully designed, sustained evaluation.

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# Comparing the predictive and classification performances of logistic regression and neural networks: a case study on timss 2011

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## Abstract

Investigating effective factors on students' achievement has wide application area in educational studies. Specially, Trends in International Mathematics and Science Study (TIMSS) allows researchers to determine correlates of mathematics and science achievement for different countries. In this study, the predictive and classification performances of logistic regression and neural networks are compared to identify the impact levels of variables on students' mathematics achievement in Turkey. Age, gender and scales created by TIMSS team for 8<sup>th</sup> grade students (students like learning, value learning, confident in math, engaged in math, bullied at school, home educational resources), are selected as predictive variables. Model fitting statistics show that two methods give similar results in prediction and classification. In addition to model results, students' confidence is found as the most effective factor to improve mathematics achievement.

Keywords: TIMSS 2011, neural networks, logistic regression

## 1. INTRODUCTION

Education policy makers desire to get reliable information about main factors effecting students' achievement. In this sense, obtained information could be used for monitoring current problems and identifying effective solutions to improve the quality of education system. One of the common ways to acquire the mentioned information is using a reliable database such as Trends in International Mathematics and Science Study (TIMSS). TIMSS is the largest international comparative study which provides useful information about educational achievement and learning contexts for policy makers, educators, researchers, and practitioners (Martin, Mullis, Beaton, Gonzalez, Smith, & Kelly, 1997). There is an extensive literature uses TIMSS data to determine factors impact on students' achievement. While some studies investigate whether school characteristics such as class/school size, resources and the curriculum are significant determinants of achievement (Papanastasiou, (2000); Pong and Pallas (2001); Schreiber (2002); Webster and Fisher (2003); Woessmann (2003)), some studies focus on teachers' characteristics such as education level, teaching experience, qualification and hours spent on planning lessons ((Akiba, LeTendre and Scribner (2007); Dodeen, Abdelfattah, Shumrani and Hilal (2012); Hanushek and Luque (2003); Jürges and Schneider (2004); Mills and Holloway (2013); Woessmann (2003)). Student characteristics such as age, gender, family background (e.g., parental education level, income, SES), number of books at home, and attitudes are another important factors concerned with achievement (Aypay, Erdoğan and Sözer (2007); Neuschmidt, Barth and Hastedt (2008); Woessmann (2004; 2005); Yayan and Berberoğlu (2004)).

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Several statistical methods have been applied in order to find significant relationship between factors mentioned above and students' achievement. With the rapid development of information technologies, a great number of techniques within data mining are attracting educational researchers (see. Romero and Ventura (2007)). However, still there is a lack of studies used data mining tools for TIMSS data. In this paper, two well-known data mining methods; logistic regression (LR) and neural networks (NNs), are used. In addition to the usage of LR and NNs to identify the impact levels of several factors on students' achievement, this study also attempts to fill another gap by evaluating the prediction and classification performance of LR against to NNs. In this vein, motivations of this paper can be described as followings: (i) to determine the significance of factors on achievement by using TIMSS 2011 survey data of Turkish 8<sup>th</sup> grade students (ii) to compare the prediction and classification effectiveness of two methods based on different model fitting statistics.

## 2. Methodology

### 2.1. Study methods

LR and NNs which are two popular data mining methods aim to describe variable(s) in relation to the other(s) by looking for rules of classification or prediction based on the data (Giudici & Figini, 2009) and they have been applied in many fields such as health, finance, agriculture and engineering. In addition to LR and NNs methods, several different methodologies such as decision trees, cluster analysis and ensemble models are performed on the relevant data and the results of outcomes are compared according to their predictive/classifier accuracy. In this way, the question of which approach is outperformed by another(s) can be reported. In recent years, such studies are rapidly increasing in educational studies. To give an example for Turkish literature, the predictive powers of four different data mining methods on secondary education placement test results are investigated and the ranked-importance of factors on prediction models are determined by Şen, Uçar and Delen (2012). As it mentioned before, this study deals with TIMSS 2011 Turkey data and two popular methods, namely LR and NNs are used. A short brief of these methods is given in the following sections.

#### 2.1.1. Logistic regression

Logistic regression is a variation of the ordinary least squares (OLS) regression, but unlike OLS, this method allows to use two or more categorical variables as a dependent variable. This study focus on binary LR method when the dependent variable is dichotomous.

$\pi(x)$  is the probability of outcome of interest and it represents the conditional mean of  $Y$  given  $X$  ( $\pi(x) = E[Y|X = x]$ ). The residuals do not follow a normal distribution because  $Y$  gets only two possible values. The conditional mean falls within the [0,1] interval. The change in the conditional mean per unit with the change in  $X$  becomes progressively smaller as the conditional mean gets closer to 0 or 1. Therefore, the shape of the fitted regression line is likely to be S-shaped. Despite different distribution functions are proposed by researchers, the most common used in the literature is logistic distribution function. The form of the simplest logistic regression model is as follows (Hosmer & Lemeshow, 2000);

$$\pi(x) = \frac{e^{x\beta}}{1 + e^{x\beta}} = \frac{e^{x\beta} / e^{x\beta}}{(1 + e^{x\beta}) / e^{x\beta}} = \frac{1}{1 + e^{-x\beta}} \quad (1)$$

where  $\beta' = (\beta_0, \beta_1, \dots, \beta_k)$  denotes the vector of parameters and  $k$  is the number of independent variables used in the model. In order to convert the model from nonlinear to linear form, a logit transformation of  $\pi(x)$  is applied.

$$\log\left(\frac{\pi(x)}{1-\pi(x)}\right) = x' \beta \quad (2)$$

The left side of Equation (2) is also named as a logit and it can be expressed by **logit (Y)** or **logit  $\pi(x)$** . The logit is the natural logarithm of odds which is derived by taking the ratio of probability of success to probability of failure of an event. As it can be seen clearly, the odds ratio of an event take values in the interval  $[0, +\infty]$  whereas the logit take the values in the interval  $[-\infty, +\infty]$ . The logit may be continuous and it is linear in its parameters (Hosmer & Lemeshow (2000); Alpar (2011)).

In LR, the goal is to predict the logit of dichotomous outcome **Y** from the categorical or the continuous independent variable **X**. The unknown regression coefficients are estimated by using maximum likelihood estimation (MLE) method which maximises the likelihood function. The log likelihood function is given below (Hosmer & Lemeshow, 2000);

$$L(\beta) = \ln[l(\beta)] = \sum_{i=1}^n \{y_i \ln[\pi(x_i)] + (1 - y_i) \ln[1 - \pi(x_i)]\} \quad (3)$$

where  **$l(\beta)$**  denotes the likelihood function of the parameters. By taking first derivatives of  **$L(\beta)$**  with respect to  **$\beta$**  and then equalizing the likelihood function to zero, we obtain the maximum likelihood estimator of  **$\beta$ 's**. The value of maximum likelihood estimate, denoted as  **$\hat{\beta}$** , shows how much logit changes with one unit change in **X**. From the Equation (2), it can be easily interpreted that the odds ratio is equal to  **$\exp(\beta)$**  and for the value of 1, no relationship between **X** and **logit (Y)** is interpreted.

Three different tests based on the likelihood function are used in order to test the significance of estimated  **$\beta$**  coefficients. To test the significance of overall LR model, the likelihood ratio test is performed. The test statistic (**G**) is the difference between two deviance values: deviance for the model with only constant (the null model) and the deviance for the model with constant and variable(s). It follows a Chi Square distribution and the formula of the test statistics can be expressed as  **$G = D(\text{null model}) - D(\text{model with variables})$**  or  **$G = -2 \ln\{\text{likelihood (the null model)} / \text{likelihood (model with variables)}\}$** . If the null hypothesis:  **$h_0: \beta_0 = \beta_1 = \dots = \beta_k$**  is rejected at chosen significance level (usually at  **$\alpha = 0.05$**  significance level), it is concluded that variable(s) added to model increase(s) the model fit. The Wald Test is performed in order to test whether any individual parameter (slope coefficient) equals to zero or not. Let  **$\hat{\beta}$**  denotes the maximum likelihood estimate of unknown parameter  **$\beta$**  and  **$SE(\hat{\beta})$**  denotes the standard error of  **$\hat{\beta}$** . The Wald statistics follows a Chi Square distribution with one degrees of freedom and can be obtained as follows:  **$W = \hat{\beta}^2 / SE(\hat{\beta})^2$** . The last one is Lagrange Multiplier (Score) test which is based on the distribution theory of the derivatives of the log likelihood and limited software packages includes this test due to complicated matrix calculations (Hosmer & Lemeshow, 2000).

### 2.1.2. Neural networks

Neural networks are widely used computational models and the main idea is to mimic the process of human brain. Algorithms of NNs are used as an alternative of standard statistical techniques in prediction and classification due to having following benefits: (1) Like human brain, NNs have the ability of learning and generalizing from past experience. According to Sivanandam, Sumathi and Deepa (2006), the ability of learning allows NNs to adjust themselves to the dynamic and changing environment. (2) NNs are easily overcome with complex non-linear relationship between inputs (independent variables) and outputs (dependent variables), and there is no need to make priori assumptions about the mathematical forms between inputs and outputs. (3) NNs are robust to noisy, missing and incomplete data. (4) Possible interactions among inputs can be easily determined by NNs. However, Linoff and Berry (2011) mentioned about some weakness of NNs versus other statistical techniques. Because of black box nature, NNs can produce well established model but cannot explain how to do it. For example unlike logistic regression, there is no way to get an accurate set of rules from NNs. Also LR enables to make confidence intervals and to develop hypothesis tests in order to make decisions through statistical theory. Non availability of such statistical procedures is the other drawback of NNs. Lastly, when training sets are inaccurate for the large amounts and chaotic data, an over fitting problem may occur (Sivanandam, Sumathi, & Deepa, 2006).

As it mentioned before, NNs have the ability of learning and learning can be done by training. The back propagation algorithm is the most popular supervised training method and it performs learning on a multilayer perceptron (Han & Kamber, 2006).

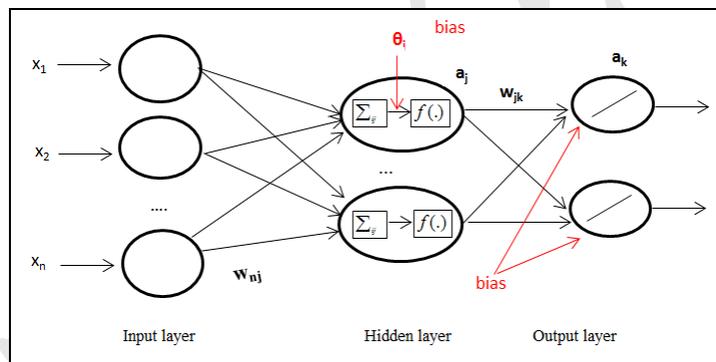


Fig. 1. An architecture of a simple MLP with one hidden layers

The Multilayer Perceptron (MLP) consists of three components: an input layer, one or more hidden layers and an output layer. Figure 1 shows architecture of two layers MLP. Neurons which are the smallest unit of a NN are represented by circles. The weight value carries information from one neuron to another. Steps of backpropagation algorithm used in training of MLP are described below (Han & Kamber, 2006);

- **Step 1:** (Initialize the network weights) Weights are randomly assigned as small numbers.
- **Step 2:** (Propagate the inputs forward) Each input layer unit  $j$  carries its information to all hidden units. For an input  $j$ , its output  $a_j$  is equal to its input value  $I_j$ . Then the net input of unit  $j$  according to the previous layer  $i$  is computed as  $I_j = \sum_i w_{ij} a_i + \theta_j$  where  $I_j$  is the linear combination of inputs  $x_i; i = 1, \dots, n$ ;  $w_{ij}$  is the weight value,  $a_i$  is the output of unit  $i$  from the previous layer and  $\theta_j$  is the bias of the unit  $j$  (sometimes bias takes the value 1). Next, each hidden unit  $j$  computes the output value  $a_j$  with respect to the type of activation function which is shown as  $f(\cdot)$ . The most popular activation function used in the hidden layer is the sigmoid or

logistics which is a continuous and differentiable nonlinear function. With the help of the sigmoidal activation function, the output of unit  $j$  can be calculated as  $a_j = 1/(1 + e^{-I_j})$ .

- **Step 3:** (Backpropagate errors) The error is propagated backward by updating the weights and biases to reflect the error of the network's prediction. The output layer error is obtained by  $Err_j = a_j(1 - a_j)(T_j - a_j)$  where  $T_j$  is the known desired value of the output. Then, error of the hidden layer  $j$  is calculated as  $Err_j = a_j(1 - a_j) \sum_k Err_k w_{jk}$  where  $Err_k$  is the error of unit  $k$ .
- **Step 4:** (Updated the weights and biases) For each  $w_{ij}$ , weight increment is calculated by  $\Delta w_{ij} = \eta Err_j a_i$  where  $\eta$  is the learning rate which takes value between 0 and 1. Then each weight is updated for each bias  $\theta_i$  in the network with the formulation:  $w_{ij} = w_{ij} + \Delta w_{ij}$ . Similarly, each bias  $\theta_i$  is updated by  $\Delta \theta_i = \eta Err_i$  and then the new value of bias is calculated as  $\theta_i = \theta_i + \Delta \theta_i$ . Training stops until a pre-specified number of epochs have expired and the sufficiently small overall error is satisfied (repeat steps 2-4). Training in network generally continues until it reaches a certain error rate such as 95%. Too much training may cause any over fitting problem. Additionally, before applying step 2, input variables are usually normalized to 0-1 scale. Thus, changing the scale helps speed up the learning phase.

## 2.2. Data and variables

TIMSS is an international assessment of mathematics and science at the 4<sup>th</sup> and 8<sup>th</sup> grade students from different nations and it is conducted every four years by the International Association for the Evaluation of Educational Achievement (IEA) since 1995. In 2011, more than 600,000 students from 63 countries participated to this international study and 45 of them administered the eighth grade assessment (Mullis, Martin, Foy, & Arora, 2012). Data used in this study includes 6928 Turkish students' information from student questionnaire and some missing or inaccurate values exist. To handle this problem, 192 students' data are excluded from the analysis.

Table 1. Independent variables used in study

Variable name	Type of data	Codes of the statements
Age	Ratio	ITBIRTHD
Gender	Nominal	ITSEX
Students like learning math	3 point likert scale	BSBM14A- BSBM14B, BSBM14C, BSBM14D, BSBM14E.
Students confident in math	3 point likert scale	BSBM16A, BSBM16B, BSBM16C, BSBM16D, BSBM16E, BSBM16F, BSBM16G, BSBM16H, BSBM16I
Students value math	3 point likert scale	BSBM16J, BSBM16K, BSBM16L, BSBM16M, BSBM16N, BSBM14F
Students engaged in math	3 point likert scale	BSBM15A, BSBM15B, BSBM15C, BSBM15D, BSBM15E
Students bullied at school	3 point likert scale	BSBG13A, BSBG13B, BSBG13C, BSBG13D, BSBG13E, BSBG13F
Home educational resources	3 point likert scale	BSBG04, BSDGEDUP, DSDG055

Before applying LR and NNs methods to determine the significance of variables on students' mathematics achievement and to compare the prediction/classification performances, dependent and independent variables are determined. In this study, first plausible value of the mathematics test is chosen as a dependent variable and scores for each student are encoded as binary values of 1 or 0 (if the score is over the average 500,  $y=1$ ; otherwise,  $y=0$ ). In order to find factors affecting mathematics achievement, the results of eight student survey questions are selected as potentially influencing variables. These independent variables are given in Table 1. According to Table 1, six of them except age and gender are created based on the students' responses to different statements by TIMSS team. Statements used to create the relevant scale are given in the last column of the table with their codes. For example, "*Students like learning mathematics*" is a 3 point likert scale (1=like learning

math: 2=somewhat like learning math: 3=don't like learning math) and it measures students' feeling about mathematics based on the following 4 point likert statements: "I enjoy learning mathematics" (BSBM14A), "I wish I did not have to study mathematics" (BSBM14B), "Mathematics is boring" (BSBM14C), "I learn many interesting things in mathematics" (BSBM14D) and "I like mathematics" (BSBM14E). "*Students confident in mathematics*" scale aims to investigate students' beliefs about their abilities in mathematics and it is a 3 point likert scale (1=confident: 2=somewhat confident: 3=not confident). "I usually do well in mathematics", "I learn things quickly in mathematics" and "My teacher tells me I am good at mathematics" and six more statements are used in order to formed this scale (for further details, see Martin and Mullis (2012)).

### 3. RESULTS

#### 3.1. Descriptive statistics

Purified data set from missing and inaccurate values consists of 6,736 Turkish 8<sup>th</sup> grade students' information. SAS enterprise miner 5.2 software is used to find descriptive statistics, construct models and compare models accuracy. Table 2 shows some descriptive statistics for independent variables (except age) with respect to dependent. It is seen that 2112 students get the mathematics score above 500, whereas 4624 students get the score below 500. When examining the created scales, "*home educational resources*" has the highest mean for both groups. Also, while the mean of "*students confident in math*" scale is equal to 1.879 for students whose scores are above 500, the mean of this scale is 2.584 for students belongs to other group. The mean which is close to 3 refers that many students replied the frequency of their feelings about confident as "not confident". Hence, it can be said that scale of "*student confident in math*" may be an effective factor describing the achievement.

Table 2. Descriptive statistics of independent variables

Independent variable	Above 500			Below 500		
	Min-Max	Mean	Std.dev	Min-Max	Mean	Std.dev
Age	12-16	14.085	0.421	12-16	14.0205	0.595
Students like learning math	1-3	1.652	0.737	1-3	2.087	0.729
Students confident in math	1-3	1.879	0.762	1-3	2.584	0.561
Students value math	1-3	1.512	0.647	1-3	1.771	0.728
Students engaged in math	1-3	1.674	0.611	1-3	1.926	0.609
Students bullied at school	1-3	1.518	0.670	1-3	1.696	0.760
Home educational resources	1-3	2.131	0.608	1-3	2.631	0.503
Total	n=2,112			n=4,624		

#### 3.2. LR and NN results

The binary LR analysis is performed in order to find which variables are significantly differentiated in two groups of students. Variable selection procedure is determined through forward stepwise selection. The Newton-Raphson Ridge Optimization algorithm, which is default in SAS, is used to calculate maximum likelihood parameter estimates. After 4 iterations, the process is terminated. Table 3 shows the likelihood ratio test results which is used as the measure of goodness of fit of the model. According to the test results, estimated model fits the data well and the set of predictors have a significant effect on the logarithm of odds of a dependent variable at 95% confidence level (p-value<0.05). Another chi-square goodness of fit tests is Hosmer and Lemeshow and the

p-value of test statistic is equal to 0.203. The null hypothesis of "no significant difference between observed values and predicted values" is rejected at 5% significance level, so the model fits the data well.

Table 3. Likelihood ratio test statistics

-2 Log Likelihood		Likelihood ratio		
The null model	Model with variables	Chi-Square	DF	p-value
3352.077	2525.401	826.6757	14	0.0001

Table 4 shows the results of maximum likelihood estimation and analysis of variable effect (in the last column). The last ordered category is chosen as the reference category for each six created scale. According to the analysis of variable effects, four predictors including "age", "home educational resources", "students bullied at school" and "students confident in math" are statistically significant at 95% confidence level. In addition to these four predictors, "the students value mathematics" scale statistically effects the mathematics achievement if the confidence level is taken as 90%. The parameter estimate of  $\hat{\beta}_1$  and  $\hat{\beta}_6$  is negative and the p-values of Wald statistics with one degrees of freedom are statistically significant ( $p < 0.05$ ). Thus, it is said that these variables are statistically significant and make negative contribution to the model. On the other hand,  $\hat{\beta}_5$ ,  $\hat{\beta}_{11}$ ,  $\hat{\beta}_{12}$  and  $\hat{\beta}_{13}$  significantly increase the model fit, positively. In other words, "confidence in math", "almost never bullied at school", "about monthly bullied at school" and "many educational resources" help to be in successful group for a student.

Table 4. LR results

Scale	Variable name	$\hat{\beta}$	SE( $\hat{\beta}$ )	Wald ChiSq	p-value ChiSq	Odds	p-value (effect)
	constant ( $\hat{\beta}_0$ )	5.556	1.3794	16.23	0.0001	258.951	---
Age	age ( $\hat{\beta}_1$ )	-0.395	0.0974	16.5	0.0001	0.673	0.0001
Gender	gender ( $\hat{\beta}_2$ )	-0.022	0.0504	0.2	0.6515	(1 vs 2) 0.955	0.6515
Students like learning math	like learning ( $\hat{\beta}_3$ )	0.218	0.0892	6.00	0.0143	(1 vs 3) 1.347	0.018
	somewhat like learning ( $\hat{\beta}_4$ )	-0.139	0.0693	4.05	0.0441	(2 vs 3) 0.941	
Students confident in math	confident ( $\hat{\beta}_5$ )	1.652	0.112	217.9	0.000	(1 vs 3) 21.32	0.0001
	somewhat confident ( $\hat{\beta}_6$ )	-0.246	0.0731	11.34	0.0008	(2 vs 3) 3.191	
Students value math	value ( $\hat{\beta}_7$ )	-0.213	0.0835	6.53	0.0106	(1 vs 3) 0.754	0.008
	somewhat value ( $\hat{\beta}_8$ )	0.1444	0.074	3.81	0.051	(2 vs 3)	

						1.078	
Students engaged in math	engaged ( $\tilde{\beta}_9$ )	-0.008	0.0931	0.01	0.9237	(1 vs 3)	1.048
	somewhat engaged ( $\tilde{\beta}_{10}$ )	0.064	0.0731	0.78	0.3762	(2 vs 3)	1.128
Students bullied at school	almost never ( $\tilde{\beta}_{11}$ )	0.243	0.0721	11.39	0.0007	(1 vs 3)	2.028
	about monthly ( $\tilde{\beta}_{12}$ )	0.221	0.0781	7.99	0.0047	(2 vs 3)	1.983
Home educational resources	many resources ( $\tilde{\beta}_{13}$ )	0.939	0.1733	29.34	0.0001	(1 vs 3)	7.462
	some resources ( $\tilde{\beta}_{14}$ )	0.132	0.0999	1.75	0.1862	(2 vs 3)	3.330

Additionally, the value of odds ratio should be greater than 1 in order to mention about significant relationship between the relevant predictor and the dependent variable. For example, the odds ratio estimate for  $\tilde{\beta}_5$  versus  $\tilde{\beta}_0$  (or 1 vs. 3) is equal to 21.32. It can be interpreted as the odds of being in successful group are 21.32 times higher for a student who has confidence in math than a student who has not confidence in math. Furthermore, this parameter estimate has the highest value of odds ratio and it can be said that students' confidence in math is the most effective factor in being the successful group. The other predictors can be interpreted as the same way.

Finally, the NNs model is constructed with the same variables used for LR model. The MLP model is performed with a network which has one hidden layer that consists of three neurons. The process is terminated after 38 iterations when the convergence criteria is satisfied and the objective function is found 0.4585. The examination of the values of independent variables' normalized importance shows that of "students confidence in math", "home educational resources", "age" and "students bullied at school" are statistically significant predictors. The most important predictors among these four variables is the scale of "students confidence in mathematics".

### 3.2. Model comparisons

While assessing the prediction and the classification accuracy of LR and NNs methods, the holdout method is used to partition the data into two independent sets: the training and the testing data set. 40% of the data is taken as the training set in order to build the initial model. The rest is split into two as the validation (30% of data) and the test data (30% of data). The validation data set is used to adjust the initial model to make it more general and less tied to the idiosyncrasies of the training data set. The test data is also named as a holdout sample and it is used for final assessment of the model accuracy (Linoff & Berry, 2011). In the SAS model comparison tool, misclassification rate is preferred as the model selection criteria.

Classification tables (confusion matrixes) which are used to evaluate the models' predictive abilities are shown in Table 5 and 6. Through these tables, the accuracy, the sensitivity (true positive rate) and the specificity (true negative rate) of each classifier method are also calculated. Calculation methods can be found in Han and Kamber (2006).

Table 5. Classification accuracy of the LR model

	Train data set				Validation data set		
	predicted		Percent Correct	Predicted		Percent Correct	
	y=0	y=1		y=0	y=1		
observed	y=0	1668	182	61.89%	1235	152	89.04%
	y=1	390	455	31.35%	289	345	45.58%
overall				78.78%	1524	497	78.18%

Table 6. Classification accuracy of the NN model

	Train data set				Validation data set		
	predicted		Percent Correct	Predicted		Percent Correct	
	y=0	y=1		y=0	y=1		
observed	y=0	1688	162	62,63%	1254	133	90,41%
	y=1	404	441	31,35%	314	320	49,53%
overall				79%	1524	497	77,88%

According to the tables, the overall percent corrects of train and validation data sets for both LR and NN methods are very close, that means that two methods give similar results for their predictive ability. While the classification accuracy of LR method is 78.5%, NN method has 78.6% accuracy rate. The sensitivities of models are calculated as 0.7 and 0.72, respectively. The specificity of LR is equal to 0.89 and the specificity of NN is equal to 0.91.

When other measures of model comparison such as misclassification rate, MSE, gain, gini coefficient and ROC index are taken into account, it is seen that both methods have similar classification and prediction ability. Table 7 indicates fitting statistics for the test data. It can be concluded that given statistics exhibit the same pattern across LR and NN models.

Table 7. Some fitting statistics for the comparisons of models

Method	Misclassification rate	MSE	Gain	Gini coeff.	ROC index
LR	0.21	0.15	181.2	0.62	0.81
NN	0.21	0.15	187.2	0.61	0.80

The classification similarities between two models are visualized in the ROC curves given below (Figure 2). ROC curves for the train, the validate and the test data look highly similar.

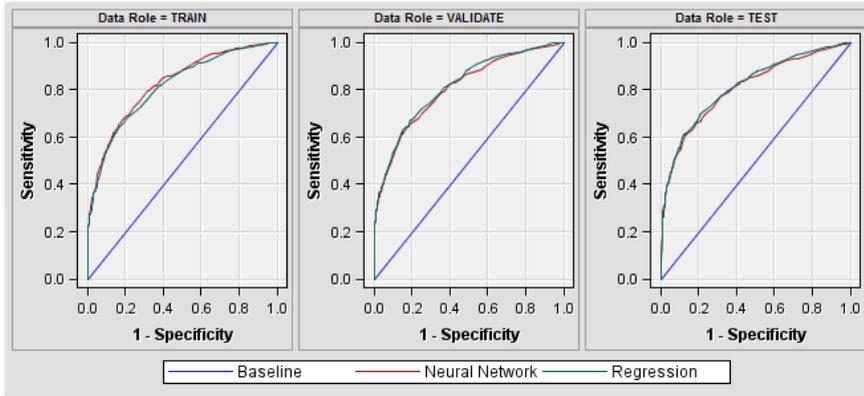


Fig. 2. ROC curves for LR and NN models

#### 4. Conclusion

In this study, 6736 Turkish 8th grade students' information from TIMSS 2011 database is used for two main purposes. Firstly, it is aimed to determine the significance of selected factors on mathematics achievement. Then, two popular data mining methods, namely binary LR and NNs are performed and the prediction and the classification effectiveness of these two methods based on different model fitting statistics are implemented.

Both LR and NN results show that “*students confidence in math*” scale is the most important predictor on mathematics achievement. Also a student who “almost never” or about monthly bullied at school” and who has “many educational resources” is included in successful group. On the other hand, when the prediction accuracy of models are compared, it is concluded that two methods give similar overall percent corrects. When some measures of model comparison such as misclassification rate, MSE, gain, gini coefficient and ROC index are examined, it is seen that predictive and the classification accuracy of LR versus NN has similar performance for the data used in this study. One reason of this similarity could be that nonlinearity does not exist between the dependent variable and the selected six independents. Because of the black box nature, unlike LR, NN cannot explain how it produces the model. LR enables researchers to calculate confidence intervals and to develop hypothesis tests in order to make decisions based on the statistical theory. Thus, LR appears to be the preferred model choice for this study.

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4<sup>th</sup> International Conference on New Horizons in Education

# Comparison of social events in regional boarding primary schools and others primary schools (Malatya sample)

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## Abstract

Students to express themselves in social activities in order to realize their in their interests aptitude and ability to choose and implement activities. These activities in general and economic level of development of the school environment ,social facilities and students' interests are shaped for. In this study, Regional Primary Boarding Schools underwent the same training in the central primary schools are compared in terms of social events. Students away from their families due to the necessity of social activities are supported thanks to the continuously exist at the school and the school's physical and social opportunities to be reachable at any time other than due to primary schools on the idea that social activities will be investigated more. Regional Boarding Primary School in Malatya, the three county study was carried out. Research from District Directorates of Education are based on general data. In Hekimhan, Arguvan and Pötürge data of the academic year of 2010-2011 is interpreted. Applied to the result of reached by the study of the social activities, support to the expectations more is that the center of the county schools.

Keywords: YIBO—Regional Boarding Primary School, Social Activities, Social Activities

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## 1. INTRODUCTION

Global society is now in an information century. In this century, people are witnessing communication Social activities are defined as the whole academical, social, cultural, artistic and athletic studies to develop sense of confidence and responsibility inside students, create new interest areas and bring new skills towards student clubs and community services along with the curriculums in primary, secondary, high schools and colleges (Ministry of National Education, 2005). With the help of social activities, students can own different abilities like giving respect to social and universal values, behaving in a democratical way, recognizing himself and the other people, adapting to the environment, developing positive identity and learning ability, being conscious of saving the environment, relying on himself and other people, getting used to study in a planned way, spending spare time in an effective and efficient way, being able to make decisions, giving tolerance to social environment, being creative and using time effectively. (Eccles, Barber, Stone, & Hunt, 2003; Perkins, Borden, & Villarruel, 2001; Scales & Leffert, 1999; Earls & Carlson, 2002).

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Regional Primary Boarding Schools are different from lots of public schools in terms of both their foundation aims and their conditions. Regional Primary Boarding Schools are boarding schools which are found in lands in which the population is little and scattered ( village, arable field, nomad camping side) with the aim of satisfy educational needs of poor and compulsory education aged students. ( Ministry of National Education, 2007) The first foundation of Regional Primary Boarding Schools equals to the first years of Republic. Atatürk indicated that there was a need for Regional Primary Boarding Schools for primary education in 1<sup>st</sup> of March, 1923 and according to that Regional Primary Boarding Schools are founded in 1923–1933 within cities with available budget, in 1933–1938 within township centers and finally in 1940 in central villages with day students and students in pension. ( Aralpcan, 1998).

Generally, Regional Primary Boarding Schools are tried to be effective education organizations in physical manners with gym centers, multipurpose halls, Information Technology halls, workshops, laboratories. According to these opportunities, it is expected that social activities in Regional Primary Boarding Schools are wide ranged in compliance with other schools.

This study aims to compare social activities in Regional Primary Boarding Schools and in the other schools.

## 2. Method

In the study, data analysis method is used as a qualitative research design. According to Fink (2005:3) data analysis is the process including analysing, identifying, arranging and evaluating data with experts, researchers and academicians. With this aim, the numbers of social activities organizations in 2010 and 2011 are found from sample schools, the data is compared and commented in tables.

The population of the research consists Regional Primary Boarding Schools and other primary schools near them in Malatya. The sample consists of Regional Primary Boarding Schools and other primary schools in Hekimhan, Arguvan and Pütürge. The information relevant of sample is shown in Table 1.

Table 1. The information relevant of sample

Schools	The town that the school is found			Toplam
	Hekimhan	Arguvan	Pütürge	
Number of Regional Primary Boarding Schools	1	1	2	4
Number of central primary schools	2	2	2	6
Total	3	3	4	10

As it is seen in Table 1, the research is carried out in 3 different towns. In Hekimhan, there is one Regional Primary Boarding School and 2 central primary schools and totally there are 3 schools. In Arguvan, there is one Regional Primary Boarding School and two central primary schools and totally there are 3 schools. In Pütürge, there are two Regional Primary Boarding Schools and two central schools and totally four schools. Because of geographical features, there are two Regional Primary Boarding Schools in Pütürge.

### 3. Findings

In 2010- 2011 academic year, there are 539 Regional Primary Boarding Schools in the country and the classroom, teacher and student conditions of these schools are shown in Table 2.

Table 2. 2010-2011 academic year, the numbers of classroom, teacher and student in Regional Primary Boarding Schools

Number of Student	Male	Female	Number of Teacher			Number of Classroom
247.563	131.874	115.689	12.990	10.428	2.562	9732

In 2010- 2011 academic year, 12.990 teachers and 247.563 students hold educational activities in 9732 classrooms in Regional Primary Boarding Schools. There is one classroom for per 25 students, and there are 19 students for per teacher. This condition reflect normal measures.

The social activities in 2010-2011 in sample Regional Primary Boarding Schools and central schools are listed below.

#### 3.1. The analysis of Social Activities in Hekimhan

Table 3. The analysis of Social Activities in Hekimhan in 2010-2011

Nr.	Schools/ Activities	f	%
1	Hekimhan 75. Year Regional Primary Boarding School	5	41,7
2	Sakarya Primary School	3	25,0
3	Atatürk Primary School	4	33,3

In Hekimhan town center, the most social activities are held in Hekimhan 75. Year Regional Primary Boarding School.

#### 3.2. The analysis of Social Activities in Arguvan

Table 4. The analysis of Social Activities in Arguvan in 2010-2011

Nr.	Social Activities in 2010-2011 Academic Year	F	%
1	Atatürk Primary School	8	42,1
2	Cumhuriyet Primary School	6	31,7
3	Tatlık Regional Primary Boarding School	5	26,2

It is seen that in 2010-2011 Academic Year, in three schools in Arguvan, Atatürk Primary school is the first with the range of 42% , Cumhuriyet Primary School is the second and Tatkinik Regional Primary Boarding School is the third in terms of social activity numbers.

### 3.3. The analysis of Social Activities in Pütürge

Table 5. The analysis of Social Activities in Pütürge in 2010-2011

Nr.	2010 – 2011 Eğitim Öğretim Yılında Yapılan Etkiniler	F	%
1	Pütürge Regional Primary Boarding School	9	28,1
2	Mehmet Akif Ersoy Primary School	8	25,0
3	Dumlupınar Primary School	6	18,8
4	Tepehan Regional Primary Boarding School	9	28,1

It is understood that in 2010-2011 Academic Year Pütürge Regional Primary Boarding School and Tepehan Regional Primary Boarding School organize more social activities than the two other central schools. Mehmet Akif Ersoy Primary School and Tepehan Regional Primary Boarding School are the third and fourth ones.

### 3.4. Comparison of Social Activities among Towns

Table 6. 2010- 2011 Data Among Towns

Nr.	Towns/ Activities		Nr. Of Activities	Average
	Towns	Nr. Of School		
1	Hekimhan	3	12	4,0
2	Arguvan	3	19	6,3
3	Pütürge	4	32	8,0

When we look at the data in 2010-2011 in Hekimhan there are 12 activities in 3 schools and there are 4 activities for per school and with these ranges, it is the last school in terms of social activities among towns. In Arguvan, there are 19 activities in 3 schools. Arguvan is the second among the towns. In Pütürge there are 32 activities in 4 schools and this means that there are 8 activities for per school and this range makes Pütürge as the first of the towns in terms of social activities.

### 3.5. Comparison of Social Activities in Regional Primary Boarding Schools

Table7. Comparison of Social Activities in Regional Primary Boarding Schools

Nr.	Regional Primary Boarding Schools/ Activities	F	%
1	Hekimhan 75. Year Regional Primary Boarding School	5	17,9
2	Tatlık Regional Primary Boarding School	5	17,9
3	Pütürge Regional Primary Boarding School	9	32,1
4	Tepehan Regional Primary Boarding School	9	32,1

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When we assess the Regional Primary Boarding Schools regarding their social activity measures, we see that Pütürge Regional Primary Boarding School and Tepehan Regional Primary Boarding School in Pütürge are the mostly activity organized Regional Primary Boarding Schools.

## 4. Results and Suggestions

According to the data getting from District National Education Directorate the Regional Primary Boarding Schools in Pütürge are more effective in terms of social activities than the other Regional Primary Boarding Schools and central primary schools and it is seen that the Regional Primary Boarding School in Arguvan organizes less social activities. Tatlık Regional Primary Boarding School in Arguvan is poor in social activities and it can be affected by its being far away from the town. When it is considered generally, it is inferred that Regional Primary Boarding Schools are organizing social activities more actively than the central schools. When it is considered among towns, we can see that Pütürge is very active in terms of social activities. It can be derived from the managers and teachers in the town. Maybe the social activities can be important factors to refine the discarded image of Regional Primary Boarding Schools.

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# Computer Aided Industrial Design Software Selection in Industrial Product Design Education at Turkey Using Expert Choice Program

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## Abstract

Computer technologies have developed rapidly in the last half century and today have become one of the most useful tools for Industrial Designers. Using the power of the computer and the software is not an arbitrary choosing for Industrial Designers; instead it has been a professional requirement.

In this paper, selection of softwares taught at Computer Aided Industrial Design (CAID) courses in Industrial Product Design Undergraduate Programmes at Turkey examined through three staged surveys and obtained datas analyzed at decision making program, Expert Choice. The assessment and final results of the study points out the required qualifications of CAID education at Turkey.

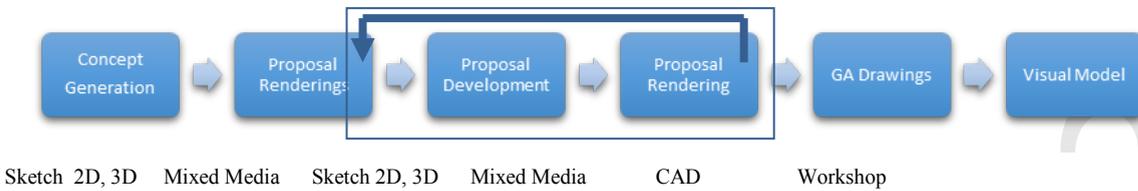
Keywords: CAID, Design Education, Decision Making

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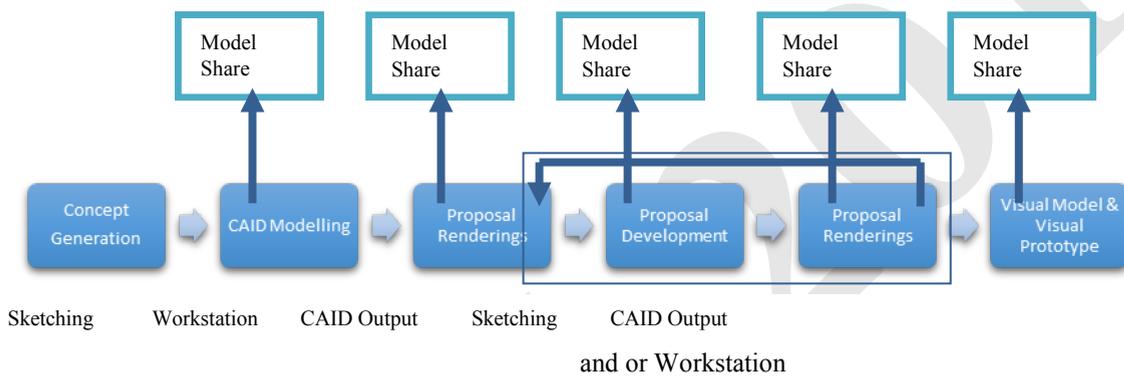
## 1. Introduction

By the development of computer technology, computer aided industrial design concept and softwares supporting the concept has been created. These softwares provide support to designers at gathering knowledge, sketch, 2D design, 3D design, prototyping and visualization stages of design process. Using CAID softwares is not an arbitrary choosing for Industrial Designers; instead it has been a professional requirement. Evans (1994) indicates that, CAID method accelerates design process, sharing knowledge with other designers and process can be managed more efficiently. He compares Archers' conventional industrial product design strategy with CAID method. In conventional method, possible design problems arise at the end of the process, whereby at CAID method possible problems can be controlled and prevented at every stages.

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**Fig. 1.** 'Conventional' industrial design strategy



**Fig. 2.** Collaborative CAID methodology

Beside the effective usage at design process, CAID method has advantage on recruiting designers in industry. As a result of Süels' (2006) survey on "Effective criterias for hiring designer", the criteria of "using computer well" (%72.5) is the second most important criteria, after the criteria of "to be educated in design" (%90).

KINDI (2007) denotes at his study on 'job postings' that, postings has a very little emphasis on creativity, while most postings almost exclusively refers to the demand for computer skills.

CAID software knowledge has a positive impact on the process of recruiting, as well as advantages on design process. Thence CAID courses are given in Industrial Product Design Departments at Turkey to prepare students for Professional life; but the number and nature of the courses given varies upon university.

One of the reasons that CAID courses reveal differences in programs can be considered as diversity of universities vocational perspectives.

In this study, without regarding vocational perspectives of universities, a decision making strategy has been implemented on CAID software choices at Industrial Product Design, Undergraduate Programmes at Turkey.

## 2. Method

Selection of softwares taught at Computer Aided Industrial Design courses in Industrial Product Design

Undergraduate Programmes at Turkey will be examined through three staged surveys and obtained datas will be analyzed at decision making program, Expert Choice.

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## 2.1. Software Selection Criterias

Various amateur or professional CAID software exist in market. Selection of these softwares and usage at design process by designer depends on criterias. These criteria were determined as:

- Price
- Ease of Use
- Ease of Learning
- Sectoral Demand
- Modeling Method
- The aim of use

### 2.1.1. Price

Softwares, used at universities are mostly education versions and economic. Price appears as an important criteria at sector. Many companies prefer to work with cheap softwares instead of expensive ones.

### 2.1.2. Ease of Use

Ease of use criteria covers a wide range, so divided into three sub-criteria:

- Interface

Ease use of interfaces increase the efficiency. User, not experiencing barriers, establishes a harmonious relationship with the software.

- Ease of access to information

Easy access to information resources like sample model, sample scene, material, supports user to use software more effectively.

- Ease of information exchange between softwares

Programs that support the exchange of information makes the design process more effective and aid designers to create their own CAID techniques.

### 2.1.3. Ease of Learning

A software, learned without encountering obstacles, increases the user's motivation and confidence in the program.

### 2.1.4. Sectoral Demand

The usage of softwares varies upon the sector. In this study Stand Design, Interior Design, Consumer Electronics, Yacht Design and housewares industry have been researched.

### 2.1.5. Modelling Method

Different modeling methods can be used during design process. NURBS or Polygon / MESH methods are used in surface modeling, solid modeling techniques are preferred for production-oriented drawings and graphics, 2D/vectoral drawing softwares are used for visual presentation. For an effective design process, the methods can be used together.

- Surface Modelling
- Solid Modelling
- 2D/vectoral drawing

### 2.1.6. The Aim of Use

The purpose of the software usage, and effective features of softwares during design process, been used for determining the values of criteria.

- Presentation
  - Photo-Realistic Rendering
  - Technical Drawing
  - Preparing Presentation
- Design
  - 2D Drawing
  - 3D Drawing
  - Be Revised
- Production
  - Accuracy
  - Analysis
  - Dimensioning
  - Production Connectivity

## 2.2. Software Alternatives

Software preferences for use have regional reasons. For ex. softwares FormZ and Modo are widely used abroad but not recognized in Turkey. Due to the awareness and use of the softwares upon regions, study includes only Industrial Design Undergraduate Programs at Turkey. Alternative softwares chosen according to softwares frequently used at university education and companies.

Software alternatives are:

- 3dsMax
- Alias Wavefront
- Autocad
- Catia
- Cinema 4D
- CorelDraw
- FormZ
- Freehand
- Illustrator
- Maya
- Modo
- Photoshop
- ProEngineer
- Rhinoceros
- Solidworks
- Unigraphics

## 2.3. Survey Study

In order to determine the weights of the criterias, three layered survey study was done.

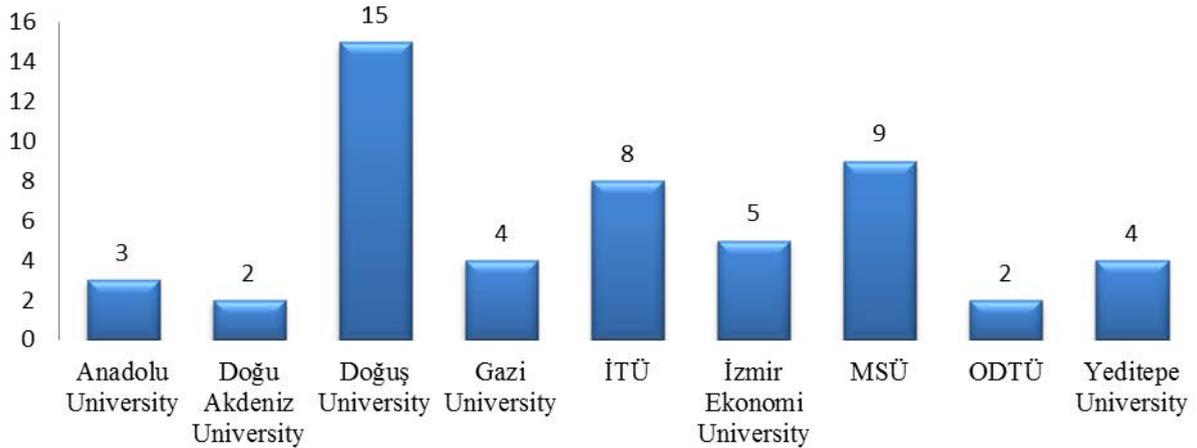
The first survey study was carried out between Industrial Product Design Department's Undergraduate Students at Turkey. Distribution of 52 students participated in survey upon university can be seen at Table 1.

The second survey was carried out with instructors of CAID courses. Instructor's selections were determined as twice of students at Expert Choice programs' decision tree. Contacted with instructors by phone or via e-mail. During this phase, realized that except 3 universities, all courses were given by part-time instructors.

Among all survey results, 5 instructors' survey results excluded from the analysis, because of part time instructors' lack of continuity, not taking place among the decision-making process at department, could affect the reliability of the survey results.

The third survey study performed by designers, working in the industry. Contacted with 3 firms from each Stand Design, Interior Design, Consumer Electronics, Yacht Design and housewares sector and the question of “Which softwares do you use at design process” was directed to them.

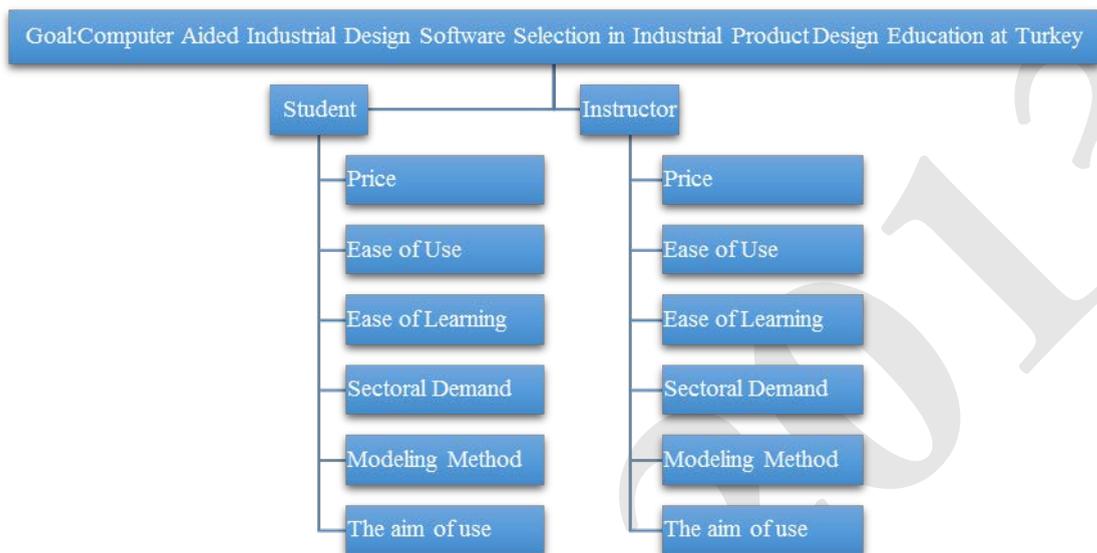
**Table 1.** Student participation to survey



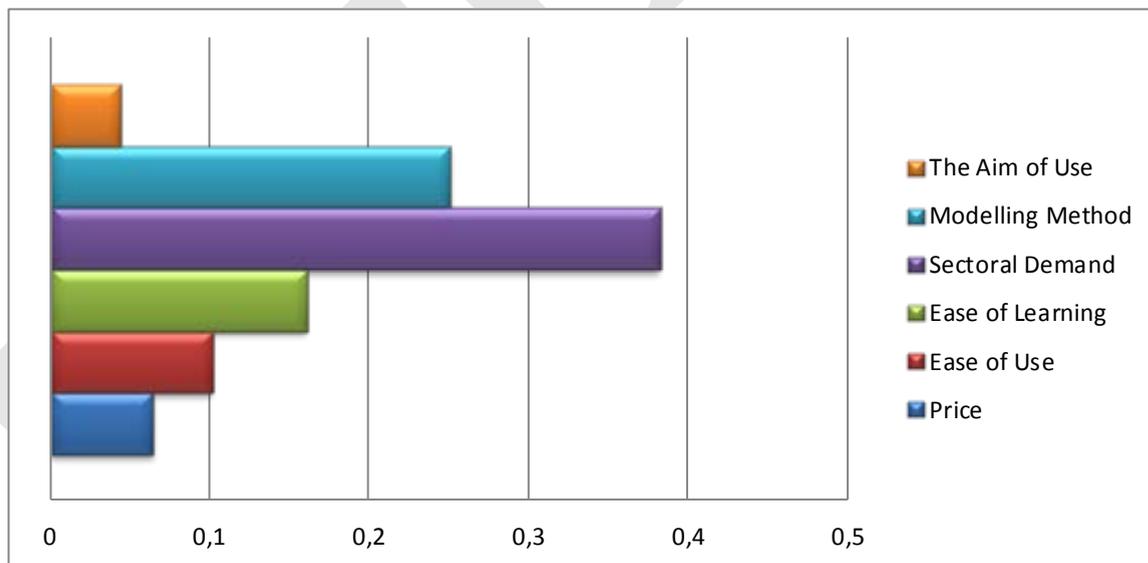
### 3. Expert Choice Study

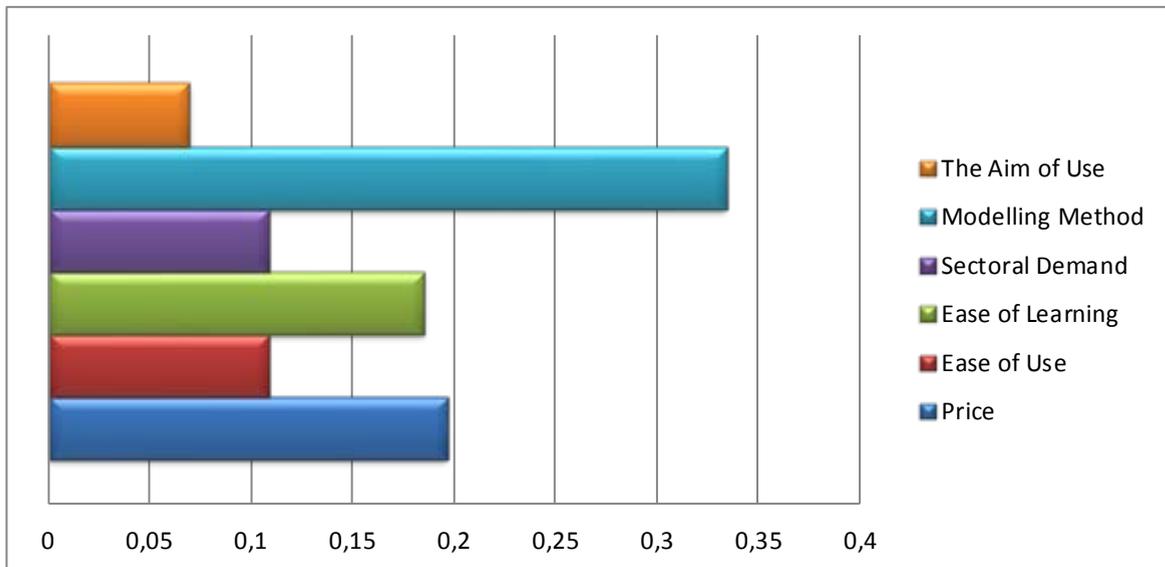
Datas obtained from the survey was entered to Expert Choice Decision Making program. The main criterias are evaluated under the two top criteria: Students and Instructors. Regardless of the value of survey datas, instructors' criterias were taken as twice of students' criterias (Table 2).

**Table 2.** Main Decision Tree



**Table 3.** Sub-criteria ranking for the student main criteria

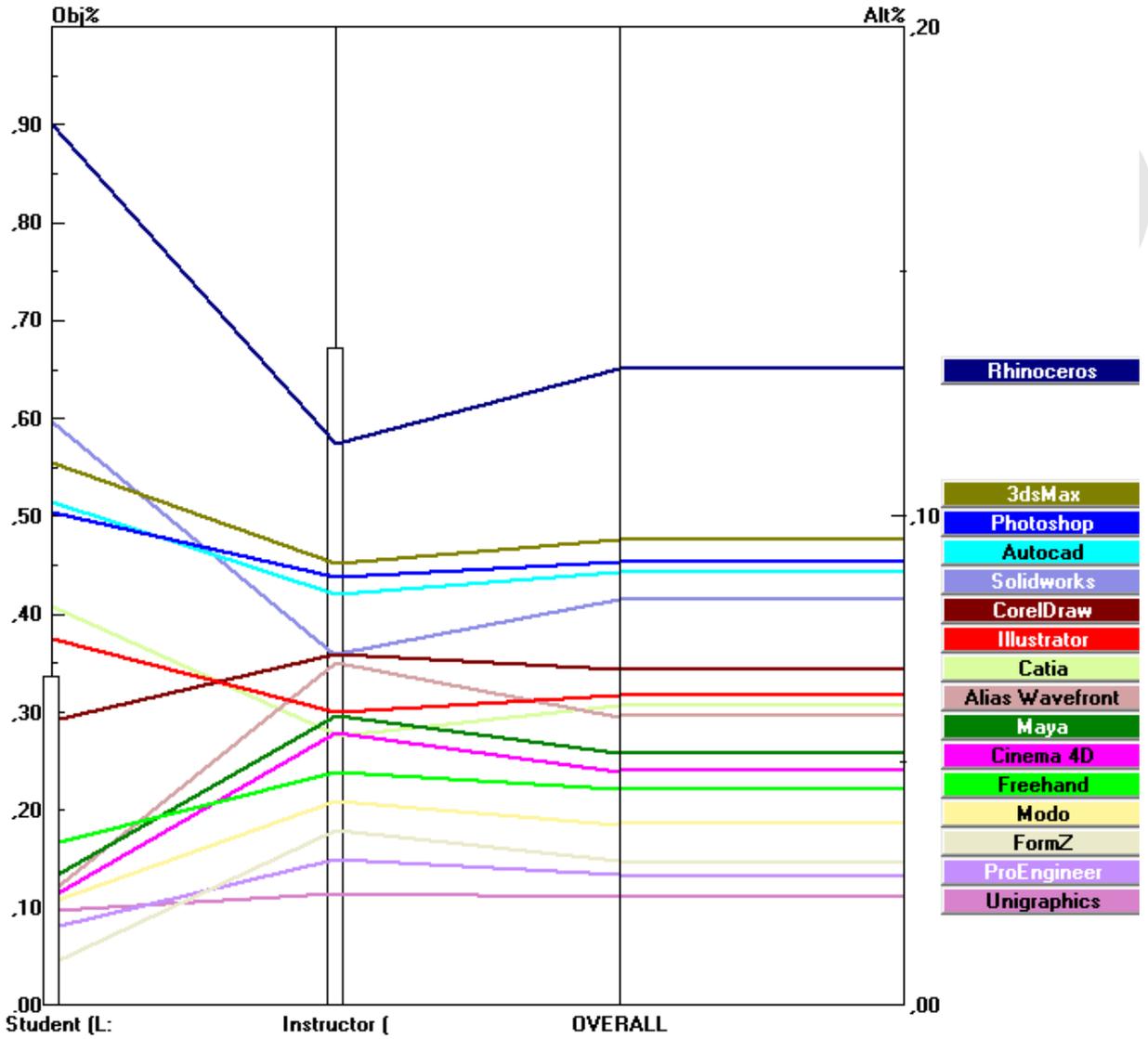


**Table 4.** Sub-criteria ranking for the instructor main criteria

Software alternatives were placed under the sub criterias price, ease of use, ease of learning, sectoral demand, modeling method and the aim of use. Sub criterias were analysed under the main criterias student and educators. In the sub-criteria rankings, 'sectoral demand' was chosen as the most important criteria among students (Table 3) and 'modelling method' was chosen as the most important criteria among instructors (Table 4).

All datas obtained from survey studies were processed to the decision tree and software performance graph was created. Results of the performance graph can be seen at Table 5:

Table 5. Software performance graph



#### 4. Conclusion

As a result of the surveys and Expert Choice criteria assessment, softwares Rhinoceros, 3ds Max, Photoshop, AutoCAD, Solidworks, CorelDraw was chosen as the first six software among all criterias. Three of these programs are surface modeling (Rhinoceros, 3ds Max, AutoCAD), one solid modeling (SolidWorks), and one 2D/vectoral drawing (CorelDraw) software. The most dominant criterias for determining software was chosen as “Modelling Method” and “Sectoral Demand”.

Under the ‘ease of use” criteria, both students and instructors chose *interface* as the most important property. Students and instructors also agreed in modeling types and ranked as; surface modeling, solid modeling and 2D/vectoral drawing.

Although the first six softwares selected as the result of research was surface modelling software, results should be viewed in terms of three modeling methods. Surface modeling, solid modeling, and vector modeling methods are all needed tools for design students and taking these educations at undergraduate education support student’s performance both in undergraduate and professional design life.

During the study, observed that the number and content of CAID courses given at universities differs from each other and mostly part-time instructors are giving courses. This can be considered as the indication of not giving importance on CAID education at Turkey.

This study was performed to examine the importance and software choice of CAID courses at Industrial Product Design Departments at Turkey. Advanced study can be made with more participants at two countries to examine the regional differences at software choice.

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# Concept education by art education and an investigation on the opinions of teacher candidates about the "different" concept\*

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## Abstract

Art education is the set of instructions on how to use the language of art. People understand the world and assign a meaning to it using art. In the modern education system the use of art education should be a tool to question the modern-day social values using a similar concept to understanding the phases of humanity by examining the works of art produced throughout the ages. The purpose of this research is to analyze and examine the evaluation of the "different" concept by pre-school teacher candidates who took art education in 2011-2012 academic year. The aim is to present how the "different" concept is handled by the teacher candidates, who will be in Turkish educational system in future, and which values they take note while concerning the "different" concept.

The research is carried out by application of art education to 196 pre-school teacher candidates thus evaluating the written opinions based on this application using qualitative research method.

*Keywords:* Art Education; Notion Education; Concept of Different

## 1.Introductions

Art is a speciality that defines a society and exposes that very society's differences from others. Every civilization that existed has expressed themselves through art. Relations of production, regime, philosophy, scientific and cultural thought, and senses, all in all the essence of society is formed in the art of that society. All properties of the society is concretized and become visible with the help of art. Because behind the subject of the art, there lies the human mind. The subject of art is fictionalized as a result of human thought and creative skill.

Thus, when we examine a work of art, we realize not only the form of the subject, but also the essence of the society that the work of art belongs to.

A work of art that is formed in a certain time period represents that period's thought, sensation and manner of life; however, at the same time it narrates something to the society. It has a message. This is yet another function that is imposed on the work of art: communicative function. In other words, the autonomous function of a work of art is formed by the material object, aesthetics object and relation with the society's cultural assets, but apart from these, the existence of a subject and content defines the communicative function of the work of art ( Tunalı, 1990 ). This communicative function lies not on the sensate of the work of art, namely the image, form, color or texture; it is hidden beneath the layers of meaning. According to Gombrich (1995), certain layers of meaning are at issue for almost all works of art. Layers of meaning are not tangible but abstract notions such as equality, love, power or freedom. With these notions and through the art object, social, historical, psychological and sociological

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questioning is performed. Art lets us feel the pleasure beyond the glory, but with our mind, consciousness and emotions. In order to understand and comprehend the layers of meaning, one has to have a sophisticated consciousness and conceptual thinking skill. Layers of meaning cannot be analysed with an everyday consciousness.

Teaching the fine meanings of the content, which are defined by abstract notions, is a time consuming process. It is needed to experience this process for humans to understand the life with all aspects, comprehend, to socialize and to situate themselves in their social surroundings. The relation between concept teaching and art education becomes important at this very point.

Art education encapsulates every field of the fine arts. However, the subject of this research is only the visual arts field of the art education. Visual arts education brings the individuals, who have gone through art education, the skill to approach their general surroundings and events with an aesthetical sensibility, critical thinking and convey their thoughts with a genuine language. It teaches the methods to present the emotions and thoughts, of the individual secludedly, and the society generally, by using different materials and behaviours (Abacı, 2006). It has a distinct side in education. Because this type of education is personal and the person does not learn the information about art, but create numerous authentic designs using the basic knowledge of art. The person learns to use the language of art, individualises and personalises it.

Visual arts education is definitely not the education of handicraft. It is an education type which should be applied on the individuals who are especially in the abstract thought stage and it examines the methods for individuals to bring out the externally stimulated impressions using experiential memory, richness of connotation and systematic thought. It is the process of the transformation of collective thought, which belongs to society, into personal expressive languages. It is education of learning the skill of comprehending via notions. In Turkish, the word "Kavram" which means "notion" is derived from the root of "kavramak" which means "capture, comprehend, encapsulate". It contains the general meaning of abstraction of the externally stimulated practical impressions and to "capture"; to comprehend. It is required to follow a very complex process in the human brain in order to create a notion from a sensorial reflection. During this process, quite a few operations are performed which are not limited to abstraction, comparison, analysis, combination, and generalisation are performed. These operations are specialities of creative thought, which leads us to the foundation of art education: education of creative thought skills. Only the ones who can think creatively, can analyse notions apart from their definitions.

Notion is usually confused with subject. Subject is the answer to the question that asks what is expressed via the art object, for example, the painting. Subjects can be varied. War, figure, portrait, nude, still life, religious, etc. More often than not, the subject can be the name of the art object. However, subject is different than content. Even though the subject is the same, every art object can have different contents. Subject, as it were, can be defined as the appearance of the art object. Hundreds of designs can be produced on the same subject with different content. As for content, it is the basic behaviour and attitude that is desired to be expressed. Notion is hidden behind content, and content is the internal structure of the art object. It is the hidden part that is inside. The hidden meaning is relayed through this form and is shaped according to the cultural and consciousness level of the observer. In other words, the important thing is what is presented within the subject, how and using which notions in the content.

This research is aimed at teacher candidates who are in their twenties and in abstract thought stage, with a purpose of them learning the design of an abstract notion using the art education method and techniques; question the abstract notions within their surroundings and develop social sensibility.

## **2. Methodology and Sampling**

This research done by using qualitative research methods on the analyses of the opinions on "different" concept according to pre-school teacher candidates who took visual arts education in 2011-2012 academic year in Marmara University, Atatürk Faculty of Education, Primary School Teaching major.

This research is carried out by participation 196 of pre-school teaching candidates. The three dimensional designs and through these designs narration of the evaluation of "different" who are done by teacher candidates are examined throughout the research.

### **3. Data Collection Instruments**

Data is formed based on three dimensional designs and literary descriptions, while the result report is produced after examining these qualitative research method.

### **4. Educational Program**

Following the training on art, the basic expression tools of art and what art education provides for an individual, it is asked from teacher candidates to design a three dimensional project on "different" notion. It is asked from teacher candidates to form a group of five people for the project. Every group is asked to think about an unknown planet, design the life and creatures living there. At this stage, photographs of previous designs are presented and discussed. The design process took two weeks and the groups produced their designs in 4 lecture hours.

Subsequently, the teacher candidates are individually asked to put themselves in the place of the being they designed and narrate when they think about the planet they are living on. They are asked to answer the question: "What is the difference of the planet that the being you designed is living on from ours?"

Educational Methods and Techniques: Debate, evaluation, design and essay writing. Three dimensional design.

Educational Tools: All kinds of materials and photographs that can express thought in three dimensional form.

Educational Goals: Developing abstract thinking skill. Designing notions via concrete objects.

### **5. Analysis of the Data**

In this study, the performance of the teacher candidates is evaluated by the three dimensional designs produced by the groups, individual essays on the subject in question and their opinions about it.

The examination and evaluation of three dimensional designs and essays are done using qualitative research method. Reading the narrative and interpreting the explanations are integral parts of qualitative research. Qualitative research tries to understand the actions, narrative and how they coincide (Glesne, 2012). Qualitative research is not only an operation in which the data is not degraded into numbers and analysed, but it also makes use of qualitative data. It is needed to use qualitative research tools in order to produce a definitive report because numbers would be insufficient for examining the perceptions of the people regarding the question, questioning, observing the designs, and evaluating the essays with interpretations while considering the relationship patterns between all of these.

As a result of the evaluation of 196 participant's essays, it is determined that 7 subject-notion groups are shaped as "different", these groups are shown in Table. 1.

Table 1: Subject-notion groups and related participant number use used these groups

Subject-Notion	Number	%
Physical Features of the Beings	137	70
Geography and Nature	91	46
Environment and Natural Life	36	18
Urbanisation	11	6
Emotions and Relationships Between People	59	30
Communal and Social Position	21	11
Human and Civil Rights	19	10

When we examine the classification of the subjects mentioned, subjects are noticed as to point to obvious differences that require sensibility to the world they live on, which are based on observation or human relations and can be emphasized by individuals from every age group or from every educational level, such as natural and urban life, environmental problems, social and communal differences, as well as subjects that can be realised by individuals who have the skill for abstract thinking, hence depend on educational level, developed consciousness, certain level of intellectuality such as human rights, equality, freedom and justice.

## 6. Results

When the designs produced by the groups which demonstrate the beings that live on different planets one by one, it is observed that they learnt the art education methods and techniques. They were successfully able to use the expression tools of art such as colour and composition on three dimensional designs which are known to be indicated by subject. In the process of designing new life forms, they preferred to make various changes on the human form such as three eyes, six arms etc. It is deduced that they are not very courageous concerning creative thinking. During the interviews, it is understood that they worked on designs appealing to children and they also liked these designs. The impression formed after the interview is that they exceedingly have the characteristics shown by the age group of the children they will be teaching.

The answers of the question asked for the essay "Two different worlds, and their differences" are grouped in seven categories.

After examining the essays of the 196 teacher candidates, it is seen that 137 of these candidates, which total to 70% of the study group, refer to the physical differences between the living beings. Number differences of the limbs such as three legs, blue skin, two heads and antenna are among the differences mentioned. 18 teacher candidates among the group were satisfied with portraying physical differences. The differences mentioned are differences that would be emphasized by individuals from every age groups.

We cannot portray a living being from its habitat. The habitat's geography, nature and climate differences are remarked by 91 (46%) teacher candidates. Mountains, rivers, oceans, seas, forests, plant and insect diversity are presented as our world's richness. Apart from these, earthquake subject is, historical quality and the smell of the sea are presented as differences exclusively by respectively, 1, 3 and 1 teacher candidates. We can see that

subject weights heavily here as well. Turkey is a country that lies on earthquake zone. During the last decade, not only in formal education but also using the media, people are encouraged to raise awareness concerning earthquake. Nevertheless, the case of only one teacher candidate has referred to earthquake needs to be concerned.

Out of 196 teacher candidates 36 ( 18% ) have stated the environment's and natural life's negative consequences as a difference between our world and other worlds. It is saddening fact that only this many teacher candidates had a subject on their agenda which reflects that people who live on Earth are destroying the nature in a manner to effect the natural balance, disrespectfully plunder the nature's right to live, and other causes that contribute to the weather, water and soil pollution such as cigarette smoke, garbage, chemical waste, factory smoke, global warming, and unplanned lumbering .

The problems brought by urbanization and unplanned urbanised cities are remarked by only 11 (%11) teacher candidates out of 196. There have been negative aspects that came to their minds while considering cities. They have imagined a world without traffic problem, noise, people and vehicle crowd, tall and box-shaped buildings crushing people, concretion, but with parks, sport arenas, and culture sites while remarking that all the problems mentioned have been solved and it is more pleasant to live in there.

Emotions of the beings and relationships between them are mentioned by 59 (30%) teacher candidates out of 196. Emotions of the humans such as love, lenience, happiness, and hope are referred by only 7 teacher candidates. 52 teacher candidates defined humane feelings as ambition, selfishness, lie, sadness, and self-interest. It is stated that humans are fighting, killing each other and not able to live any of the pleasant emotions. It is remarkable that despair is common in youth and they depict every relation in a negative manner. In spite of this implication teacher candidates depicting children purified from negative characteristics and not changing when they grow up indicates a criticism about the world they are living in. Only 4 teacher candidates have stated that there is no artistic relationship between humans. This can be interpreted as the lack of art education for it is only one term in their university life.

21 ( 11% ) teacher candidates among 196 characterised social status as difference. Wars, violence to women, educational problems, early marriages, hunger, health, and security are defined as differences by respectively 8, 3, 3, 3, 2, 1, and 1 teacher candidates

Only 19 (10%) teacher candidates have remarked about human rights. They have put emphasis on alienation notions such as earthlings to not accept, ridicule, ignore, not treat equally, be unconcerned and insensible about, and not even saying hi to the one that is different. They have separated children from other humans at this point as well and indicate children as affectionate and friendly by portraying children as treating themselves who come from a different world and has different physical features nice.

### 6.1. Conclusion and recommendation

Visuality is widely used in our age. Visual language has gone ahead of long, written expressions because of the fact that it is more effective and quick to convey narrations among the quick flow of life from society to individual and vice versa. This language has born because of a necessity.

Creating a visual language, using it or reading it differs between individuals of different ages. Pre-school children read via more concrete visuality. Pre-school child can puzzle out the differences between colours, dimensions, numerical differences; can figure out the relationships between these; can easily figure out the larger or numerically bigger. Pre-school child is interested in the real entity, which is the upmost stratum of visuality, the side that is visible. As the child gets older, it becomes to be able to evoke via symbolic entities that the visual side expresses. It knows that a lion stands for courage. Bird is always the symbol of freedom. As the life experiences and educational level increase, it begins to realise the layers of meaning behind the real entity, the visual part. Connotations increases with time and age. Individual can form systematic connotations via the novels read, movies watched, music listened or the painting observed at a museum visited; can puzzle out and interpret the narrations that are not told via a natural language or in a straight forward manner by using an original perspective. Becomes able to comprehend the metaphors, polysemy, irony or diversifications of notions. The individual has developed into thinking in an abstract manner rather than concrete.

As a conclusion of this research done after a visual art class given by me that lasted for one education term, it is seen that the teacher candidates, who are considered to be adults and at ages of concrete thinking, cannot see or make sense of the layers of meaning of visual language, the hidden meanings. Very few teacher candidates have emphasized abstract notions and the values that are expressed by these notions.

It appears to someone that, being examined periodically since the start of their lives and being not able to develop independent and free behaviours have negatively affected their intellectual sides. The fact that they are receiving education on pre-school teaching, and their success on preparing educational plans for the children they will be teaching has a risk of them shift their needs of their own ages backwards in time. Enjoying nursery rhymes, reading picture books, only being interested in children drawings makes teacher candidates go on a journey that they are not aware of. It would help them develop greatly if they read novels, go to museums and be interested in all disciplines of art during their educational period. It would make them into educated and cultured teachers who know how to use the knowledge.

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# Conflicts between students as interculturally incompetent behavior

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## Abstract

The study focuses on intercultural conflicts, which constitute an important part of multicultural education. The author focuses on the definition of intercultural conflicts and their development. The focus is particularly intercultural conflicts at school to tertiary education. The study aims to give an overview of the issue of intercultural conflicts, perform their basic classification and present training theories associated with them.

Keywords: intercultural conflict; intercultural competence, intercultural conflict competence, intercultural communication training, internacionalization

## 1. Introduction

The theme of this essay is intercultural conflict between students. This topic was chosen for several reasons. In recent years, a strong research thrust focusing of the effect of culture on the performance of work teams has developed. For instance, research on „relational demography“ examines how individual differences (homogeneity and heterogeneity) in gender, age, tenure, culture and/or nationality affect performance in teams and organizations (e.g. Tsui & O'Reilly, 1989), but not in the school environment. Data shows that the way people interpret their environment, how they think, feel and act, are too often divergent and create barriers that hamper smooth cooperation. However, research on the interaction of people from different cultures and the impact of culture over time is still minimal. Thus, due to a lack of empirical research, we know very little about: a) the role of cognitive, communicative and affective consequences during the development of a shared understanding, and b) what is the role of culture and its impact on the dynamics of such social interactive behaviour (Vallaster, 2005). With globalization, the constant interaction between peoples, cultures and civilizations will increasingly become a source of tension and conflict, since mobility and migration will increase, creating multi-ethnic and multicultural societies. At the same time, peaceful co-existence in a multicultural context will be an ongoing challenge. Peoples will have to be brought up to respect, learn about and understand each other's cultures, and ethnic and religious values. To achieve these objectives, universities have a key role to play in promoting and developing education and intercultural dialogue.

A prosperous society, but one where the relationship with others is crucial, is formed by recognizing and mobilizing all resources and skills via areas of effective intercultural dialogue, which gives rise to fruitful cross-fertilisation.

Scientists, teachers, and students agree that the world around them changes both politically and economically, culturally, socially and technologically (Janebová, 2009). Universities are part of the wider society – of contemporary globalization process, and therefore can not be seen only tertiary education in the national context.

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It can not be seen also because of the efforts of tertiary education institutions and national policies to apply internationalization to the current agendas of the institutions and its development. Universities have great potential for innovation in each country, and they should try to respond to social and other changes or even anticipate them.

According to Council of Europe (2009, pg. 28) in period 2002 – 2005 the percentage of number of foreign students in the Czech Republic as the host country increased by 90% (plus 8769 students). Through internationalization of higher education universities becoming microcosm of society, they are “melting pot”. To achieve transparent and participatory democracy, which is a fundamental principle of good government, universities should be a forum for inclusive democracy, a place where students, on the basis of socio-cultural differences, will be able to deconstruct social stereotypes.

Universities are the places where people meet with different cultural backgrounds, values, personality, and therefore there are interpersonal conflicts, natural and inevitable (Turnuklu, Kacmaz, Turk, Kalender et al., 2009). Crawford and Bodine (1996) say that many conflicts in the school environment arising from differences - national, ethnic, gender, class, physical and mental. These differences lead to conflicts, which may take the form of prejudice, discrimination, harassment, and/or hate crime. However, these conflicts must be viewed comprehensively, because their nature is not only prejudice and discrimination, but also due to the structure and relationship of inequality and privilege. These intercultural misunderstandings are leading to intercultural conflicts.

This essay discusses three principal research questions: What is the nature of intercultural conflict? What is the process by which intercultural conflict develops? And how can individuals be taught, trained and/or mentored regarding the development of intercultural conflict competence?

## **2. Nature of intercultural conflict**

According to Ting-Toomey (2009) is intercultural conflict defined as the perceived or actual incompatibility of values, norms, face orientations, goals, scarce resources, processes, and/or outcomes in a face-to-face context. Intercultural conflict can be about substantive, relational, and/or identity conflict goal issues.

Intercultural conflicts arise because of misunderstanding of different cultural, ethnic and religious values, different social class, or gender inequality, and most of these conflicts are the result of intolerance and ignorance of these differences, so called the interculturally incompetent behavior. Janebová (2010) points to the fact that in the seemingly homogeneous „national culture“ there exists experiences of other people, subcultures, organizational culture, and other cultural level, which break down the idea of culture as „coherent“, and emphasize its internal differences.

Despite a significant amount of research on intercultural conflict, there are relatively few syntheses of this literature. Additionally, the diversity of literature on intercultural conflict is generally not integrated across contexts. In the Sage Handbook of Conflict Communication Oetzel, Ting-Toomey and Rinderle (2006) attempt to address this limitation by introducing a social ecological framework for the study of conflict. Social ecology is the study of the relationship between organisms and their environment (Brofenbrenner, 1979). The framework emphasizes that the environment has multiple levels or contexts and that the relationship of these contexts to the phenomenon of study is complex. An integrated framework of the levels is thus necessary to fully understand conflict communication in context. Oetzel, Ting-Toomey and Rinderle (2006) present the social ecological framework of conflict communication: interpersonal, organizational, community, and international. These levels correspond with Brofenbrenner’s (1979) social ecological framework, which divide environmental influences into four system levels: micro (face-to-face interactions in specific settings – interpersonal conflict), meso (interrelationships among various microsystems – organizational conflict), exo (forces within the larger social systems – community conflict) and macro (cultural beliefs and values – international conflict). In particular communication always come into play two individuals whose identity is woven of belonging to different groups,

from past experiences, the influence of environment on personal characteristics, etc. (Janebová, 2010). We are focusing just on the interpersonal level, respectively intercultural conflicts in interpersonal dimension (conflicts between two people) arising from the socio-cultural differences.

Culture is hence perceived as a group specific collective phenomenon within a social context and is partially shared among individuals through values and opinions, thought approaches and patterns of behavior. Culture is not perceived as a rigid or static entity, but is in constant flux across individuals within cultural groups, and over time within individuals (Maznevski & Peterson, 1997).

These groups include ethnic groups, religious groups, social classes, women or men, lesbians and gays, etc. (see above Gudykunst & Ting-Toomey, 1988). This definition we also know from the concept of intercultural education in the Czech Republic in the form of socio-cultural groups, but also according to Pope, Reynolds and Mueller (2004) in the form of inclusive definition of multiculturalism, that would include race, gender, sexual orientation, social class, religion and age. All of our social identities influence who we are and how we view the world and because of the complexity of diversity, authors aids that we all experience life from the perspective of those social identities whether we realize it or not.

Socio-cultural group is such a group of people that can be defined on the basis of race, ethnicity, belonging to socio-economic class, gender, language, national identity, sexual orientation, physical or mental handicap or subcultural affiliation.

According to Hofstede (2001) each group of people or category of people is equipped with a set of shared programs that make its culture. Because in each of us belongs simultaneously to many different social groups and categories, inevitably we carries several layers of mental programming, corresponding to different levels of culture.

Within intercultural competence development, it is important to consider cultural distance, which is a key contributor to intercultural conflict. The greater the cultural distance between the two conflict parties, the more likely the assessment of the conflict negotiation process would be misconstrued. The cultural membership distances can include deep-level differences such as historical grievances, cultural worldview, and beliefs. Individuals from contrasting cultural communities often bring with them different value patterns, verbal and nonverbal habits, and interaction scripts that influence the actual conflict interaction process. Intercultural conflict often starts off with diverse expectation concerning what constitute appropriate or inappropriate verbal and nonverbal behaviour in a conflict encounter scene (Ting-Toomey, 2009). Defining intercultural competence is the basis for understanding intercultural conflict and understanding the context of conflict and the development of professional competencies are the foundation for solving conflict situations.

Deardorff (2009, s. 14) defines intercultural competence as “ability to communicate effectively and appropriately in intercultural situations, based on intercultural knowledge, skills and attitudes”. Intercultural competence include three basic dimensions: affective, cognitive and behavioral and the authors approach to developing models of intercultural competence (i.e. Deardorff, 2009). Ting-Toomey (2009) point out that developing intercultural conflict competence within the larger intercultural competence setting is critical because conflict creates further perceptual distortions and emotional flooding in the cultural encountering process.

### **3. Intercultural competence as possibility to prevent conflicts**

Intercultural conflicts often arise because the intercultural competence wasn't developed. Intercultural competence in particular include: intercultural knowledge (awareness of their own cultural values, norms and traditions and their importance to our personality, learning from different cultures and prevent prejudice and stereotypes), intercultural sensitivity and adaptability (to be sensitive and empathetic to the foreign culture and interpret emotions in a culture of others) and the art of intercultural communication (ability to communicate without communication noise and confusion and the ability to deal with intercultural conflicts / problems). Communication skills in the intercultural situation, as subcompetence of intercultural competence (behavioral

competence), is critical for managing conflicts effectively. It includes authenticity, art of listening, be aware of and respect formal rules in foreign culture, correctly interpret nonverbal signals, to nuances as specificity of humor and irony of different cultures (Morgensternová & Šulová, 2009). The Council of Europe has responded to these challenges too. In May 2008, the Council of Europe adopted a White Paper on Intercultural Dialogue, which not only brings together and formalises the long-standing commitment of the Council of Europe in this area, but strengthens it (Council of Europe, 2009). For the purpose of this book is intercultural dialog understood as a process which consists of an open and respectful exchange of views between individuals and groups with different ethnic, cultural, religious and linguistic backgrounds and heritage on the basis of mutual understanding and respect. It requires the freedom and ability to express themselves and the willingness and ability to listen to the views of others. Intercultural dialogue contributes to the political, social, cultural and economic integration and cohesion of culturally diverse societies. Grown equality, human dignity and sense of common purpose. Its aim is to develop a deeper understanding of different worldviews and practices, increase collaboration and participation, enabling personal growth and transformation, and spread tolerance and respect for others. Among the stakeholders that should promote intercultural dialogue, include institutions of higher education.

Researches dealing with the relationship of national culture and social groups (as family, religion, social clubs, profession, work teams and universities etc.) found out that universities have an impact on the behaviour of individuals in case of that individuals currently studying at the university (Gudykunst & Ting-Toomey, 1988).

Higher education institutions play in fostering intercultural dialogue an important role through educational programs, as actors in broader society and as a place where intercultural dialogue is put into practice. According to Steering Committee on Higher Education and Research (CDESR) are universities are best defined by their universality – their duty is to give an unbiased and open attitude to the world, based on the values of the Enlightenment (Council of Europe, 2009). Universities have the potential to shape the intercultural intellectuals, who will play an active role in the public sphere. To reach this aim should help the scientific research on intercultural studies, dealing with aspects of attitudes "learning to live together" and cultural diversity in all educational activities.

#### **4. Intercultural conflict training**

Because is the behavioral competence, respectively intercultural communication competence critical for managing conflict effectively, we will focus in this part of essay on intercultural communication training.

Intercultural communication training is defined in this article as an interactive facilitation and coaching process in which learners are given the opportunity to acquire culturally relevant knowledge, increase self-awareness and other-awareness, manage emotional challenges, and/or practice competent intercultural communication skillsets (Bennett, 2003; Ting-Toomey, 2004). Through effective intercultural training, trainers can intentionally transform the mindsets, affective habits, and/or behaviors of the trainees in order for them to communicate competently and adaptively across cultures. More specifically, intercultural conflict training is conceptualized in this article as the competence-based training of individuals to manage emotional frustration and interaction struggles constructively due to cultural group membership differences. Such differences can stem from a perceived or actual incompatibility of cultural values, norms, face orientations, goals, scarce resources, processes, and/or outcomes in face-to-face context (Ting-Toomey & Oetzel, 2001).

According Ting-Toomey (2009) students have to develop intercultural conflict competence. Intercultural conflict competence refers to the mindful management of emotional frustrations and conflict interaction struggles due primarily to cultural or ethnic group membership differences.

The criteria of communication appropriateness, effectiveness, and adaptability can serve as evaluative yardstick of whether an intercultural conflict communication has been perceived as behaving competently or incompetently in an interaction episode (Ting-Toomey, 2009). Intercultural conflict competence can be

developed through intercultural conflict training. I would like to review major theory-practice approaches in intercultural conflict training. I'm using selection which Ting-Toomey used in 2007.

The criteria to guide selection of free conflict training approaches for a synoptic review:

- The approach covers either a strong conceptual or an applied angle to understanding culture-based conflict practice
- The conflict theory has either been systematically tested in a range of cross-cultural conflict settings or the applied model has been utilized successfully with a wide range of diverse cultural audience
- The theory or model has an heuristic function for bridging intercultural conflict theorizing processes with conflict application issues
- The conflict concepts and training ideas are readily accessible in published chapter or article format for further reading by curious intercultural researchers or practitioners

We will present the following free approaches: a) The conflict face-negotiation theory (Ting-Toomey, 1988, 2004), b) The S.A.F.E model (Hammer, 1997; Hammer, Rogan, 1997) and c) The A.E.I.O.U. collaborative negotiation model (Raider, Coleman, Gerson, 2006).

#### *The conflict face-negotiation theory*

Intercultural conflict often involves different face losing and face saving behaviors. Face refers to a claimed sense or desired social self-image in a relations or international setting (Ting-Toomey, 1997). Face loss occurs when we are being treated in such a way that our identity claims are either being directly or indirectly challenged or ignored. Face-loss can occur either on the individual level or the identity group level, or both. Repeated face-loss and face-threat often lead to escalatory conflict spirals or an impasse in the conflict negotiation process.

Ting-Toomey (1988) and Ting-Toomey and Kurogi (1998) developed an intercultural conflict theory, namely, the conflict face-negotiation theory. This theory assumes that:

- 1) People in all cultures try to maintain and negotiate face in all communication situations;
- 2) The concept of face is especially problematic in emotionally-threatening or identity vulnerable situations when the situated identities of the communicators are called into questions;
- 3) The cultural value spectrums of individualism-collectivism and small/large power distance (Hofstede, 2001) shape facework concerns and styles;
- 4) Individualism and collectivism value patterns shape members' preferences for self-oriented facework versus other-oriented facework;
- 5) Small large power distance value patterns shape members' preferences for horizontal-based facework

versus vertical-based facework;

- 6) The value dimensions, in conjunction with individual, relational, and situational factors influence the use of particular facework behaviours in particular cultural scenes;
- 7) Intercultural facework competence refers to the optimal integration of knowledge, mindfulness, and communication skills in managing vulnerable identity-based conflict situations appropriately, effectively, and adaptively (more Ting-Toomey, 2007).

#### *The S.A.F.E. Crisis Negotiation Conflict Model*

The S.A.F.E. model embodies four core motifs or triggers that are related to conflict escalation to de-escalation process (Hammer, 2001). The term „S.A.F.E.“ stands for the following four interactive frames:

- 1) **Substantive demands and interests in the conflict** (the substantive or content goals in the crisis negotiation situation between the subject and the negotiators)
- 2) **Attunement** (the degree of trust, power, control, and empathetic understanding that is being developed between the subject and the negotiators)
- 3) **Face** (the face needs or concerns of the subject as the crisis situation unfolds and the ability of the negotiators to effectively respond to the subject's face needs or desires)
- 4) **Emotional distress** (the ebbs and flows of the emotional state of the subject as reflected through the expression of positive versus negative emotions and, thus, increasing the degree of predictability to unpredictability of the crisis negotiation situation).

#### *The A.E.I.O.U. Collaborative Negotiation Training Model*

It is a comprehensive conflict training program that emphasizes a strong „collaborative negotiation“ perspective. Their cultural training philosophies are twofold: that all conflict resolution training programs should integrate a cross-cultural perspective, and that all training designs should also reflect a keen cross-cultural sensibility.

In their intercultural conflict resolution training (CRT) program, Coleman and Raider (2006) emphasize the following three objectives:

- 1) *Knowledge objectives*: for example, to become more aware of key ways in which worldviews differ and how that can manifest into conflict, and also to develop awareness that competition and collaboration are two main strategies for negotiation and for resolving conflict.
- 2) *Attitude objectives*: for example to shift trainees' attitude in ways that they will commit to the larger goal on increasing the use of collaborative conflict negotiation skills at all levels to create a more just

society, and also to develop an appreciation of cultural differences as a source of richness rather than liability.

- 3) *Skills objectives*: for example, to learn to listen when one's own identity group is under attack and be able to avoid ethnocentric or identity-based responses, and also to create a collaborative climate through the use of informing, opening, and uniting behaviors.

This collaborative conflict negotiation model – A.E.I.O.U. – stands for “*attack, evade, inform, open, unite, and with an added “Y” to symbolize yes*”.

Whole raft of studies take as their theme one essential aspect of practical intercultural communication> the knowledge, abilities and attitudes needed to make it work. When it comes to the requisite skills, what is important for intercultural dialogue. The findings of studies on this show clearly, that with all the good intentions in the world, simply wanting intercultural dialogue is not enough to make it happen. This naturally raises the question of training in the necessary competences and resources (Council of Europe, 2009).

Which main research question should be answered? In the area of competences: *Does institution offer courses teaching intercultural skills in specific areas? Does the institution offer training for specialist in the intercultural communication and/or dialogue?* And in the area of research: *Is the institution involved, through its research groups, in national or international research projects relating to multiculturalism? Does the institution encourage research in these areas, through international partnership and/or international network? Does the institution have advisors to manage international and multicultural research teams?*

## 5. Conclusion

In the present study, we briefly describe the topic of intercultural conflicts at school, focusing on tertiary education institutions. We tried to approach the reader a topic that is very current and is not yet given the attention it would deserve. Intercultural conflicts provide a large space for their theoretical treatment, empirical verification, but also for the application level, which we reflect in the environment of higher education. We consider it important to continue to discuss the issue and develop in the educational environment.

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# Constraints and shortcomings in the development of marketing professionals in Romania

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## Abstract

Marketing is an emerging field in Romania, confronted with numerous challenges regarding professionals' development, despite the increasing interest of students for marketing profile faculties.

This paper regards 3 different perspectives – of employers, students, and professors – acquired through qualitative methods, on the topmost attributes and competencies required for a productive marketing professional and the main hindrances in career progress, which report several issues concerning major gaps between the 3 views, but also inside the employers' perspective. This research is a step forward for the macro system career management, but it also highlights some aspects of how human resources requirements shift in high emerging domains.

*Keywords:* professional development, marketing employee, competence;

## 1. Introduction

A major support for emerging fields consists of the specialized human resources that are able to provide highly qualitative work. This requirement is usually under-satisfied on one of its tales, by having either a fast-developed field confronted with penury of professionals, or numerous professionals in a former emerging field or a stationary one, but with a high latent potential.

Marketing field in Romania arised in the post-communist era immediately after 1990, but the lack of qualified professionals and organizational experience kept it away from a spectacular boom in the 90's. As more and more multinationals entered the Romanian market, marketing has become a field "on fashion" for both businesses and workforce. The university system has adapted to this trend by founding marketing faculties and developing marketing study programs inside the economic ones. Although no official statistics have been found, we can approximate the number of marketing professionals who graduate every year at about 1000-1500 individuals – professors' estimations from the qualitative research below are considered.

This paper aims to provide a diagnostic of the labour market on marketing field by identifying constraints and shortcomings in the development of marketing professionals, in their way from formal education to labour market and back if necessary, and proposes some solutions for repelling it.

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## 2. Theoretical and practical background

Marketing is one of the most dynamic field in economics, with fast transformations in both theory and management practice. The transformations are even more alert in countries where the socialist system kept marketing away from being practiced. The external influence driven by the multinationals which entered the Romanian market represents a significant force in the becoming of market practice in Romania.

Unlike in the early 90's, when academic background was constantly overlooked when hiring someone on a marketing position – due to the lack of professionals on the field –, nowadays, the Romanian education system provide plenty of qualified workforce, which sets marketing on the top of the fields affected by academic inflation. Qualitatively, though, it appears as obvious the gap between formal education and employers' competence requirements, with deep implications at various levels, like:

- Career significance for the environment (Hoekstra, 2006), by minimizing the role of education in the development of a competent professional. The same idea can be stated in relationship to non-relevant professional background achieved during faculty, which has become from an encouraged practice, a dominant one;
- Career identity for the individual (Hoekstra, 2006), as the awareness of the gap makes students consider formal education useless for their professional development in marketing;
- The image of marketing itself as a science that can be completely learned in the workplace. This is a magnification of the “learning by doing” principle. It has to be said that this phenomena is common roughly for all the fields in economic sciences, as we will show later.

We have already put in the spotlight two approaches on career: internal career represented by identity and external career represented by significance. A third approach needs to be considered for a complete view of the construct – organizational career (Baruch, 2004) –, referring to the position and roles a professional undertakes in time. A very useful theoretical instrument here is Hoekstra's career role model (2010), consisting of the following 6 roles: maker, expert, presenter, guide, director, inspirator. A career role is defined as the “enduring aspects of the work roles that the person identifies with and is identified with” (Hoekstra, 2010). Although in the original model, marketing positions are placed in the presenter role, all of the 6 roles can be associated with different jobs inside marketing field. We will use this model later in order to interpret the results of our research.

From the employer perspective, the competencies needed for a marketing position are vitally important to be fulfilled by an employee, not just for efficiently completing every task allocated to him/ she, but also for the workability of certain strategic instruments, such as those used to define and delimit strategic business units. Thus, one criteria used when deciding the composition of a business unit is the overlap of employee's skills, needed for manifold products or markets (Căescu & Moise, 2011).

## 3. Methodology

We considered 3 perspectives which are relevant for identifying the constraints and shortcomings in career development of marketing professionals: employers, students, and professors. Usually, people who work in marketing and marketing-related fields are not eligible for a research, but in this case, they are the holders of the insights that we are looking for. A qualitative research is appropriate to meet our goals, and also taking into account the difficulties in forming a representative sample of every of the previous categories. Thus, we conducted 2 focus groups of students and 10 in-depth interviews with 5 professors of marketing and 5 managers or marketing managers. In-depth interviews were preferred for professors and managers in order to get “pure” perspectives of each of them, without influences from another subject of the research.

The selection questionnaire for students followed four inclusion criteria – to be a marketing student, to declare himself/herself decided to develop a career in marketing, to report at least an attempt to get a job or an internship, no matter the field, and to provide as many attributes as possible to portrait a competitive marketing professional –, and two exclusion criteria – to have been participated to a focus group in the 12 months and to have close relatives working on marketing or marketing-related fields. Concerning the managers, we selected 2 managers of SMEs, 2 marketing managers of multinationals and a representative of a media planning agency, primarily based on their willingness to participate. In the case of marketing professors, no selection method was used, as all 5 are peers of the authors from The Bucharest University of Economic Studies and University of Craiova. For the in-depth interviews, we avoided using projective techniques due to the high qualification of the participants, which would corrupt the results, so we mainly used direct questions. The group discussions and interview were conducted in Romanian, excepting one interview with a marketing manager, which was conducted in English. In the lists of verbatim below, we tried to keep exactly the same meaning in the translated transcript as in the original one. In order to overcome researchers' subjectivity, we discussed our interpretations with two other researchers specialized in qualitative research.

Six themes were approached during the group discussions and interviews:

- What does it takes to become a good marketing professional, generally? For a thorough portrait, the interviewer encourages the respondents through auxiliary questions to give as many attributes as possible, together with brief explanations of the most significant;
- The specific competencies required for some jobs/firms: marketing researcher, copywriter, client service responsible, marketing planner, media planner, marketing responsible. The last one refers only to the SMEs which do not have a marketing department, but just one or a few employees on marketing;
- How formal education contributes to the formation of these competencies? It's important here to ask the respondents to justify the extent to which competencies can be – or should be – developed in formal education versus at the job;
- Some successful career paths that are typical found among marketing professionals;
- The attitude of each category – students, professors, and employers' representatives – towards the other two, in terms of professional competence and degree of understanding marketing in the contemporary economy;
- Constraints and shortcomings at each level previously discussed, that encumber career development of young marketing professionals.

As it can be seen, the interview guide contains themes going from general to specific in a natural flow, finishing with a conclusive theme that sums up exactly what we are looking for. The comparative analysis of the 3 perspectives enable us to infer superior conclusions, although we need to have in mind that the results of qualitative research are not representative, and thus are not suitable for accurate comparisons.

#### **4. Results and discussions**

We will expose the meaningful results of the research together with some lists of verbatim that sustain our interpretations. In the nomenclature below, we explain the codifications used for the participants and their answers in the lists of verbatim.

## Nomenclature

FG1/ FG 2	focus group 1/ focus group 2
MP	marketing professor
ER	employer representative
M/ F	male/ female respondent
1, 2, 3...	distinguishing number – for the focus groups, the numbering was made from right to left, as they appear on the recording
<u>Word</u>	accented word
(0.5)	a 0.5 seconds pause in the speech
[word]	researchers' filling

### 4.1. *The portrait of a competitive marketing professional*

Highly defined portraits were obtained from every of the three categories. Despite being a general characterization, without a focus on any specific marketing position, we expected the recall of a large amount of basic knowledge as fundamental. Instead, general character traits – conversational, open-minded, fast-learner, resilient, unconventional, realistic – were commonly acknowledged as helpful for career development. Practically, this portrait has nothing specific for a marketer in order to be recognized as so. Indeed, students widely recalled theoretical knowledge as an important trait, but most of them were unable to explicit the trait. The ones who did, considered promotional knowledge the most important to know – lines 1-5. This can be explained by the numerous subjects they have in their academic program on this topic. Concerning the employers' representatives, they stressed on seriousness, hard worker and fast-learner, motivating that they have found many students and young professionals who are not ready for any sacrifice and don't have a vision on their professional future – lines 6-11. On the contrary, professor MPM2, the representatives of the media planning agency and one of the multinationals based their description on competencies attained through formal and informal education – lines 12-16.

LINE	RESP.	
1	FG1F1	I think that <u>promotional techniques</u> would be the most important to know (0.5), especially in the start of your
2		career.
3	FG1M2	[...] to know how to promote and sell anything, because (0.5) here's the hard job for any firm.
4		
5	FG2F5	It helps me a lot what I've learned in Promotional techniques class [in my current job]
6	ERM3	It's hard to find dedicated young marketers. [...] They are looking for big salaries, without willing to work hard.
7		
8	ERM1	We need serious graduates, who are able to integrate themselves very fast in our activity. We appreciate having
9		work experience during faculty.
10	ERM2	It's hard to believe how every 2 months I have to find a new marketing responsible. I have no idea what they are
11		expecting to give them.
12	MPM2	What has he done during faculty is decisive for every marketing professional. And I'm not talking just about going
13		to classes, but also about having diverse experiences, for example in the NGO's.
14		
15	ERF4	We look for the applicant to know how to make a marketing plan, how to plan a number of activities. It's important
16		to have experience in coordinating a team.

#### 4.2. Specific competencies required for some marketing positions

The participants of all three categories were asked to nominate the specific competences for 5 positions: marketing researcher, copywriter, client service responsible, marketing planner, media planner, marketing responsible. In order to examine the correctness of the answers, we used the expertise of two human resources managers from marketing industry.

Excepting copywriter, very poor descriptions were made for all the other positions, especially by students and SMEs' representatives. In the focus group, every job was introduced by asking who would like to get a job on that. Instructively, although every position was chosen at least once, the students weren't able to give details about the job description or competencies required for that job. Another significant observation refers to the understanding of SME's representatives on marketing responsible position. Both of them mentioned as the most important competence for this position to have good operation skills in some software, such as Photoshop, Corel and Microsoft Office. According to the two human resources managers, none of the marketing professors gave the right and complete list of competencies for all the six positions. We can conclude here that formal education isn't set on the competencies needed in the real economy, as not even awareness and minimum knowledge of it isn't formed. While SME's representatives show little understanding of the role of marketing itself in their firms, multinationals and media planning agency representatives give detailed lists of competencies and job description for most of the positions. Though, little marketing skills are expected to be achieved by the applicants for new-entry positions. Actually, they declared that most of these positions aren't available for new-enters, at least not with full responsibility. The fact that marketing students and graduates lack important marketing skills is a wide conclusion in the scientific literature (Arora & Stoner, 1992; Litchfield, 1993), which tries to find a solution as the regards professional and career skills in the marketing curriculum (Kelley & Bridges, 2005).

#### 4.3. The contribution of formal education to the competences development

Heterogeneous opinions were revealed about the contribution that format education has or should have to the general and position-specific marketing competences, inside every perspective. Most of the students consider the faculty useless for their career development – lines 17-18 –, while some of them appreciate that it's important just for the diploma and for the professional network development. However, other marketing students disagree with that, advocating that they really expect that the knowledge they get will prove useful in their professional

becoming – lines 19-20. They all agree though, after this dispute, that a job in marketing field – and for some participants also NGO activity – during formal education period provides more benefits in term of competences and success chances.

From professors' perspectives, two main logics can be drawn out. Some of them start by arguing that formal education is fundamental for career success, but are unable to give sustainable reasons – lines 21-22. In fact, their argumentation is believed by the multinationals and media planning agency representatives – lines 23-25. Other marketing professors declare themselves disappointed of the academic curriculum structure, which is not adapted to the contemporary marketing – lines 26-28.

Employers' representatives don't give too much credit to formal education when talking about competence development. Instead, they use the academic experiences of their applicants to visualize their professional mindset. Briefly, their answers go on two directions:

- Anything can be learned at the workplace, as long as the professional has the right mindset and motivation, which is generally the multinational representatives' opinion;
- The competences needed for the job must be previously gained, no matter from where, so experience is a sine qua non requirement. This is the SMEs' logic when talking about marketing responsible recruitment. Nonetheless, they also show some interest in the theoretical knowledge attained by the applicant from faculty, but the level of requirements is unwittingly low – lines 29-31.

LINE	RESP.	
17	FG1F4	What we learn here [in faculty] has nothing to do with what happens in the real world. They [professors] give us examples (1) from our grandparents' youth.
18		
19	FG2F2	I'm confident that what I learn today will prove important tomorrow. As (0,5) Steve Jobs said, "you <u>can't</u> connect the dots looking forward".
20		
21	MPM1	It's crucial for a good marketer to have the right academic background. [...] You just can't be good enough by just doing thing by heart.
22		
23	ERF4	We have great specialists on marketing department, who haven't attend a marketing class in their lives. [...] A structured mind like this one [an engineer's mind] helps a lot in marketing.
24		
25		
26	MPM4	Looking at what we're most doing in the classes, one can conclude that marketing is a fluffy thing. We are rigorous only where we (0.5) <u>shouldn't</u> be. [...] It's natural that we don't have credibility in front of employers.
27		
28		
29	ERM1	We don't have time to teach them everything they have to do. They know it, or they don't. [...] I usually ask the applicants at the interview: what's the marketing mix? How can you define a brand?
30		
31		

#### 4.4. Successful career paths

Here, professors are the ones who could give the numerous examples from their ex-students. Though, they consider these examples exceptions that cannot be multiplied because the number of students exceeds too much the demand for marketers – lines 32-35 – or because of limited penetration of marketing into the firms' activity – lines 36-37.

Students also prove they are able to identify good case practices in terms of career development in marketing, some of them declaring they have at least one role model in the industry, especially from the speakers they have met in different projects they were involved in. We notice that many of these role models are employed – or were at some point in their career – in a marketing service provider: marketing research company, advertising or PR agency, etc. Moreover, other students believe that career success usually depends on a well exploited lucky situation at a given moment, especially at the career beginning – line 38 – in line with previous research conclusion (Markaki, Sakas & Chadjipantelis, 2013).

Employers representatives show great gaps when approaching this topic. While SMEs managers weren't able to give more than one example from reality – it's true that they tried to reason some paths based on logics – the

other 3 representatives had plenty of examples to give. In the most examples, two obvious characteristics can be drawn: the relative high number of employers changed, and at least one major shift during their career, inside marketing field, or between another field and marketing – lines 39-44.

LINE	RESP.	
32	MPM1	We can't expect that these cases [successful careers] will become the rule (1), no matter how much we
33		[professors] would fight for. We make too many marketing professionals for our [Romanian] market's needs,
34		and not too many have gone to other countries yet and started doing marketing.
35		
36	MPM4	Many firms in Romania have <u>no idea</u> what marketing <u>is</u> , so our students have to aim only the big companies
37		(0.5) and the marketing service providers.
38	FG2M5	You can't become somebody without a little luck at the beginning.
39	ERM5	[Name] started in 2000 or 2001 at [agency name]. Few years later he moved to [agency name], where he
40		reached the position of Regional Communication Manager. He worked there until 2011, period during which
41		he change 3 or 4 positions. Then he took a few of month pause, being strategist for [company name], until he
42		decided to open his own agency. Eventually, this year he came back to [agency name]. (3) Oh, and he also had
43		a mobility in [country name] for a couple of months.
44		

#### 4.5. *The attitude of the three categories towards each other*

Interestingly, every category widely showed negative attitudes to the other two. Professors are accused by both students – lines 17-18 – and managers for delivering out of date information and for ignoring the practicality of their classes. Students are considered lazy, picky, unwilling to make sacrifices, and uninterested in learning – lines 6-11 – by the professors and SMEs managers and one of the multinational representative, but not by the other two managers. They admit to have found many exceptional young professionals and students through their internship and traineeship programs – line 45. In their turn, employers are seen as exploiters by most students – lines 46-48 - and unprofessional in the way they understand and apply marketing by the professors. Still, there are some exceptions who declare that they like their working environment and the opportunities they get.

LINE	RESP.	
45	ERF4	Many brilliant students have entered our cross-functional traineeship.
46	FG1M1	Employers don't take us seriously, they just want to exploit us on small tasks and pay us very poorly.
47		
48	FG2F2	I prefer a firm which doesn't pay me that much, but which develops me professionally.

#### 4.6. *Constraints and shortcomings in the career development of marketing professionals*

We distinguish between constraints and shortcomings on the following rule. We consider constrains those situations that make a marketing professional act inversely as his professional interest would dictate him, and shortcomings those contexts – usually marketing-related – which obstruct the desired behavior towards professional development. This theme sums up the constraints and shortcomings recalled in the previous five ones, and gives a holistic view on the barriers in the way towards professional success in marketing.

Firstly, students from the two focus groups were confronted with an internal guideline of recruitment team, made available by one consultant human resources manager, and differences with their portrait of a competitive marketing professional are discussed. Students ascribe the differences on the unrealistic image they have about marketing – lines 49-53. The same conclusion was drawn by most of the managers – lines 54-55, while some professors don't see a problem on that – lines 56-58. Moreover, students accepted that formal education doesn't develop their soft skills, such as teamwork – lines 59-62.

The required skills by the SMEs' managers is definitely a shortcoming with great impact on the development of marketing professionals, as this firms should cover most of the jobs on marketing, to the point where these jobs can barely be considered on marketing. The fact that many of these jobs still require experience is

counterintuitive, as it would be perfectly matched for new-entries. Actually, the lines 29-31 show that SMEs' managers have no idea of what they shall ask from a marketing employee.

On the other hand, the representatives of multinationals and marketing service providers declare that they don't expect to find too many hard skills on their applicants. The first derived constraint here is that any student or graduate can apply for a marketing position, as anything can be learned at the workplace, tightening thus the competition on the labor market, in line with Taylor's (2003) findings from United States. The second constraint here can be understood by employing Hoekstra's (2010) career role model. Although we agreed that any of these roles can be played in marketing jobs, refusing to award full responsibility to new-entry positions makes almost all these roles invalid. The sole role that we still consider operative is maker. Thus, we can explain why an attractive career can disappoint very fast a deluded pretender.

Interesting shortcomings can be found analyzing the successful career paths. If we take these paths into consideration, success depends on the possibility to work in an agency or research company, which is a pretty narrow pipe, but in fact, all the 3 categories acknowledged that the level of marketing professionalism is higher in this kind of companies. Then, considering luck a decisive component of success drives to demotivation and inaction inertia. Another shortcoming was observed by ERF4: the intricate paths of success, with manifold employers and field changes, don't yield to role models thinking. He argues that following your model means to close yourself many doors, and finally realize that you went on an inappropriate path for yourself or for the circumstances.

Finally, line 48 helps us infer a major constraint that was unmentioned by any group member. While some students or graduates – like FG2F2 – prefer the employers who develop them professionally, without paying a big salary, others need to choose the firms to offer them the highest amount of money. This illustrates the fight between exploration and exploitation, where in many cases, the long term objective – career development – is struck by the short term objective – economical subsistence. The choice between these two alternatives is hard to be avoided, because the employer brands are used to indemnify its employees, especially at entry-level and early stages of professional evolution.

LINE	RESP.	
49	FG1F4	Most of us think that marketing means advertising in the moment we apply to this faculty, and we need maybe more than (0.5) a year to understand that it's not that way. It is not enough to be creative in order to (0.5) be competitive.
50		
51		
52	FG1M1	I was always passionate of sales, and when I applied here [to Faculty of Marketing] I was convinced that marketing means sales.
53		
54	ERM3	When they come to our firm, they have no idea of how things work here on marketing.
55		
56	MPM1	On every field there's a gap between theory and practice, so nobody should be blamed.
57	MPM5	Any employee needs a time for adaptation at his new job. Take into account that every company has its own specific procedures. Experience isn't always helping.
58		
59	FG2F1	In faculty, we have many projects to do in team, but the truth is that we generally work independently.
60		
61	FG2F2	It's hard to work in team when you are competing for scholarships and accommodation with your teammates.
62		

## 5. Conclusions

Marketing is still a young industry in Romania, confronted with numerous challenges regarding career development of young professionals.

This paper regards 3 different perspectives – of employers, students, and professors – acquired through focus groups and in-depth interviews, on the most significant attributes and competencies required for a competitive marketing professional and the main barriers in career progress. Obvious gaps were detected between the 3

categories of participants, but also inside every category, especially in the employers' one. Though, all this gaps must be validated through quantitative research in order to prove meaningful.

This research is a step forward on both management practice and state of knowledge. On management practice, this paper gives valuable insight of the most impactful misbeliefs of employers and employees when talking about marketing professionals' recruitment. In addition, this research may result helpful for the elaboration of a more balanced labour policy at the macro level. On the state of knowledge, the current paper is an opportunity to consider a wide range of research that links human resources management on marketing to marketing efficiency in a small world of expertise, where professional quality is determinant.

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## Construction of the nations in post-Soviet on the condition of Russian diasporas “post imperial syndrome”

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### Abstract

This given article looks at the experience of national building on the post-Soviet territory conditions after dissolution of the Soviet empire. And it became in terms of experience of the Republic of Kazakhstan. Under imperial experience of national development of the former Soviet republics in article following phenomena are as follows:

First is the continuity of many elements of an ethnic course of Russian empire in the national policy of the Soviet Union.

Secondly, circumstance, which dissolved the Soviet Union, became possible in many aspects because of opposition of its non-Russian ethnic groups to imperial character of the Soviet national policy, to consciousness of Russian ethnic groups, its leadership in social structure of the Soviet society.

*Keywords:* Kazakhstan, Kazakh, Russian Diaspora,

The gaining of sovereignty and independence by the former Soviet republics initially caused euphoria amongst their populations. Coupled with this, the democratic way of national development and national values gained great popularity. This is hardly surprising, since the national self-determination of the republics of the Soviet Union was made possible, largely due, to the spreading of democratic values in the period of "perestroika." Perhaps that is why most of the newly independent Soviet republics have chosen the way of democratic states. The ruling elite of these countries saw the prevailing sentiment. However, that euphoria has not passed away only because a democratic transit of the bulk of former USSR republics has failed. It has taken place also because these countries have failed to construct a fully national state for all those years.

In addition, the transformation of economic systems in much of the former Soviet Union was not successful in improving the socio-economic conditions of their citizens. Over the past few years after independence, the social injustice, and the broad division of society into rich and poor, has become commonplace in many of these countries. In this connection, we will review socio-political moods of Russia's citizens since it is of interest for our research.

For 20 years after the collapse of the USSR, Russia has conducted sociological measurements of the socio-economic and socio-political mood of Russians. Findings of the review have showed that for instance compared to 2001 Russia's citizens very decently evaluate such their democratic values as 'self-expression in

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policy', 'freedom of speech', 'multi-party system', 'free elections.' In 2001 such successes of 1990s' reforms as freedom of speech ranked number 2 in evaluations of Russia's citizens, while in 2011 they ranked number 6 (Analytic report, 2011: 22-24).

This poll has also exposed that as the majority of interviewed opine negative social consequences of reforms exerted much influence not individually but on the whole community. It is quite obvious that these data are indicative of a high level of social ill-being in Russia (Analytic report, 2011: 28). This poll in 2011 also revealed a clear relationship between feeling of injustice of 'what was going on' with a sense of shame of respondents being Russia's citizens for condition of the country and realization that 'it is impossible to live like that any more (Analytic report, 2011: 67).

Researchers logically reach conclusion that such moods result from 'mismatch of reality and sociocultural norms which are widely spread in all layers of Russia's citizens which is also indicative of ongoing process of power delegitimization' (Analytic report, 2011: 68). In other words, activities of the authorities do not satisfy panhuman and national values of Russia's citizens any more. Moreover, researchers sum up: 'Social tension for the time being latently rotting in the community all of a sudden can be taken to the streets ... and it is attributed specifically to social-psychological condition of the population and not some of its personal material interests' (Analytic report, 2011: 73-74).

Moreover, according to the researchers, these violent acts can take shape also as "nationalist actions," because in this case the implications for such sentiments of Russians e.g. "people of my nationality have lost a lot in the last 15-20 years" and "all means are good when it comes to protecting the interests of my people" (Analytic report, 2011: 75).

According to sociological research in 1993, about 34% of Russian respondents believed that non-Russians were the main cause of all the social ills of Russia. Moreover, more than 54% of Russian respondents of all social classes believed that non-Russians in Russia had too many rights and too much influence (Gudkov, 2004: 206].

The above-stated data and conclusions about national moods of the title ethnos in Russia are confirmed by other social studies as well. In particular, according to the All-Russian Public Opinion Research Center, between 1998 and 2002 percentage of ethnic Russians crusading for 'Russia for ethnic Russians' idea surged from 45% to 55% (Sherbakova, 2009: 86). It is necessary to mention that people aged between 18 and 30 prevail among supporters of that idea. Moreover, respondents aged under 24 post the least index of ethnic tolerance which is 2.6-3 times lower compared to people above 40 (Sherbakova, 2009: 106). These data first of all indicate that consolidation and mobilization of the Russian community in Russia based on ethnophobias will continue in the future. It's no coincidence that as early as in 2007 closed polls of the All-Russian Public Opinion Research Center showed that 70% of interviewed ethnic Russians supported the 'Russia for ethnic Russians' motto (Sherbakova, 2009: 127).

In Russia ethnophobia among the Russian population is very widespread and it seems to have its roots in the past. For example, ethnophobia against Chechens, who are currently, actively circulating in Russian society, was there even before the first Chechen war of 1994-1996. (Sherbakova, 2009: 95). The Chechens belong to the group of people from the Caucasus, for which ethnophobia have similar features and are characterized in particular with such terms as "criminal, prone to terrorism", "getting rich at our expense," "despise people of other blood" etc. (Sherbakova, 2009: 104-105).

Such negative ethno-nationalist sentiment in Russia is gaining in strength each year. As noted by the Russian expert G. Zverev, Russian ethnic nationalism recently has shifted its focus from the periphery of public consciousness to become the ideological mainstream of the socio-political reality of Russia (Zvereva, 2005).

In Russia, the growth of negative ethnic nationalism became the foundation for the spread of violence against non-Russians. In 2005, some 435 people including people from the Caucasus and Central Asia, were the victims of skinheads. Additionally, all these actions began to turn into violent ethnic nationalism (Kozhevnikova,

2006: 9). Thus, negative ethnic nationalism remains one of the essential foundations of the consolidation, the mobilization in Russia of Russian society.

All this could not but affect the political process in Russia and its national policy. Xenophobia in Russia has become one of the most powerful electoral resources whereby candidates for various public authorities to actively display negative ethno-national ideas. Support for Russian negative ethnic nationalism by ruling elite of came into wide practice. Often, for example, members of the State Duma make various appeals, demands, aimed at suppressing the rights of non-titular ethnic groups in Russia. On 19 January 2005, 19 members of the State Duma were demanding the closure of Jewish organizations in Russia, accusing them of Zionism. It should be noted that this demand was condemned by President Vladimir Putin after only a week (Kozhevnikova, 2006: 23-33).

One can say that two orientations towards nation building are being implemented in Russia, i.e. ethnonational and citizenship-based. This means that Russia's ruling elite, wide ranges of the Russian ethnos simultaneously advocate nation building on the principle of co-citizenship and based on the Russian ethnos. At that, the Russian elite vigorously exaggerates an idea of priority of ethnocultural and other interests of the Russian ethnos in the nation building of Russia.

As Russian scholar Panov P. has demonstrated, currently the Cremlin carries out its discourse in the tideway of 'Russionism', when those who acknowledge Russian cultural values, special way, great historic mission of Russia are referred to the Russians. This scholar treats an appeal to co-citizenship in the Cremlin's policy as a desire to absorb other ethnoses capable of adopting the Russian culture (Panov, 2001: 85). Moreover, as Russian researcher Scherbakova D.I. opines while with Boris Yeltsin ethnic course of the state was a response to national movements, with Vladimir Putin policy of limiting rights of ethnic elites and supporting rights of the Russians became its cornerstone (Sherbakova, 2009: 86-87). At that, it is likely that Russia's leadership tries to mobilize ethnonational potential of the Russian ethnos for the purpose of implementing its geopolitical plans, including to restore its influence on the former USSR. In other words, Russia's ruling elite once again begins to play the card of restoring imperial Russia. In this context, anti-American demarches of Vladimir Putin and Dmitriy Medvedev for instance are quite understandable.

In such a manner the ruling elite of the Russian Federation has to a large extent facilitated consolidation of the Russians based on negative ethnonationalism. It is made subtly with respect to the Caucasians, natives from Central Asia as well as NATO countries. Signs of imperial syndrome reviving in Russia can be seen in that.

It should be noted that transformation of the Soviet socio-political system was mainly associated as attachment to socio-political values of the West. However, subsequently, at least starting from mid 1990s, moods of uniqueness of Russia's civilization development and distinctiveness became dominant in Russia. As opinion polls reveal since then in the bulk of Russia's citizens 'orientation towards civilized distinctiveness is coupled with traditionalistic philosophies' (Analytic report, 2011: 155-156).

Researchers have generally come to the conclusion that Russia's "revolution of values is a long time over," but the search continues for socio-political "new meanings and new ideas" (Analytic report, 2011: 158). One can in this sense, understand the appeal of the Russian ruling elite's need to revive the Russian identity, and the imperial values deeply rooted in Russian ethnicity. According to the Swiss scholar A. Kappeler, imperial identity and imperial patriotism were very important factors in consolidating the social classes in the Russian ethnic group (Kappeler, 1997: 179).

The above-described moods of the Russian ethnos in Russia cannot but cause feedback and discontent first of all among indigenous ethnoses of constituent territories of the Russian Federation. Thus, findings of focus groups in Tatarstan have revealed that the majority of their participants believe that ethnopolitics of Russia's authorities does not consider ethnocultural interests of the title ethnos of that republic (Shumilova, 2006: 140). Moods of national self-determination are widely spread in Tatarstan. At that, there discontent with the federal

center, i.e. Moscow, for the most part extend to the ethnic majority of Russia, i.e. ethnic Russians (Sagitova, 2006: 258).

Perception of the Russians as an imperial ethnos quite frequently is articulated in non-Russian information space of Russia. As Russian expert Kuznetsova A.B. says, in its time deportation of the Chechens and the Ingushes was also treated as a seizure of power by the imperial ethnos, i.e. ethnic Russians. This shows that the discrimination of the Chechen-Ingush people from the indigenous Russian population of Chechnya, is perceived more in the vein of Russian imperialist expansion. (Kuznetsova, 2005: 125).

As considered earlier, the facts suggest Russia's current historical practice is the mobilization of the Russian people by the xenophobic imperial values. In this context, it seems that the main characteristic, of self-determination and the development of the post-Soviet states, was the opposition to the imperial Russian ethno-nationalism, where the Russian community has or had a large volume.

National values are formed based on a model of nation, national ideology adopted in the society. In this case, two approaches dominated in the former USSR. In the first approach national values resulted from a model of nation building based on the principle of co-citizenship. In the second approach – based on nation building underlain by ethnic principle, i.e. based on an indigenous ethnos of a concerned state. Ruling elite of the major part of former USSR republics strives to implement the second model of nation building. The first model was and is being implemented inside countries that lack an absolute domination of an indigenous ethnos.

Although, there are some deviations, for instance like in Ukraine and Baltic states Latvia and Estonia. These countries do not have an absolute domination of an indigenous ethnos. However, ruling elite of these states also advocates a monoethnic principle of building their nation-states. Along with that, these countries also do not have clearly-cut and legislative orientation towards nation building based on a monoethnic principle. However, on the whole, elite of these states follows that principle and does its best to implement it in practice. In this approach national values are displayed mainly through some strategies of historic and cultural nature of indigenous ethnoses of those states.

Therefore, it's no coincidence that the so-called 'Russian question' buds from time to time in those countries. Its key basis is a fact that representatives of the Russian ethnos make a minority in those countries. According to 2011 census, indigenous ethnos in Lithuania accounted for 62.1%, while the Russians made 26.9%. In Estonia Estonians made 68.8% of the total population in 2010, and the Russians accounted for 25.5% (Kalabekov, 2010). Indigenous ethnos in Ukraine stands at 77.82% and the Russians ranking the second biggest ethnic community of Ukraine account for 17.28% (Pankov, 2005). Regular exploitation of the Russian question in those countries is also ensured by intricate relationships with Russia. Moreover, desire of these states to bolster their cooperation with NATO member states infringes on geopolitical rights of Russia. Finally, complex of these factors disables elites of those states from implementing to the full extent their plans of nation building based on monoethnic principles and probably forces them to pronounce thoughts about nation building underlain by co-citizenship principle.

The situation in the field of nation-building in the above countries applies to most post-Soviet countries. Typically, on the eve of Kazakhstan's independence in 1990 the population was 40.3% Kazakhs and 37.6% Russians. In 1992, it became 41.9% Kazakhs, and Russians down to 37%, with Russians prevailing in the northern and north-eastern regions of the country. (Zimovina, 2003).

Moreover, as researches show Kazakhstan is one of former USSR republics that most of all was exposed to Russification. In soviet times and also in composition of Russian empire socio-cultural space of Kazakhstan sustained a large-scale deconstruction when its core, nomadic housekeeping, was destroyed.

Meanwhile, Kazakh national movement as Azat, Zheltoksan, etc. was vigorous in Kazakhstan on the threshold of proclamation of sovereignty. In point of fact, these movements appealed to the need of nation building in Kazakhstan based on monoethnicity. These ideas caused a broad response of the Kazakh people. All those things have entailed suggestion of legislative execution of those ideas, the more so as they received support

of significant ranges of the ruling elite which for the most time already was composed of Kazakhs by then. Vigorous manifestation of ideas of Kazakh ethnonationalism designed to forcibly introduce the Kazakh language and Kazakh culture in public reality began in political process of the country.

In this period, due to the requirement to speak the national language, Kazakh, the recruitment to the civil service was mono ethnic in character. In January 1993, the first Constitution of the Republic of Kazakhstan was adopted, defining its statehood as a "self-determined state of the Kazakh nation." The Constitution however does not mention the status of the Russian language. Hence Kazakhstan was officially proclaimed as the "Kazakh" nation-state. This appears to have led to the sharp increase in the mass emigration of Russians from Kazakhstan, post independence. Overall, 2 million Russians have left Kazakhstan, leaving many strategic Kazakh refineries and factories without skilled workers and engineers.

Perhaps, due of the problem in 1995, another Constitution was adopted, which granted Russian the status of the official language of state and local government. This current Constitution deleted reference to state of Kazakhstan as the Kazakh state. It also introduced into the basic law of the land a paragraph on the Protection of ethnic, cultural, national and linguistic interests, and the rights of all ethnic groups in Kazakhstan. Also included is a ban on the creation of parties or organizations on ethnic or religious grounds. In the same year the Assembly of People of Kazakhstan, was established which operate under the auspices of the cultural and national centers of some of the ethnic groups in Kazakhstan, including Russian. In total, the Assembly of People of Kazakhstan has 22 national and regional, national-cultural centers of some of the ethnic groups of Kazakhstan, combining 470 regional, city and district organizations.

In general, at present, our country has more than 100 national schools and 126 middle schools, where the pupils of 15 ethnic groups learn their native languages, and 76 secondary schools have optional, study circles in students native languages. The national revival schools have 29 branches in 11 languages, for the study of ethnic groups in Kazakhstan. In addition, 170 similar Sunday language centers are operating. Each year, the state orders more than 30 books to be issued in the languages of ethnic minorities in Kazakhstan with a total circulation of about 100,000 copies.

However, the main innovation in interethnic field founded by the 1995 Constitution was an official proclamation of nation building in Kazakhstan based on co-citizenship. At that, the Kazakh language and Kazakh culture were declared to be a cementing core of Kazakhstan's nation. One of specific steps towards nation building in Kazakhstan was a Concept of formation of state identity of the Republic of Kazakhstan adopted on 23 May 1996. According to that concept national identification was to be built based on principle of co-citizenship and continuity with traditional Kazakh statehood. That concept also expressly maintains that statehood models of Russian Empire and Soviet Union were imperial in their own way [The concept of national identity formation of the Republic of Kazakhstan, according to the Order of the President of the Republic of Kazakhstan as of May 23, 1996, N 2995].

Quite recently, in 2010, Kazakhstan adopted National Unity Doctrine that proclaimed building Kazakhstan's nation based on co-citizenship, shared civic interests and values. Its underlying concepts 'One country – one destiny,' 'Different origin – equal opportunities' and 'promotion of national spirit' themselves suggest high level of democratic nature of that Doctrine (The doctrine of national unity of Kazakhstan, 2010).

Under the unifying role of the Kazakh language and culture, one can see Kazakhstan has created favorable conditions for the construction of the nation, "Kazakhstan". However the task has not been achieved as Kazakh society is lacking even a reasonable level of national consolidation.

In many ways, it happened due to such an objective reason, the low functionality state language of Kazakhstan, Kazakh. Numerous studies have shown that the level of use, scope and application of the Kazakh language in daily practice continues to yield to the Russian language and hence cannot become the national language of Kazakhstan (Aliyarov, 2011).

Another objective factor hindering the national unity of Kazakhstan's society, is a high level of ethnic tension, conflict within Kazakhstan. There is reason to believe that inter-ethnic relations contain underlying tension that can surface into open inter-ethnic clashes under certain circumstances. A number of studies by Kazakhstan's scholars argue in favor of that. In particular, it is demonstrated in a reasonably substantiated research of the Kazakhstan's Center of Humanitarian and Political Environment conducted in 2009 (Aliyarov, 2010: 119-131).

It should be pointed out that in Kazakhstan it is not customary to trace causes of interethnic conflicts, conflict situations to ethnopolitical disagreements, cultural confrontation and ethnophobias. Probably, behind it is a desire not to complicate relations with the authorities which present their interethnic policy as Kazakhstan's know how and boast the interethnic field of Kazakhstan as one of the most stable worldwide. Therefore, it is little wonder that an overwhelming majority of Kazakhstan's experts, analytical structures have put forward economic factors allegedly tangled with skirmish as a root cause of interethnic conflicts that took place in Kazakhstan.

However, we believe that the main factors of ethnic conflict, ethnic tensions in the country are the socio-cultural factors. These, in our opinion, are such phenomena as the conflict of social status and cultural values. Position in society, public respect and honor is highly valued among Kazakhs, even more so than material values. Kazakhs also appreciate the calm tone, relaxed manner of a speaking companion. (Krysko, 2002). So when someone starts to neglect those values, a Kazakh will take it as a challenge and an insult. An example, is the way in which conflict between ethnic Kazakh and Turkish workers unfolded in the oil and gas companies in Karabatan Atyrau region of Kazakhstan in 2006 where Kazakh officials have long received lower wages and social benefits than their Turkish counterparts. Whilst a factor, this pay differential was not the major cause of the conflict between them. The main cause of the conflict was that the Turkish workers were defiant, dismissive and disrespectful to the Kazakh colleagues. The result of which led to a massive confrontation.

In connection with the above-said it appears that attitude of the Russian Diaspora to the Kazakh statehood, culture and Kazakh language exerts much influence on exacerbation of tension, general level of attitude of non-indigenous ethnoses to the Kazakhs. It is quite justifiable to highlight this factor since the Russian language is the most functional one in Kazakhstan's community. Moreover, Kazakhstan's Russians from the outset of republic's independence as if appear as secret rivals of the Kazakhs in their original right to Kazakhstan's territory and statehood. It's no coincidence that as early as at the beginning of 1990s a lot of gossip was circulating in Russia's information space about transfer of a number of northern and north eastern territories of Kazakhstan with dominant Russian population to Russia. We think that the so-called post-imperial syndrome of Kazakhstan's Russians has been displayed in this particular factor. Existence of this syndrome negatively affects general status of not only the Kazakh language, Kazakh culture, Kazakh literature but statehood of the Kazakhs themselves. Let's quote some certain data that prove existence of that syndrome among a good deal of ethnic Russians in Kazakhstan.

In particular, for instance in 1991, 77% of ethnic Russians in Kazakhstan treated the USSR as their native land. Meanwhile, the figure was 50-60% for ethnic Russians in Baltic republics (Pope, 2002). Social study conducted by the Institute of Philosophy and Political Studies of the Ministry of Education and Science of the Republic of Kazakhstan in July – August 2007 has exposed that nearly 23% of interviewed ethnic Russians still treat the USSR as their native land.

Russian ethnopolitical organizations are quite pro-active in Kazakhstan as they find support of some representatives of the Russian ethnos in the republic. For instance, in spring 2010 website of Kazakhstan's ethnic Russians <http://www.russians.kz> that was active until late last year conducted an opinion poll of readiness of the Russians 'to live in 'the Kazakh Republic' and to live under hegemony of 'the Kazakh nation responsible for nation development.'" In the end of the 7453 who voted, 80% (5,972 people) were against it. Possibly due to pressure from the authorities, the results of this survey have been removed.

In addition, from the results of opinion polls in different years, it becomes clear that among all non-indigenous ethnic groups of Kazakhstan, the Russians have the lowest degree of readiness to integrate around the nucleus of the Kazakh culture (Kharitonova, 2008). It is also necessary to mention that Kazakh Russians exhibit the lowest knowledge of the Kazakh language or the desire to learn it. (Shaukenova).

In our opinion, in this case reluctance to learn the Kazakh language and to coalesce around the Kazakh culture is due to conflicts of social statuses of the Kazakhs and the Russians. The Russians have lost their previously high status when they were a top ethnos in the USSR. While the Kazakhs instead have gained a higher status in sovereign Kazakhstan. Thus, rivalry for status entails hostility to a rival, disregard of its culture and language, the more so as the Russians view themselves to be higher in cultural and civilization development than the Kazakhs. It is also necessary to pinpoint that growth of negative nationalism, imperial moods in Russia that we covered earlier also can exert significant influence on behavior and motivation of Kazakhstan's Russians.

Therefore, post-imperial syndrome of wide ranges of Kazakhstan's ethnic Russians is among key factors that prevent formation of Kazakhstan's ethnoses into a single nation and reduce scope of interethnic concord in Kazakhstan's community. Of course, there are other weighty causes that slow down nation building in Kazakhstan. For instance, it is a low level of democratization of Kazakhstan's socio-political system that hinders full-fledged exercise of different rights and interests of Kazakhstan's citizens, including ethnopolitical and ethnocultural. However, this subject is beyond the scope of our research.

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4<sup>th</sup> International Conference on New Horizons in Education

# Continuity in educational supervision: a case study

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## Abstract

The aim of this study is to examine the continuity of supervision and how it is done. It is thought that the study is important because it brings out the ideas of supervisors about the continuity of supervision. This study is a qualitative research and a semi structured interview is used. Participants are composed of education supervisors in İzmir. Purposive sampling method is used in the study. At the end, the importance of continuity in educational supervision is emphasized.

*Keywords:* supervision, continuity, education

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## 1. Introduction

Today, education system that prepares individuals for change and keep face with the change with its whole elements is needed. Rapid changes in technology and production of knowledge forces organizations and employers to learn and because of that rearrangement of adopted objectives, content, appliances and tools used in education is required. To follow this change, sustainable renewal of teachers who are the basic elements of education increases id needed (Memduhoğlu & Zengin, 2012). So, teachers' need to develop and renew themselves not only increases the importance of their own efforts, but also increases the importance of efforts and supports of the people who is responsible for growing up teachers (Ergüneş & Ovalı, 2011). A way of providing that is to apply an effective supervision process by giving priority to guidance and professional development.

Inspection involves visits, observation of organizational services, programs and plans, evaluation of the quality made by the inspectors individually or in teams (Wilcox, 2000). From this point of view supervision can be assumed as a control mechanism. However, supervision as it has a developmental function is seen today as an essential tool emphasizing the necessity of supervision (Aydın, 2005; Demirtaş, 2010).

According to Başar (2000), principles of supervision are intentionality, planning, continuity, objectivity, integrity, contingency, openness, and democracy. Because of integrity and effectivity in the implementation of

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principles of supervision, there should be in an interaction among these principles. For example, contingency needs integrity, openness interacts with democracy, and continuity interacts with planning. Continuity is used for expression of continuing actions and cases never cut (Bıçak, 2004). It is seen both in problem and in solutions of that problem (Bıçak, 2004; Özen & Sağlam, 2010).

When there is no continuity in supervision, it is too late for changes and corrections. Also, continuing supervision provides the interaction of past and future (Başar,2000). In contemporary educational supervision there is an order and continuity. How teaching methods should be regulated to the student's development levels, methods of supervision also should be regulated in accordance with the teachers' professional development levels (Aydın, 2000). When the literature is examined, it is seen that researches investigating the continuity in supervision that it is limited. Hence, it is important to apply supervision services and to ensure continuity of them.

### *1.1.Aim of the study*

Purpose of the study is to examine the continuity of supervision and how it is done. It is thought that the study is important because it brings out the ideas of supervisors about the continuity of supervision.

## **2. Method**

This study is a qualitative research and a semi structured interview is used. Participants are composed of education supervisors in İzmir. Purposive sampling method is used in the study. Draft of the semi structured interview form gets the final form through with the expert opinions. In the study, internal validity is obtained by examining of experts, confirmation of participants and making the interviews in a long time interval. External validity is obtained by detailed description. Also, by consistency examining, internal reliability is obtained and by confirmation examination made by three experts, external reliability is obtained. For the data analysis, descriptive and content analysis methods are used.

## **2. Findings**

Opinions of the participants are gathered without their names, but coded because of the privacy reasons. So, supervisors' names are coded as 'D' and every participant gets code names as 'D1, D2, D3... D10'.

### *3.1. Opinions about continuity of supervision*

Through that sub problem the first question in the interview is "How do you describe the term continuity which is one of the principles of supervision?" As an answer to that question, education supervisors mentioned on teacher development, graduating student, frequency of inspection time/periodic inspection, inspection of the principal, clinical supervision, integration of school and inspection, continuous exchange of ideas, active

communication, continuity of observation, subsequence precedence relation, following the quality, control of problems and bureaucratic necessity.

One (D2) of the supervisors talked about continuity in supervision as: "Continuity of supervision is to carry out a guidance process and to evaluate in certain time intervals. Primary schools are inspected certainly in every two years. There is continuity. Every institution is inspected in every two years. Especially it is on the primary school level. But, there is not a certainty on the inspection of new primary, secondary and high schools. There will be change in the regulation, by the Ministry. The law makes us to get the responsibility of supervision of those schools. Government institutions are inspected in every two years and private institutions are inspected in each year." D1, D5 and D6 coded participants also said similar things and emphasized those inspections are made periodically. The one (D3) who specified continuity in education supervision can be provided if the school managers are given more authority on supervision tells: "Continuity of education supervision is to provide supervision by making school principals more sufficient on the education activities in school and to continue to remote supervision by the supervisors." D8 also says similar things with D3.

### *3.2. The perceptions on how to provide sustainability in inspection*

The question in the interview form according to the sub dimension is "How is the sustainability provided in inspection?." As response to this question, provincial education inspectors mentioned the reports, usage of different communication methods, the same inspectors' inspection, legal regulations, total assessment, raising awareness, preparing effective inspection plans.

The provincial education inspector D8, expressed his views about different communication methods and raising awareness as "The aim of inspection is to make teachers their self inspection., that's why inspectors have been trying to raise awareness, only by raising awareness inspections can be continued. ...I have been talking to teachers, trying to persuade the teacher to correct the false situations and also trying them to believe. If the teachers believe in me, he makes the change himself. If the teachers believe in the inspector that he guides the teacher then he can share his troubles with the inspector. If the teachers believe that the inspector will only criticize him there becomes a negative communication". D2 also mentioned his ideas as follows "After the inspection there becomes a bond between the teacher and the inspector. All the communication ways such as internet, phones are open to the teachers. We also give our mobile phone numbers to the teachers. They can call us whenever they want, it does not matter if it is day or night. Especially this year, due to the primary class first level, lots of people called me. School administrators, teachers all can call us." D1, D4, D5 and D6 expressed similar views as D8 and D2.

One of the provincial education administrators' D3 expressed his view as, " According to the legislation, schools are inspected biennially. This period causes fast inspection and decrease in quality. When you visit a school, you can see that at least 40 teachers work there, and you should do the inspections in two days , we write

our reports, and deliver it to the related chair.” And like D3, D2, D5, D6, D7 and D8 mentioned that reports are one of the most important factors for the sustainability of the inspection.

### *3.3. The perceptions on the significance of inspection's sustainability*

The question in the interview form according to this sub dimension is “ Why sustainability is important in inspection?”. As a result of the analysis five themes emerged out which are, the significance according to organization, student, society, teacher, inspector. The most important theme is the importance of inspection for the teachers' improvements (D2, D3, D5, D6, D7 and D8) secondly for the success of the students (D2, D3, D4 and D6).

One of the provincial school inspectors expressed his view about the improvement of teachers as follows, “The aim of the feedback after the observation of the teacher is for guiding them to improve themselves. For the guidance we tell both the positive and negative sides of them. For example during the lesson, if the teacher always tells the lesson himself we warn them and tell them that it is not appropriate to the programme. I suggest some resources related to the trouble.”. D3's idea on the success of the students is as “ I think that inspection remains unclaimed as it is done biennially. If head teachers and inspectors play more roles in the inspection system, schools will not remain unclaimed, and the sustainability of the inspection will remain. If the inspection is sustained, it will be effective in students' success.”

Four provincial education inspectors (D3, D6, D7, D8) expressed similar views about the continuity of inspections importance according to the inspectors . D3 said “ The continuity of inspection can be effective to the inspector for his own motivation. Inspector's motivation has been decreasing. You visit one or two schools in a year. Our mood also changes in time. When you go to a school, you should be prepared. For preparation you should have taken data about schools before. However none of them happens.”

### *3.4. The perceptions on the factors that affect the sustainability of inspection negatively*

The question in the interview form according to this sub dimension is “What are the factors that effect the continuity of inspection negatively?”. The most emphasized themes are the limited period of inspection, (D2, D3, D4 and D5), the improvement of working conditions of inspectors (D1, D2, D5 and D6), the change of growing up inspectors (D4, D6 and D7), the variety of inspection field (D3, D4 and D6), the change of some factors that are related to Ministry (D5, D6 and D7), the improvement of competencies of inspectors (D3, D4 and D8), the improvement of administrators competencies (D3, D8), multiple inspection systems (D3, D8).

D5 mentioned his thought as follows; “ We have been talking on our troubles about the improvement of our working conditions, we always face with the similar problems, we also are not informed about the change in education system for example about 4+4+4 although we do the inspections.” D3 expressed his thought as follows “ The inspections which is done for guidance is limited. Our working conditions is expanded through the

Ministry of Education decree so we can not catch up with those many works. We also have investigation responsibilities besides guidance and supervision. The variety of inspections prevents us from the time for guidance.” D4 said, “I visited a school and attended 80 hour lesson, I looked at the performance of the teacher, namely I observed his job performance. I examined his job planning and current situation for his success. At the end of the lesson, there becomes an identification for the current observed situation. What did the teacher do? He did this, he does not know this, at the end he gained improvement, this is not enough, ..but the time is not enough.”

About the negative effects D5 told the following statements, “ There has been a problem on the sustainability of the inspection. There is an educational planning problem. These plans are not done by educators or theorists or field experts. A lawyer became minister of education, engineer became minister of education, as they were not educators they assumed that they made an invention. That s the painful side.”

D8 said “ The inspection should be revised. Inspection has been done in three different levels, internal audit, ministry and primary school inspectors should be combined under one level. There becomes role challenge in inspection system.”

### *3. 3.5. The perceptions on the suggestions of providing the sustainability of inspection*

The question in the interview form according to this sub dimension is “ What are your suggestions to provide the sustainability of inspection?” The mostly emphasized themes are alternately inspection in specific schools (D1, D2, D3 and D5), the increase of knowledge technology (D3, D4, D6 and D7), the increase of decentralization (D5, D6, D7 and D8), the structural change of inspection system (D2, D4 and D8).

D5 expressed his idea as follows; “The inspectors’ working in specific fields or working in limited number of schools alternately gives him the opportunity to know the school more. The assessment of the inspection becomes more objective.” D3 said, “The increase in the usage of knowledge technology should be better, I formed up a group in internet during my visit to third class. I felt myself as if I visit the school more often, I was taking notes also, but the information had reached us before we visited the schools, we did more logical guidance.”

## **4. Discussion**

Supervisors thought the relationship with the concept of continuity which is one of the principles of supervision and teacher development, graduating of students, periodic supervision, supervision by school principal, clinical supervision, co-operation with school and supervisor, continuous exchange of ideas, active communication, continuity of observation, the relationship of priority and post, follow up of quality, control of problems and bureaucratic necessity. Supervisor provided continuity of supervision with methods of reporting, using of different communication techniques, the control by the same supervisor, compliance with laws and regulations, making collective assessment, raising awareness, preparation of effective supervision plan.

Supervisors said that continuity of supervision was important in terms of corporate, student, community, teachers and supervisors. Supervisors mentioned factors that adversely affect the continuity of the supervision such as limited supervision period, improving the working conditions of supervisors, change of supervisor training, diversity of supervision field, change of management structure of the Ministry, development of supervisors' competences, development of administrators' competences and structure of multi-control system. Supervisors reported that in order to ensure the continuity of supervision, supervisors should work in particular schools, use the information technologies, enhance decentralization and change the structure of supervision system.

According to the findings, supervisors tried to explain the continuity of supervision in terms of basic elements of the education system, supervisors whose the using methods indicated that they tried to realization of continuity partially however supervisors presented the solution suggestions due to institutional problems and individual problems of supervisors in education system. The suggestions of this research in line with these results are as follows:

1. The realization problems related with continuity of supervisors should be discussed by school administrators, supervisors, teachers and academics.
2. Supervisors are responsible for overseeing the institution and the number of teachers is very high. When it is added to investigations and inquiries, workloads of supervisors further increased. However the numbers of theirs are not sufficient. Therefore, the number of supervisors can be increased in schools.
3. Because period allocated for supervision is insufficiency for even identification and assessment the various aspects of teachers, supervisors can be started to in only a few number of schools.

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# Corporate Social Responsibility Education in the Czech Republic

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## Abstract

The corporate social responsibility (CSR) movement has gathered great momentum over the past number of years is now regarded as being at its most prevalent. However, there has been a lack of attention to, and discussion of, CSR in Czech and in relation to education. The paper reports findings from a survey of CSR education (teaching and research) in the Czech Republic. It analyses the extent of CSR education, the different ways in which it is defined and the levels of teaching. The paper provides an account of the efforts that are being made

to mainstream CSR teaching and of the teaching methods deployed. It considers drivers of CSR courses, particularly based on historical development and the anticipation of future success being dependent on more institutional drivers. Finally it considers main developments in CSR research both by business school faculty and students, tomorrow's researchers and the resources devoted to CSR research. The conclusion includes questions that detected further research directions.

*Keywords:* corporate social responsibility; the Czech Republic; survey of business schools; teaching and research

## 1. INTRODUCTION

This paper reports survey of corporate social responsibility (CSR) education in condition of the Czech Republic (CR). We mean teaching and research of CSR in this country with emphasis to the public role of the business school (private and state). The significance of this survey lies in the question as to whether business school are no more than brain washing institutions education their graduates but if appropriately develop CSR approaches in their teaching. Others have concluded that there is an "intellectual bias against business ethics" in business ethics and similarly oriented areas is systematically discouraged and seen as a "field of study... falling somewhere on the vector between ambivalence and disdain" (Hosmer, 1999, pp. 91, 102). Conversely other surveys have presented a more positive picture, notably the Beyond Grey Pinstripes report of the Aspen Institute conducted first in 2001 and repeated (Aspen/WRI, 2003). These findings contrast with some earlier studies (for an overview see Collins and Wartick, 1995) by depicting a growing interest and consolidation of business ethics and responsibility related topics in business schools' teaching and research agendas. In Czech there was an study in 2008 from the University of Economics, Prague, which was attended by 236 students. The research proposal was focused on determine the general knowledge of the CSR and how to get the original information on this concept. The research showed that the term CSR knows 73% of those surveyed students, mostly from newspapers of by studying at the school.

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The general field of CSR in Europe is shaped somewhat differently and took longer to take off as an academic discipline. Certainly the most comprehensive initial overview over the situation in Europe has been provided by Mahoney (1990) in a comparative study of the teaching of business ethics in the U.S., U.K. and continental Europe. More recent information on the situation in European business schools has been case-study based work on business ethics practice in various European countries (Matten and Moon, 2004). In 1998, the European Business Network for Social Cohesion and The Copenhagen Centre provided information of a range of business schools' activity but did not aggregate or interrogate the findings. So far then, there has been little attention to assessing the overall state and shape of the contemporary CSR field in European business schools.

This paper reports on the findings of a survey that was designed to fill the gaps in relation to connection of the concept of CSR in terms of educational institutions in Czech. The first goal was to provide an overview of teaching and research in the broad field of CSR and describe the main institutions that are significant from this point of view. We assumed that CSR would mostly be understood as an umbrella term for a broad set of synonyms and different concepts reflecting both business and society relations and business ethics. The second goal was to capture the range of meanings of and activities in CSR reflecting Czech's different business and educational contexts. Thirdly, we were interested in finding out what role in terms of visibility, acceptance with students, resource provision for research and general expertise the area possesses at Czech universities.

The choice of the terminology of CSR was determined by the action that key institutional players (such as the 2002 founded European Academy of Business in Society, key media and to a growing degree, corporate oriented publications) seems to have made this term an increasingly popular label (e.g., [www.csreurope.org](http://www.csreurope.org)). The new imperatives for CSR raise the challenge for corporations to acquire and develop appropriate skills and competencies. This raises the question of the role played by universities and business schools, the key provider of business education, in terms of:

- Provision of graduates with CSR skills,
- Supply of CSR education for practitioners,
- Specialist CSR education for industries,
- Research to advance knowledge in CSR.

The paper analyses these issues by addressing the following questions:

- At what levels and in what sorts of courses is CSR taught?
- Is CSR taught to business students, tomorrow's business leaders and managers?
- What meanings are attached to CSR education?
- Is CSR teaching conducted with business and community partners?
- What are the drivers for CSR teaching?

The paper continues, first the brief characteristic of literature review of CSR meaning and terminology. Secondly, we define the current approach of CSR in the Czech Republic - as the institutional background, as well as in the educational process. We define the key players in the field of CSR and the core institutions.

### *1.1. Literature review*

The Corporate Social Responsibility (CSR) movement is rapidly growing in significance as a strategic management instrument over the past number of years. Not only has the issue received academic attention but has quickly moved up the corporate agenda (Knox et al., 2005, Ogrizek, 2002). However, there has been a lack of attention to, and discussion of, CSR in the Czech Republic. The considerable emphasis placed nowadays on the societal role of business is in accordance with the spreading belief that measures of company success must go

beyond profit and should also relate to the needs of stakeholders and society at large (Natale and Sora, 2009). According to Carroll (2000) CSR is becoming the defining business issue of our time, affecting corporate profits and credibility, as well as personal security and sustainability of the global economy.

One of the factors contribution to the extension of CSR is the lack of consensus as to what the concept really means (Carroll, 1979; Panapanaan et al., 2003). Although the acronym CSR is now well rooted in the business lexicon (specifically in the European approach), a meaning of the term remains a subject of much debate (Roberts). Dahlsrud (2007) identified 37 of definitions that have variety of significance. It has been described as and subjective (Frederic, 1986), unclear (McWilliams, 2001), amorphous (Margolis and Walsh, 2001), highly intangible (Cramer et al., 2004), ambiguous (Fisher, 2004) or as and concept with unclear speculative boundaries. The majority of Czech authors (Trnková, Putnová, Čaník, Řezbová, Zavřel, Dyrtr, Petříková) used a positive approach to the definition based on subjective perspective. One of the most cited definitions could be seen from Carroll (1999) which is constantly being developed by many authors.

CSR has also been characterized as the concept in a variety of ways such as legally complying with the letter of the law, complying with the social and environmental codes of conduct engaging in corporate philanthropy, and the broader impact that business has on society among others (Jenkins, 2004; Khan et al., 2011; Prieto-Carron et al. 2006). According to the first authors (dealing with CSR issues) such as Berle, Means or Bowen, the emergence of the concept is due the increase in large companies. They already define the social responsibility of the businessman as a voluntary integration of social values in the management. A major idea is that CSR can be determined by the consequences of the company's activities on the stakeholders. CSR's issues are focused on a triple bottom line which includes: economical, social and environmental issues. The role of business in society is rapidly changing and the companies no longer operate in isolation but are a part of the business environment. The sustainability Performance management is also a new term in the field of entrepreneurship and corporate social responsibility (Kocmanová and Dočekalová, 2012). In relation to business and education, a variety of definitions have been proposed which focus on issues such as number of employees working in the enterprise, annual turnover, ownership types, and formal versus informal economy status (Jamali et al., 2009).

Additionally, well educated managers of e.g. SMEs plays a significant role in the local community with a high-degree of inter-reaction and acting as benefactor by support to the local economy by creating job opportunities. It has been argued that companies are constrained by the time and financial resources (Sarbutts, 2003 and Vives, 2006). On the other hand, it has been argued that being smaller and flatter; SMEs may be better placed than large firms to take advantage of the changing needs of society (Perez-Sanchez, 2003 and Sarbutts, 2003). Therefore, it is necessary to include in education, especially at universities the field of CSR. The acquired knowledge is then transferable by graduates (managers) into practice. Business ethics and community support play an important role in various business environments.

### *1.2. CSR approach in the Czech Republic*

In the CR at the beginning was the impulse of most companies involved to focus purely on philanthropic donations. Over the time, a number of companies have steadily been growing and companies are engaged in a remarkable range of activities. Today, Business Leaders' Forum's mission is promotion and enforcement of CSR in line with European methodology and best standards. The Forum closely cooperates with the European Commission and European Commission's Directorate-General for Employment, Social Affairs and Equal Opportunities (BLF, 2012).

The *harmonization* of Czech law with EU legislation, and the Czech Republic's accession to the European Union, contributed to major advances in the promotion of CSR. As long ago as 1998 the Czech Republic adopted, among other things, rules for the introduction of Eco-Management and Audit Scheme (hereinafter also EMAS), and prepared the first National EMAS Program. The program was updated in 2002 and is currently governed by EC Regulation no. 761/2001. In order to fully participate in this program, companies must, among other things, introduce an environmental management system which contributes to the continuous improvement of their environmental conduct. In 2007 there were 17 Czech organizations registered in the EMAS Registry, and another 1.500 in the EMS system (ISO 14001) from *Czech Environmental Information Agency*. The *milestone* in building foundations of CSR was August 2003, when the Sustainable Development Council of the Czech Government (hereinafter also SDCG) was established as a standing advisory body of the Government for sustainable development and strategic management. Increasing interest in CSR and a trend in implementation of CSR reflect also surveys of the Business Leaders' Forum. In 2004 in the survey 76 % of surveyed companies claimed to be involved at least in one CSR activity (the most frequently towards employees); in 2007 it was almost 90 %. CSR awareness has also been increasing thanks to international corporations operating in the country as they belong among main supporters of CSR and have brought essential know-how.

As CSR gaining its popularity among entrepreneurs, some non-governmental organizations have been focusing on building partnership between profit and non-profit organizations in the area of corporate philanthropy, corporate volunteerism, social marketing, environmental protection and others (e.g. HESTIA, AISIS, Czech Donors Forum, Environmental Law Service, Business Leaders' Forum, etc). In March 2007 the Ministry of Labour and Social Affairs created a new website on CSR, to inform users about the concept of CSR in the European Union. The website also provides references to different projects and activities concerning the promotion of CSR (Czech Ministry of Labour and Social Affairs, 2012).

According to surveys in the business sector, it appears that the main CSR related priorities are the environment, well-being and philanthropy. In each field is the most important to get into public awareness while the SMEs should implement this approach and gaining the competitive advantage in the futures market. For that purpose was founded the *key CSR actors* in the Czech Republic: Ministry of Human Rights and Minorities ([www.vlada.cz](http://www.vlada.cz)); Ministry of Labour and Social Affairs ([www.mpsv.cz](http://www.mpsv.cz)); Ministry of the Environment ([www.mzp.cz](http://www.mzp.cz)); Ministry of Industry and Trade ([www.mpo.cz](http://www.mpo.cz)); Business Leaders Forum ([www.blf.cz](http://www.blf.cz), [www.csr-online.cz](http://www.csr-online.cz)); Association of Fair Business ([www.korektnipodnikani.cz](http://www.korektnipodnikani.cz)); Czech Society for Quality.

Awareness is widespread, but information is lacking as to specific CSR topics. Many CSR-related activities are of common public knowledge but they are understood as concepts in and of themselves and not within the CSR context. However, the broader concept of CSR is slowly taking root in educational institutions such as universities. It is often covered in courses on Corporate Governance, Business ethics and in some cases it exists as a separate course as well. From *environment part* of situation in CR are related - *National action plan* - the current policy on climate change is in the process of modification (Ministry of the Environment of the Czech Republic, 2012). Environmental awareness is largely promoted through the *Czech Republic's National Cleaner Production Program*. In addition, there are a number of educational programs that reach out to the younger generations, introducing them to important personal practices such as sorting waste.

From the *cooperation between local communities and businesses* there we found that the business community involvement is generally not innovative. While normative projects and activities are carried out, ongoing dialogue and cooperation between businesses and communities is not common. *Sustainable Products and Services* are included into the Czech Republic's National Trademark on Quality is given to products that meet certain standards regarding quality/sustainability. The program consists of approximately 20 trademarks,

including several that focus solely on environmental impact of the product. It was mentioned that company best practices is implemented into the *Business Leaders' Forum*. Currently, has collected and disseminated practical CSR tools and guidelines via its web portal.

## 2. Methodology

Although our aim was to include institutions and types of CSR courses, a new issues arise in the study of CSR education in the methodological field. In this paper, we focus on the public high schools (universities in Czech) of economic type. In the CR, there is clear structure of universities. They are divided into four groups: 1. state universities, 2. public universities, 3. private universities, 4. universities with MBA program (see Table 1). We only targeted at the public sector, which is crucial because it allows education to all groups of potential students, there is no discrimination in terms of regular financial payments, this education is free for all students and it is financed by the state budget.

Our focus is institutional and research tool was expressly designed to elicit information about business schools and their broader attitudes, approaches and indeed their openness towards teaching and research activities in the chosen area. As the concept of CSR does not originate in Europe, we expected a range of terms to describe it and as we aimed to capture a culturally sensitive picture of CSR education, we have discovered a huge range of CSR synonyms: *Corporate Social Responsibility (CSR)*, *Business Ethics*, *Corporate Citizenship*, *Sustainability*, *Business and Society*, *Business and Governance*, *Business and Globalization*, *Stakeholder Management*, *Governance*, *Corporate Environmental Management*. The clarification of methodological issues which are used in research:

- What is a “university”? In condition of the CR we mean the name for institutions of higher education – finished with graduates in bachelor, magister, Ph.D. and MBA programs. They could be state-funded or private-funded universities.
- What is “CSR”? There is a variety of labels used in CSR educational courses. Literature overview of the meaning is included in following part of the paper.

Table 1. List of high schools of economic type in the Czech Republic

Type of university	State university	Public university	Private university	Universities with MBA programs
Number of universities	2	20	40	27

Source: Own primary research

As in the CR was not such a study performed and there is no single database that would be listed as individual statistics on objects or taught programs, so we came out a detailed analysis of the individual websites of all schools involved in the research and from the website of the Ministry of Education, Youth and Sports. We identified institutions with a facility for business education, whether in business schools or in university faculties or departments of management, economics, accounting, administration etc. This yielded 80 institutions but only 20 public universities became the subject of research.

## 3. Findings

We define the nature of CSR courses in terms both of individual *modules* (semester length courses) and full dedicated *programs* (multiple modules leading to a degree or other award). The variety in the conceptualization

of CSR education is illustrated by the fact that in the CR *we have no level and types of CSR programs* (there is no comprehensive program focused on the area of CSR). This was a surprising finding that we do not assumed. Positive findings are in the area of variety in the labels used for *CSR modules* titles (see Table 2). The percentage expresses of use of the selected terms used in the modules. It means that there are specific subjects taught at public universities.

Table 2. Generic labels of CSR modules

Business ethics 32%
Ecological/Environmental Management 28%
Corporate Social Responsibility 21%
Accounting 18%
Corporate Governance 17%
Business and Society 10%
Management/Business; Human Resource Management (all 7%)
Corporate Citizenship; Finance (all 5%)
Sustainable Development 3%
Leadership, Transnational, Geopolitics (all 1%)

Source: Own primary research

CSR itself is used only 21% of universities though is the third most common single title. The first place have “business ethics” 32%, which stems from the historical development of the country, where the term is most often used - according to old habits (does not have the same meaning as in Anglo-Saxon countries). Second position is occupied by a “environmental management” 28%. This aspect is given importance of the EMAS certification and relevant ISO standards 14000. The relative scarcity of modules labelled CSR itself or such close synonyms as corporate citizenship, sustainable development, finance, leadership, transnational – this values suggests that are unlike business ethics and we see as a recent development in Czech business education.

Therefore, it appear as a dynamic platform for teaching a number of current societal issues or management fashions. It is also stringing that there is proliferation of CSR labels generally considered of fringe status from a business school perspective. According to Moon and Matten (2004) from their perspective have to CSR education to make a difference in the future of business it should be in the form neither of a hived-off programme nor an optional module but embedded in the core of business education.

Many CSR teachers and practitioners share this view that CSR should be fully integrated into degree level teaching programmes. This is known as “mainstreaming” and would enable every business student to be made aware of the social and ethical dimensions of their future activities as a businessperson. We offered greater use of these tools in university education: formation of optional modules, embedding in other modules and courses, compulsory modules and other CSR teaching activities (seminars, conferences, special events, workshops, etc.)

We identify the most *teaching tools* used in CSR teaching (see Table 3). There is evidence widespread use of business speakers, NGOs speakers or CSR managers speakers as well as case studies from practical part of business environment (the key role are the large international companies). The tools related to the academic sphere are not so often use, such as e-learning, discussions or international student exchange. This suggests that the CSR teaching is influenced by practice.

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Table 3. Special tools used in CSR teaching

Teaching tool	Percentage of using the tool (%)
Business speakers	23
CSR based on case-studies	20
NGO speakers	15
CSR speakers (managers)	10
Communication (media) speakers	4
Other, the most popular:	6
- E-learning	
- Discussion forums	
- International student exchange	

Source: Own primary research

Other areas of research have been focused on the drivers of CSR education not only in universities but in all business schools. The survey invited perceptions of recent and future drivers of CSR business education. Specific drivers of CSR education were identified according to our findings in this order (the most important is in the first place, at least meanings driver is in the last place): individual faculty members; leadership of school/faculty/department; business organizations; students, university leadership; CSR networks and associations; governmental bodies; and society.

In comparison with the future success of CSR teaching is more important focused on the individual faculty members with a research interest or otherwise in CSR. The future drivers of success of CSR teaching in business school we define as business approval and support, required for program accreditation, inclusion in business school ranking, employment success of graduates, governmental incentives.

#### 4. Conclusions

The paper set out to address questions about the extent and the ways in which Czech business education addresses the broad topic of corporate social responsibility. The survey succeeded in gathering data from a wide range of public universities of economic type. There is a highly diverse understanding, contextualisation and packaging of CSR teaching. Although the term CSR, its current agenda items and other current business-society agenda items have gained currency, many modules are grounded in the longer term orientations of business ethics and environmental responsibility.

The variety in the conceptualization of CSR education is illustrated by the fact that in the CR *we have no level and types of CSR programs* (there is no comprehensive program focused on the area of CSR). Positive findings are in the area of variety in the labels used for *CSR modules* titles. Social responsibility reflects the values of the society in which we live and also will live future generation. CSR is not just a matter of business leaders, but concerns all of us. Educational institutions in the Czech Republic should, therefore, their subjects into the curriculum and to offer their training courses to include far more this issue. One possible approach is seen in the drivers of future success CSR teaching in business schools. Another factor is the support of educational institutions, students - support the work of professional business school students deal with this issue. The key role we see in national and international student's awards.

We can conclude that in the short post-revolutionary history of the country, we see positive development in the higher level of involvement in CSR training modules, but it is necessary to develop comprehensive programs in the bachelor's, master's and doctoral studies. Support from institutions, business sector and the government will be crucial for future success of CSR teaching.

This paper constitutes an important step in providing an overview over CSR education in Czech. It is intended that our findings focus the attention of business schools and their all stakeholders on their CSR education provision and that they provide benchmarks for further research in the area. Future goal of the survey is to intensify research on all four types of universities.

## Acknowledgements

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4<sup>th</sup> International Conference on New Horizons in Education

# Creation and Innovation of Study Programmes with Emphasis on the Needs of Labour Market and Knowledge Society

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## Abstract

Creation of new study programmes follows introducing new products the perspective of which depends on the globalization growth and trends in economy, business activities and enterprises that is the assumption for the graduates to assert at the labour market. These activities are at the University of Zilina supported also by resources from the projects of the European Social Fund within the Operational Programme Education. The University of Zilina submitted and the employees are working at the project titled “Innovation and internationalization of education – tools of quality enhancement of the Zilina University in the European Education Area” that includes also the issues of study programmes creation and innovation at the selected faculties and departments. The aim is to enhance the quality of education at the Zilina University through development of innovative forms, attractive study materials and rationalization of study programmes. This paper is oriented on widening the offer of the university education at the Zilina University with emphasis on the needs of labour market and knowledge society.

*Keywords:* study programme, innovation, internationalization, graduates, education.

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## 1. Importance of innovation and internalization of education

In the Strategy Europa 2020, in its principal initiatives and new integrated directions, knowledge is in the center of the EU effort for achieving smart, sustainable and inclusive growth. In the proposal of the financial framework for years 2014 – 2020, the European Commission supports this strategy through increasing the budget for investments in education, research and innovations. The reason is that education and especially higher education and its connection with research and innovations are essential important factor for advance of the individuals as well as the whole society. The result of education is high - qualified human capital and active inhabitants that are necessary for Europe to produce working positions, economic growth and prosperity. Thus the higher education institutions are important partners in realizing the objectives of the EU's growth strategy Europa 2020 for achieving the advance and sustaining the growth. For the purpose to contribute to the smart, sustainable and inclusive growth as much as possible on the part of the European systems of higher education, reforms in key fields are necessary with the aim to increase number of graduates in all three levels of higher education: bachelor, master and doctoral; to enforce quality and relevance of human capital development in higher education; to develop effective mechanisms for administration and financing in connection with support of excellence and to enforce knowledge triangle among education, research and business sphere (Strategy Europa 2020, 2011).

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The strategic aim of the Slovak Republic innovation strategy for 2013 is that the Slovak Republic will develop, within years 2007-2013, national innovation framework that will include regional and innovative structures. The regional innovative structures (incubators, innovation centers, schemes, advisory centers and other elements) will establish a basic structure leading to permanent sustainability of the Slovak Republic on the base of knowledge. Based on these assumptions, the results achieved in 2013 should be as follows:

- positive trend of innovation processes development in economy and social sphere,
- number of successfully realized projects,
- innovations will take a share of 25% in increase of the gross domestic product in mentioned year (at present the share on the gross domestic product is 8%),
- more than 50% of enterprises in industry and services, especially small and middle sized enterprises (SMEs), will have innovative character (according to the European Commission information only 13% of SMEs placed new products on the market, whereby 32% of actual products were innovated in years 2002 – 2004),
- better competitiveness especially of SMEs,
- more than 5% of ideas for enterprise innovations will have a resource in higher-education research, resort research and Slovak Academy of Sciences (at present the share of ideas for innovations from university and academic environment is less than 1%).

The business sector, especially through SMEs, is considered to be the innovations bearer in general. To perform this task, professionally prepared, educated and creative human sources are necessary. Therefore education and obtaining experience and knowledge related to applied research and new innovative methods realized in business sphere have to be the priority field of innovative strategy. To meet the increasing demands on knowledge employees, the professional preparation of research workers within their higher education has to be better connected with needs of knowledge national labour market and especially with requirements of SMEs (Innovation Strategy SR for years 2007-2013, 2013).

The Government of the Slovak Republic in the Manifesto for years 2012-2016 declares that, within its priorities, it will support the higher education, research, innovations with special view to natural and technical sciences and with relation to all-society needs and economic development as well as the mobility of students, higher-education teachers and research workers (Manifesto of the Government of the Slovak Republic for years 2012-2016, 2013).

Innovation in education is usually understood as something new, modern, more interesting, more stimulating what is introduced into educational process to increase its attractiveness for students, to achieve better study results and better self-assertion of graduates at the labour market. The innovations in educational process are the most frequently connected with:

- use of information – communication technologies as cross-sectional tool (modern e-learning technologies and information systems, internet schools and on-line courses, electronic educational materials and modern electronic interactive teaching aids),
- activating, participating methods of work with students, (e.g. project method),
- innovations of educational content (curricula on new subjects),

- use of less usual organizing forms (e.g. block education, specialized laboratories, virtual laboratories and experiments for distance),
- introduction of elements of verified innovation programs (e.g. integrated thematic education),
- management of education, knowledge management, learning organization,
- use of results of scientific-research activity of educational institution in educational process.

## 2. Innovation and internalization of education at the University of Zilina in Zilina

The University of Zilina in Zilina (UNIZA) is a public higher education institution of university character. In its faculties and institutions UNIZA provides education in all three degrees of higher education and in many educational activities within continuing education. The UNIZA has seven faculties, see Fig. 1:

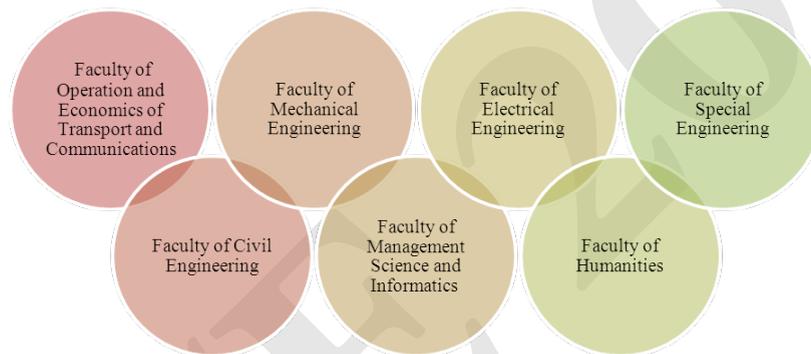


Fig. 1. Faculties of the University of Zilina in Zilina

The most important fields of the scientific-research activities are connected with profile of the university in the field of education and its results provide necessary preconditions for further education advance and improvement. They also contribute to form firm relations with social practice and enable the UNIZA to be a sought partner for home and foreign universities as well as other institutions and enterprises during solution of joint scientific-research and educational projects, participating in international programmes and academic mobility.

Development, innovation and precision of the study programmes offer and also creation of suitable structure of students' number in bachelor, engineering/master and doctoral study programmes are in accordance with the long-term intention of the university in the field of the higher education. The UNIZA proceeds from assumption that the tendency to specialization will deepen especially in the 2nd and 3rd degree of study, that the study offer in bachelor programmes will be balanced with interest and that engineering/master study programmes will be selective for applicants that will meet the more demanding requirements of this type of study. Likewise demanding selection will be precondition for study in doctoral study programmes and their development will

correspond with university orientation in scientific-research field (Long-term intention of the University of Zilina in Zilina, 2013).

Based on these facts, the UNIZA successfully implements also projects oriented on enhancing educational process within the European Social Fund in the Operation Programme Education. Within this program a lot of projects have been elaborated and implemented, e.g.:

- Flexible and attractive study at the University of Zilina for the needs of labour market and knowledge society 2010-2013.
- Development of quality culture at the University of Zilina on the base of the European standards for higher education 2011-2013.
- Innovation and internationalization of education – tools of quality enhancement of the University of Zilina in the European Education Area 2013-2015.

The above mentioned projects include all faculties of the UNIZA and support especially trend for development of joint study programmes of interdisciplinary character within the faculties. The important factor in development of education is also applying modern methods and forms of education and involving students also in out-of-school activities of the university. Through these joint projects the UNIZA tries to create an environment and other assumes especially for strengthening pedagogical activities oriented on motivation and support of independent work of students and work in teams, support of activities that lead to obtaining the skills and habits necessary for future professional life and especially for forming abilities necessary for permanent education, obtaining and classifying information and their creatively processing and application. Within evaluating and new formulating study programmes the UNIZA tries closely cooperate with representatives of the most frequent employers of the UNIZA graduates, scientific-research institutions and partners in abroad. The university will have a respect to opinions of current students and university graduates. The study programmes will be prepared in so way to be able to be realized in English language. Preparation of the UNIZA graduates in respective study programmes has to be concentrated on obtaining a good position at the labour market and trouble free assertion in practice. Likewise the results of scientific-research and art work (except basic research) have to be applicable and broadly usable in practice or in cultural and societal life. Therefore close connection with practice is condition of the university development.

### **3. Initiatives of the Crisis Management Department of the Faculty of Special Engineering in the field of innovation and enhancing educational process.**

Faculty of Special Engineering of University of Zilina in Zilina is technologically and managerially oriented faculty. It educates college-educated professionals for demand of public administration and business entities in field of crisis management with emphasis on protection of persons, economy and environment. Basic mission of faculty is to provide college education in accredited study programs of bachelor, master and doctoral studies, to expand knowledge by means of creative scientific research in field of crisis management, to provide lifelong learning related to its accredited study programs (Loveček, T. at all., 2012; Hudáková, M. - Veľas, A. 2011) :

- Crisis management.

- Security management.
- Rescue services.
- Transport in Crisis Situations.

Crisis Management Department's mission is to provide an academic education by the Civil Security study programme. Graduates are prepared to deal with the processes of risk assessment and emergency management in the public administration, municipalities, private sector and institutions dealing with living environment protection. Department of Crisis Management guarantees scientific education and organizational preparation of emergency management specialists educated through the Civil Security Programme. The Department provides the University education on 3 levels in compliance with Bologna process – Bc, Ing, PhD, and in accordance with Slovak law NR SR No.131/2002 about Universities and according further legal changes. The accreditation of 8.3.7. Civil Security study programme has been done recently in accordance with the law mentioned above.

Graduates are theoretically prepared for the professional life in the governmental sphere as well as in the private sector. The main sphere of the competence within the public sector is connected to the roles and tasks of risk and emergency management in governmental institutions, municipalities, and in the environmental institutions. Graduates have accurate knowledge on risk solution methods, they can provide risk analysis in various environment. They can deal with risk assessment and crisis elimination on management positions in public sphere or in (none)-industrial sector. There are several post-gradual courses provided for employees of Emergency management units of Ministry of Interior, Ministry of Defence, Ministry of Economy, Ministry of Transport, Posts and Telecommunication SR and for other governmental units and institutions dealing with emergency management. (Móricová, 2012; Sventeková at all. 2012; Crisis Management Department's mission, 2013)

Through its specific scope of activities Department of Crisis Management belongs to the smaller departments of the UNIZA and each year about 30-40 students successfully finish their full-time engineering study and 15-20 students finish their external engineering study. Similar number of graduates finishes also bachelor study.

**Department of Crisis Management of the Faculty of Special Engineering**, in accordance with long-term intention of the UNIZA, actively participates in activities focused on innovation and enhancing educational process. The aim is to provide education that will correspond with requirements of practice and current knowledge society. Pedagogical as well as research workers are part of teams participating in solution of university projects and actively work on specified tasks. Within these activities we can mention e.g. project *Flexible and attractive study at the University of Zilina for the needs of labour market and knowledge society* that included also preparation of new bachelor study programme Risk Management and preparation of accreditation documents of study programme *Civil Protection* in English language.

Within the activities of the Department of Crisis Management that are oriented on ascertaining the pedagogical process quality and prepared modification of existing study programmes, the department requested graduates who finished their study in years 2006 – 2010 to answer several questions aimed at:

- identification of strengths and weaknesses of pedagogical and scientific-research work,
- evaluation of graduates assertion,
- opinions on satisfaction/un-satisfaction with study (quality of study).

This survey was realized in year 2011 and for its needs anonymous questionnaire distributed through e-mail was prepared. 31% of total number of requested graduates (190) participated in this survey, from them 55% were women and 45% were men. 92% graduates were 25-30 years old.

From the total number of respondents, 73% were employed as assistants, specialized employees, and chiefs. 75% of graduates are satisfied with provided education and consider it to be qualitative. 43% of graduates use their knowledge in the practice. Because small numbers of graduates are employed in crisis management field it is apparent that they do not use their knowledge specifically oriented on crisis management but they use especially knowledge from general subjects what indicated also respondents' responses. Knowledge obtained within study of the subjects and fields - information technologies, logistics, management, economy, managerial statistics, foreign language, econometrics, marketing, crisis management, managerial psychology- are according to the graduates the most applied knowledge in their work. They would need further education in foreign languages, economy, management, marketing, managerial psychology, information technologies what results from various graduates professions. The majority of graduates (79 %) think that education realized by department should be more focused on practice, but 71 % of them said that students are lead to self-realization and 88 % graduates positively appreciate approach of pedagogues to students.

According to graduates, developing cooperation with practice, integration of lectures of professionals from practice to education, possibility to obtain certificates during study and many other activities focused on development of students' personalities, future crisis managers could contribute to enhancing the education and their subsequent assertion. With respect to very limited file extent, the results are not statistically important but they provide stimuli that can be used in the future (Móricová, V. – Klůčka, J., 2012).

Except this small survey, each year the Department of Crisis Management realizes a survey of students' satisfaction also in the form of anonymous questionnaire that is focused on ascertaining satisfaction with quality of education, organization of educational process, approach of teachers and study conditions. The students have also opportunity to express their stimuli for improvement of study organization.

At each faculty, evaluation of education quality is a part of the Report about faculty activities that is discussed at the collegium of dean and at the meeting of academic senate and once a year also at the meeting of the Scientific Board of the faculty.

In connection with these activities the Faculty of Special Engineering participates also in project Innovation and internationalization of education – tools of quality enhancement of the University of Zilina in the European Education Area.

Within preparing this project, focused on innovation and internationalization of education – tools of quality enhancement of the Zilina University in the European Education Area, two main objectives were defined (Švarcová, R, 2013):

### **1. Support of education quality at the University of Zilina through development of innovative forms, attractive study materials and rationalization of study programmes.**

The aim is proposal of conception of attractive study materials creation and elaboration of methodology for producing multimedia study materials as repeatedly usable objects, stored in digital library that will be used for creating study resources for on-line education. Introduction of new methods into study programmes (virtual laboratories) will be a part of conception. The activity includes also pilot verification of preparation and creation of new attractive study materials based on the uniform university system supporting their quality assurance and possibility of use by other departments of the UNIZA. For the purpose to achieve this objective, the faculties and departments of different orientation are selected so that the specifics could be identified and conditions for various needs of study programmes could be afforded. Within this activity new study programmes will be established and accreditation documentation of new study programmes for the 1<sup>st</sup>, 2<sup>nd</sup> and 3<sup>rd</sup> degree of higher education at selected faculties of the UNIZA. Primarily the analysis and comparison of existing study programmes with offer of the European universities will be elaborated. Modern content of study programmes in accordance with labour market needs and knowledge society will be proposed to improve the assertion of university graduates at the labour market in accordance with obtained qualification.

### **2. Increase of the University of Zilina participation in international cooperation through support of teachers and students mobility and introduction of joint study programmes.**

The aim of this activity is innovation of international teachers and students mobility process based on the identification of the weaknesses in actual teachers and students mobility, elaboration of internal legislation, recommendations and tools for mobility support and their increasing, enhancing teachers and students competences for effective participation in mobility, development of cooperation in common study programmes at international level, development of intentions dealing with preparation of new and adaptation of existing study programmes in cooperation with prestigious foreign universities and development of joint study programme.

In this project the Department of Crisis Management of the Faculty of Special Engineering is also dealing with preparation of new engineering study programme *Risk management* and accreditation documentation of bachelor and engineering study programme *Security and protection of critical infrastructure*. Except the Faculty of Special Engineering also the Faculty of Electrical Engineering, Faculty of Management Science and Informatics, Faculty of Humanities and Faculty of Civil Engineering are participating in implementation of this project within their professional orientation.

### **4. Conclusion**

One of the basic tools of country competitiveness increasing is orientation on quality human sources development. This is dependent on effective and enhanced educational process especially in higher schools that provide scientific knowledge and guarantee education that ensures high degree of knowledge, skills and abilities of the graduates to be able to find their job in rapidly changing labour market requirements. The only way for the higher schools is to adapt structure, organization, content and method of study to new conditions.

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# Criteria for second foreign language preference

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## Abstract

The current study aims to find out what language other than English stands out as a second foreign language in a small scale of study at the faculty of education at Sakarya University. English is a widely spoken and accepted foreign language in Turkey. Families who send their children to state schools wish their children to study English and the case is not different for the families who send their children to private schools. In private schools, the language issue is somehow different because the students in these schools start learning a second foreign language at very early ages usually in well equipped classes and with high qualified teachers. The languages taught in these schools differ according to the school policy. German as a second foreign language seems to be the most popular language taught in these schools. French was the dominant language in Turkey in the 19th century. Language preferences inevitably change in accordance with the global changes. It is a clear fact that English is becoming prominent all over the world and the other languages can have only the second or third place in the order of most used foreign languages in many countries. The USA and The UK spend great effort and budget to spread English worldwide and try to keep English as a dominant foreign language in many countries. Today in many countries like Turkey, English is the dominant foreign language and it is regarded as lingua franca.

**Key words:** second foreign language, dominant, private schools, prominent.

## 1. Introduction

Throughout the history, some languages as French, Arabic and Persian became very popular in Turkey from time to time. For instance, from the 15th century to the early 20th century, Persian was popular. However, as scholars point out, the use of this language was limited to the elite. In other words, Persian had never diffused among masses. Arabic was the language of science and education in Ottoman Empire until the period of Reorganisation. With the advent of Reorganisation period, besides Arabic and Persian, French was also started to be taught in Enderun schools. The translation office founded in İstanbul was turned into Language School (Lisan Mektebi) in 1864. In addition to French, Romanian, Bulgarian, German, English and Russian were taught in Lisan Mektebi where foreign language teachers were also educated. With the reformation in Madrasas in 1914, foreign languages were integrated in the Madrasa curricula (Aslan, 2010). In the 19th century, French became popular and yet its use remained limited to intellectual and governing elite. (Yucel, 1982, 21)

English, on the other hand, enjoys a great popularity not only among Turkish elite, but also among ordinary Turks, especially among the Turkish youth, today. Even though there is no statistical data showing what percentage of Turkish people in general or the Turkish youth in specific use English, it is obvious that one can

see in the Turkish press, media and television that English has been increasingly used in Turkey. Reasons for the increasing popularity of English in Turkey are closely related to the integration of Turkey into globalization process. Beginning from the 1980s, Turkey has increasingly become influenced by globalization. (as cited in Acar, 2004, 2)

Turkey's economic integration with global economy also contributes to the increase in the use of English in Turkey. Employment pages in Turkish daily newspapers, such as *Hurriyet*, *Milliyet* and *Sabah* show that many companies with international connections require their employers to have knowledge of foreign languages (as cited in Acar, 2004, p2). Among these, the most required language appears to be English. German and French, and Russian are other required languages by the business sector.

In addition to the influence of global developments, such as internet, global economy, tourism, western movies and the emergence of multi-channels, educational policies of Turkish government are major factors in the rising popularity of English in Turkey.

In the past, the first school with foreign language education, Robert College, was opened in 1863 and Uskudar American College followed it in 1871. There was also Galatasaray Imperial Lycee that was opened in September 1869. The education was completely in French in this school (Shaw, 1977, p109). Darüşşafaka, which was the first non-governmental organization started education in 1873. It was nominated as a better school than many others in terms of teaching French and science courses (Demircan, 1988). The mission of Darüşşafaka Association was providing "equity in education." Bright and talented children who have lost one of their parents and who have limited financial resources become eligible to study at Darüşşafaka after passing a competitive exam when they are ten years old, and Darüşşafaka provides them access to quality education at international standards (retrieved from [http://en.wikipedia.org/wiki/Darüşşafaka\\_Association](http://en.wikipedia.org/wiki/Darüşşafaka_Association) on May 15th,2012).

In the same period, Italians, British and Germans founded their own schools too. After the end of the Ottoman Empire and the foundation of the Republic of Turkey in 1923, the new Turkish government declared a new law of education on March 3rd 1924. According to this law, Arabic and Persian were replaced by French, English and German as foreign languages in school programs. Until 1956, Galatasaray Lycee was the only school that gave education in a foreign language. In 1974-75, the number of schools giving education in foreign language, which are called Anatolian high school, was 12 and it reached to 23 in 1982-83 (as cited in Acar, 2004, p2). After this date, the number of Anatolian high school dramatically increased. In a world of competition, these schools felt obligated to raise their standards up to private schools and they added another foreign language to their curricula.

## **2. Methodology:**

### **2.1 Participants**

This study was conducted with 361 freshmen (212 female and 149 male) from different departments at the faculty of education at Sakarya University in 2009-2010 academic year. Convenience sampling method was used in this study.

### **2.2 Procedure**

A questionnaire comprising 20 items was prepared for this study and participants were required to put them in order from the most to the least important item which showed the reasons for their language preferences

(appendix). In addition to the questionnaire, a structured interview consisting of 5 questions was prepared by the researcher. The participants were given the questionnaire in order to collect data. After the data were collected by the researcher, it was saved on the computer and analyzed with Statistical Package for the Social Sciences (SPSS 16) and 17 structured interview questionnaires were randomly selected from 361 questionnaires and the participants' points of view were reflected to the study. The questionnaire and the interview responses were translated into English by the researcher.

The item analysis for each language was done only in terms of 3 most important items such as item 1 is the most important, item 2 is the 2<sup>nd</sup> most important and item 3 is the 3<sup>rd</sup> most important item in tables. The questionnaires were given numbers and participants were labelled with the same numbers given to the questionnaires. Thus, participant (21) means the questionnaire numbered 21. The responses based on mainly participants' views are listed as;

The participant (21) states that s/he does not find language planning and policies (LPP) inadequate and s/he thinks that education in Anatolian high schools and private schools are also inadequate. S/he states that the level of learning a foreign language depends on intelligence. S/he also argues for that language teachers are quite qualified but they cannot teach efficiently.

The participant (26) states that language education in schools is not adequate and s/he emphasizes that distant languages can be learned harder than the similar languages adding that teachers are equipped with sufficient language knowledge to teach a foreign language.

The participant (28) states that LPP in our country is wrong. It gives the impression that foreign language education is given because of obligation or formality and it is not taught for practical purposes. S/he also pinpoints that graduates of private schools are not capable of using the foreign language since the language education level is low in these schools.

The participant (33) states that students learn grammar well but they cannot communicate well. S/he also explains that speaking skill is not given enough importance and s/he highlights that classroom atmosphere, vocabulary knowledge, L1 level are the factors affecting language learning. S/he suggests that language teachers should consider language learning important and use correct methods. S/he claims that many teachers use wrong techniques.

The participant (34) states that people in Turkey have had English education for years but they cannot speak English properly. S/he points out that English is taught better in private schools and underlines the fact that learning English is somehow based on a person's linguistic intelligence. S/he thinks that a teacher can be considered to be qualified if s/he can teach what s/he knows.

The participant (36) states that the language education in primary and secondary schools is rather inadequate and inclined to rote learning and s/he claims that s/he could not benefit from this kind of education. S/he points out that language education in private schools are better than Anatolian high schools. As for the factors, s/he states that environment, friendship, school and level of English in primary school affect language learning. S/he says that although teachers are qualified in their field, they do not reflect this in their teaching. Thus, the number of the students who can speak English is not more than only a few.

The participant (37) states that s/he does not find language policies adequate adding that enough importance is not given to teaching a foreign language and s/he says that some private schools are really good at teaching a foreign language. Anatolian high schools used to give high standard foreign language education but after prep classes were abrogated the situation turned to worse in language education. S/he says that the most important factor is the academic success of the teachers. As for language teachers, they are successful at Anatolian high schools and universities and they can be more successful if they stay abroad.

The participant (39) states that language teaching is based on rote learning in schools but it should be based on practice. S/he asserts that private schools are better than Anatolian high schools due to the financial conditions. S/he also suggests that learners do not have a chance of communication in L2 and they lose their motivation because what they learn cannot be used in practice. S/he also adds that there are many language teachers who have high competence and teach efficiently.

The participant (41) states that language policies do not help students to learn a foreign language because students prefer having a passing grade instead of learning a foreign language. S/he adds that students are loaded with useless grammatical points which are no use in practice. S/he underlines that education at Anatolian high schools are adequate but it is not as adequate as at private schools. Factors affecting language learning can be listed as teacher's method, teacher's attitude towards to the students, how the students consider language and lesson. S/he claims that language teachers do not spend enough effort to improve themselves and suggests that language teachers should stay in the country where the language they teach is spoken.

The participant (44) points out that LPP in our country is not logical because authorities sometimes make explanations about the foreign language education whether it should be compulsory or elective. S/he adds that full language attainment is rather hard as long as learning is confined in the classroom because continuity is an essential factor in language learning. S/he claims that private schools provide better language education for their students than other schools. S/he suggests that teachers should have sufficient knowledge and motivate students and s/he also finds language teachers qualified at Anatolian high schools.

The participant (46) states that Turkey considers foreign language education important. The number of language teaching hours is high at Anatolian high schools and private schools and s/he suggests that foreign language teachers should have competence to teach the language and create an atmosphere students should enjoy learning. S/he points out that foreign language teachers our country high standards in teaching the language.

The participant (49) states that language policies in our country do not serve language teaching at all. Although students know grammar, they cannot learn how to communicate because of insufficient course hours at state schools. As for affecting factors, distance of the studied language, structure of the language and features of language teacher are important factors. S/he criticizes teachers explaining that teachers cannot teach whatever s/he knows.

The participant (81) has added one item to the item list saying that the selected language helps a person develop intellectually and s/he criticizes teaching method stating that it is mainly based on grammar teaching. S/he also underlines the fact that private schools and Anatolian high schools give better language education compared to other state schools. S/he suggest that listening to music, watching subtitled movies and people who speak the language affect language learning positively. As for teachers, they follow procedures and do not have much to do about this situation but some teachers make use of this and do not do anything to improve themselves.

The participant (70) states that English is taught as a foreign language in terms of foreign language policy. S/he thinks that teaching English as a foreign language is normal because in many parts of the world English is a universal language. S/he claims that It must be compulsory. In addition, adequate levels of English can be taught in different foreign languages. I think language education is not sufficient. It is rote learning. Only students who can get good grades are targeted. Even though I graduated from Anatolian high school I do not believe an elaborate foreign language education is being given there. S/he pinpoints that teacher's attitudes and techniques affect language learning in a class. Willingness of students and student awareness are also very important. As for teachers, I think teachers are qualified in terms of pedagogical and language skills.

The participant (57) suggests that necessary measures should be taken because foreign language education in private schools and Anatolian high schools is extremely inadequate. English lessons in Anatolian

high schools are reduced to ten hours, preparatory year is abrogated which causes the problem to get bigger and bigger. Students are trying to learn English rule by rule and this does not help them in daily life or in business to talk to a foreigner. Factors affecting language learning can be listed as a teacher factor, the interest in the country of the language spoken. As for teachers, pedagogical and language competence of foreign language teachers in our country are high but many students cannot make use of this situation. This is due to the rote learning.

The participant (86) states that education policy in general is poor adding that a language should be learned by practicing. S/he claims that the foreign language education is mainly based on theory. S/he claims that language is learned according to today's conditions and needs. S/he also suggests that foreign language education should be spread to the four years and should not be limited with one year in schools. S/he thinks that teachers are generally qualified.

The participant (53) states that English and German are taught since they are the most important languages but there is a demand for teachers of English in schools. The government should invest a little more on English teachers and provide good conditions for them. English and German are taught in Anatolian high schools. Students at Anatolian High Schools speak this language better than other students at state schools. s/he also states that s/he cannot judge teachers' qualifications.

### 3. Findings and Interpretations

**Table 1: Percentages of selected languages**

		Frequency	Percent
Valid	German	86	23,8
	Arabic	48	13,3
	Chinese	27	7,5
	French	62	17,2
	Spanish	35	9,7
	Italian	24	6,6
	Japanese	49	13,6
	Russian	24	6,6
	Other	6	1,7
	Total	361	100,0

When we look at table 1 and its bar chart, we can see that, German is the most preferred second foreign language selected by 86 participants with 23%. French is the 2<sup>nd</sup> most preferred second foreign language selected by 62 participants with 17%. Japanese is the 3<sup>rd</sup> most preferred second foreign language selected by 49 participants with 13.6%. Arabic is the 4<sup>th</sup> most preferred second foreign language selected by 48 participants with 13,3%. Spanish is the 5<sup>th</sup> most preferred second foreign language selected by 37 participants with 9.7%. Chinese is the 6<sup>th</sup> most preferred second foreign language selected by 27 participants with 7.5%. Italian and

Russian are the 7<sup>th</sup> and 8<sup>th</sup> most preferred second foreign language selected by 24 participants with 6.6%. 6 participants preferred Korean, Norwegian, Portuguese, Greek, Bulgarian and Flemish as a second foreign language to learn.

**Table 2: The items that indicate why participants learn a foreign language.**

**(1 most important, 20 least important)**

Items	N	Minimum	Maximum	Mean	Std. Deviation
s1	361	1,00	20,00	8,37	6,05
s2	361	1,00	20,00	10,57	5,33
s3	361	1,00	20,00	10,21	5,24
s4	361	1,00	20,00	10,73	5,54
s5	361	1,00	20,00	9,25	5,40
s6	361	1,00	20,00	9,47	4,91
s7	361	1,00	20,00	11,90	5,68
s8	361	1,00	20,00	15,63	6,72
s9	361	1,00	20,00	6,56	4,71
s10	361	1,00	20,00	10,27	5,70
s11	361	1,00	20,00	12,33	5,17
s12	361	1,00	20,00	9,76	4,87
s13	361	1,00	20,00	9,09	5,68
s14	361	1,00	20,00	9,73	4,72
s15	361	1,00	20,00	14,60	4,81
s16	361	1,00	20,00	13,49	4,47
s17	361	1,00	20,00	10,20	5,35
s18	361	1,00	20,00	7,86	5,15
s19	361	1,00	20,00	9,03	5,92
s20	361	1,00	20,00	10,94	5,20

Table 2 shows the most preferred items from the most to the least in languages preferred. Item 9 (*I would like to communicate with people who speak this language*) is the most preferred item as a mean of all languages (Mean=6.56). Item 18 (*I think this language will help me to gain prestige*) is the 2<sup>nd</sup> most preferred item as a mean of all languages (Mean=7.86). Item 1 (*I need this language to promote myself academically*) is the 3<sup>rd</sup> most preferred item as a mean of all languages (Mean=8.37).

As for the least preferred items according to participants, item 8 (*I find this language closer to me in the sense religion*) is the least preferred item as a mean of all languages (Mean=15.63). Item 15 (*I think this language will help me better understand my mother tongue*) is the 2<sup>nd</sup> least preferred item as a mean of all

languages (Mean=14.60). Item 16 (*I think I could express my feelings better in this language*) is the 3<sup>rd</sup> least preferred item as a mean of all languages (Mean=13.49).

**Table 3: The distribution of languages according to the gender**

Gender * Language Crosstabulation												
			Language									
			German	Arabic	Chinese	French	Spanish	Italian	Japanese	Russian	Other	Total
Gender	1,00	Count	44	26	11	48	16	19	38	6	4	212
		% within Gender	20,8%	12,3%	5,2%	22,6%	7,5%	9,0%	17,9%	2,8%	1,9%	100,0%
		% within Language	51,2%	54,2%	40,7%	77,4%	45,7%	79,2%	77,6%	25,0%	66,7%	58,7%
		% of Total	12,2%	7,2%	3,0%	13,3%	4,4%	5,3%	10,5%	1,7%	1,1%	58,7%
	2,00	Count	42	22	16	14	19	5	11	18	2	149
		% within Gender	28,2%	14,8%	10,7%	9,4%	12,8%	3,4%	7,4%	12,1%	1,3%	100,0%
		% within Language	48,8%	45,8%	59,3%	22,6%	54,3%	20,8%	22,4%	75,0%	33,3%	41,3%
		% of Total	11,6%	6,1%	4,4%	3,9%	5,3%	1,4%	3,0%	5,0%	,6%	41,3%
	Total	Count	86	48	27	62	35	24	49	24	6	361
		% within Gender	23,8%	13,3%	7,5%	17,2%	9,7%	6,6%	13,6%	6,6%	1,7%	100,0%
		% within Language	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%
		% of Total	23,8%	13,3%	7,5%	17,2%	9,7%	6,6%	13,6%	6,6%	1,7%	100,0%

It can be easily observed from the table 3 that language preferences in terms of gender show significant difference. While the female participants most prefer French (22,6%) and least prefer Russian (2,8%), male participants most prefer German (28,2%) and least prefer Italian (3,4%). Calculations were done according to  $p < 0.01$ .

**Table 4. Item analysis according to German. 1= the most important 2=the 2<sup>nd</sup> most important 3= the 3<sup>rd</sup> most important**

Language		N	Minimum	Maximum	Mean	Std. Deviation
German	s1	86	1,00	19,00	5,9186	5,29865
	s2	86	1,00	20,00	11,9302	4,91287
	s3	86	1,00	20,00	9,7326	4,73143
	s4	86	1,00	20,00	12,7907	4,81203
	s5	86	1,00	20,00	11,4535	5,04954
	s6	86	1,00	20,00	9,6744	5,01865
	s7	86	1,00	20,00	11,3023	5,40821
	s8	86	1,00	20,00	17,2558	5,09714
	s9	86	1,00	20,00	7,0814	4,74085
	s10	86	1,00	20,00	12,1512	5,54451
	s11	86	2,00	20,00	12,8837	5,13218
	s12	86	2,00	20,00	10,3140	4,94740
	s13	86	1,00	18,00	6,8140	5,20523
	s14	86	2,00	20,00	9,8488	5,13470
	s15	86	1,00	20,00	14,2791	4,92210
	s16	86	2,00	20,00	13,7093	4,21724
	s17	86	1,00	20,00	8,6977	4,88953
	s18	86	1,00	20,00	7,2093	5,23139
	s19	86	1,00	20,00	7,5581	5,40066
	s20	86	1,00	20,00	9,3953	5,28322

Table 4 reveals the fact that German was preferred by 86 participants for the purpose of the item 1 (*I need this language to promote myself academically* Mean=5,9186), the item 13 (*I think this is a widely spoken language* Mean=6,814) and the item 9 (*I would like to communicate with people who speak this language* Mean=7,0814).

**Table 5. Item analysis according to Arabic 1= the most important 2=the 2<sup>nd</sup> most important 3= the 3<sup>rd</sup> most important**

Language		N	Minimum	Maximum	Mean	Std. Deviation
Arabic	s1	48	1,00	20,00	11,5625	5,72752
	s2	48	1,00	20,00	7,7917	5,02741
	s3	48	3,00	20,00	11,2083	5,07375
	s4	48	1,00	20,00	9,9792	6,07222
	s5	48	1,00	19,00	7,6042	4,90219
	s6	48	4,00	18,00	9,8125	4,24092
	s7	48	2,00	20,00	14,5208	4,61722
	s8	48	1,00	14,00	2,0000	2,33384
	s9	48	1,00	17,00	6,1875	4,63408
	s10	48	1,00	20,00	9,1667	5,26463
	s11	48	3,00	20,00	15,0208	4,71976
	s12	48	1,00	20,00	8,8542	5,47719
	s13	48	4,00	20,00	12,4583	4,58006
	s14	48	1,00	17,00	8,7292	4,87171
	s15	48	1,00	20,00	10,9167	5,39043
	s16	48	1,00	20,00	10,3750	5,48741
	s17	48	2,00	20,00	13,3333	4,71455
	s18	48	3,00	19,00	12,3750	4,53650
	s19	48	4,00	20,00	15,2917	4,69929
	s20	48	3,00	20,00	12,8125	4,26593

Table 5 reveals that Arabic was preferred by 48 participants for the purpose of the item 8 (*I find this language closer to me in the sense of religion* Mean=2,0000), the item 9 (*I would like to communicate with people who speak this language* Mean=6,1875) and the item 5 (*I am interested in the culture of the country where this language is spoken* Mean=7,6042).

**Table 6. Item analysis according to Chinese 1= the most important 2=the 2<sup>nd</sup> most important 3= the 3<sup>rd</sup> most important**

Language		N	Minimum	Maximum	Mean	Std. Deviation
Chinese	s1	27	1,00	20,00	8,1111	6,09750
	s2	27	1,00	20,00	12,3704	5,37908
	s3	27	1,00	18,00	7,1481	4,07340
	s4	27	2,00	20,00	10,8519	5,09678
	s5	27	2,00	19,00	10,0370	4,79969
	s6	27	1,00	16,00	7,5556	4,05096
	s7	27	1,00	19,00	7,8519	6,16257
	s8	27	1,00	20,00	16,6296	5,21940
	s9	27	2,00	19,00	8,4815	5,22840
	s10	27	1,00	20,00	12,5556	5,44436
	s11	27	1,00	20,00	13,9259	4,98402
	s12	27	2,00	19,00	11,2963	4,37488
	s13	27	1,00	19,00	7,2963	5,75002
	s14	27	3,00	18,00	10,7407	3,62250
	s15	27	4,00	20,00	15,4074	4,63481
	s16	27	4,00	20,00	14,7407	4,10996
	s17	27	2,00	17,00	9,4074	4,74146
	s18	27	1,00	20,00	7,2593	5,00456
	s19	27	1,00	19,00	5,6296	5,05469
	s20	27	2,00	20,00	12,7037	4,90537

Table 6 reveals that Chinese was preferred by 27 participants for the purpose of the item 19 (*I think this language will help me financially in the future* Mean=5,6296), the item 3 (*I would like to learn about the political relationship between my country and the country where this language is spoken* Mean=7,1481) and the item 18 (*I think this language will help me to gain prestige* Mean=7,2593).

**Table 7. Item analysis according to French 1= the most important 2=the 2<sup>nd</sup> most important 3= the 3<sup>rd</sup> most important**

Language		N	Minimum	Maximum	Mean	Std. Deviation
French	s1	62	1,00	19,00	7,8226	5,60306
	s2	62	1,00	20,00	9,5968	5,38200
	s3	62	1,00	19,00	11,3387	5,40171
	s4	62	1,00	20,00	11,2419	5,41003
	s5	62	1,00	19,00	9,8065	5,33728
	s6	62	1,00	19,00	10,5161	5,33391
	s7	62	3,00	20,00	14,6129	4,15422
	s8	62	1,00	20,00	18,9516	2,94444
	s9	62	1,00	19,00	6,4194	4,65726
	s10	62	1,00	20,00	7,3065	5,75907
	s11	62	2,00	20,00	11,1129	5,18227
	s12	62	2,00	19,00	8,0806	4,15005
	s13	62	1,00	19,00	8,6290	5,09977
	s14	62	1,00	18,00	9,6935	4,92431
	s15	62	6,00	20,00	15,4516	3,94917
	s16	62	4,00	19,00	13,2742	4,12577
	s17	62	1,00	20,00	9,6935	5,43995
	s18	62	1,00	18,00	6,9355	4,76968
	s19	62	1,00	20,00	9,4839	5,53007
	s20	62	2,00	18,00	10,0323	4,93886

Table 7 reveals that French was preferred by 62 participants for the purpose of the item 9 (*I would like to communicate with people who speak this language* Mean=6,4194), the item 18 (*I think this language will help me to gain prestige* Mean=6,9355) and the item 10 (*I think that the pronunciation of this language sounds beautiful* Mean=7,3065)

**Table 8. Item analysis according to Spanish 1= the most important 2=the 2<sup>nd</sup> most important 3= the 3<sup>rd</sup> most important**

Language		N	Minimum	Maximum	Mean	Std. Deviation
Spanish	s1	35	1,00	20,00	10,8286	5,95318
	s2	35	1,00	20,00	9,7429	5,63781
	s3	35	3,00	20,00	12,5429	5,16972
	s4	35	1,00	20,00	9,1714	5,96305
	s5	35	1,00	19,00	7,9429	5,46078
	s6	35	2,00	20,00	11,7429	5,17541
	s7	35	1,00	20,00	13,0571	5,10446
	s8	35	3,00	20,00	16,4000	5,43518
	s9	35	1,00	19,00	7,4286	5,39218
	s10	35	1,00	18,00	8,8000	5,43301
	s11	35	2,00	20,00	9,9429	5,16745
	s12	35	1,00	19,00	10,3714	5,30308
	s13	35	1,00	18,00	6,6286	5,43456
	s14	35	1,00	19,00	9,8286	4,79268
	s15	35	1,00	20,00	14,6571	5,42295
	s16	35	7,00	20,00	13,8857	3,84074
	s17	35	2,00	20,00	8,2571	5,54841
	s18	35	1,00	20,00	8,2000	4,98704
	s19	35	3,00	19,00	10,2571	4,96069
	s20	35	1,00	20,00	10,3143	5,05715

Table 8 reveals that Spanish was preferred by 35 participants for the purpose of the item 13 (*I think this is a widely spoken language Mean=6,6286*), the item 9 (*I would like to communicate with people who speak this language Mean=7,4286*) and the item 5 (*I am interested in the culture of the country where this language is spoken Mean= 7,9429*)

**Table 9. Item analysis according to Italian 1= the most important 2=the 2<sup>nd</sup> most important 3= the 3<sup>rd</sup> most important**

Language		N	Minimum	Maximum	Mean	Std. Deviation
Italian	s1	24	1,00	20,00	8,2917	6,19593
	s2	24	2,00	20,00	9,2083	5,21686
	s3	24	3,00	20,00	11,1250	5,16100
	s4	24	1,00	18,00	8,1250	5,11870
	s5	24	1,00	19,00	6,0833	5,46862
	s6	24	2,00	19,00	9,0000	4,92553
	s7	24	4,00	20,00	13,5833	4,51005
	s8	24	11,00	20,00	18,5417	2,55341
	s9	24	1,00	13,00	4,8750	3,79144
	s10	24	1,00	19,00	8,8750	6,00226
	s11	24	2,00	19,00	9,7500	4,60859
	s12	24	1,00	19,00	9,7917	5,32410
	s13	24	3,00	20,00	11,1667	4,88713
	s14	24	1,00	19,00	9,5833	5,18289
	s15	24	4,00	20,00	15,4167	3,61057
	s16	24	1,00	20,00	13,0833	4,86261
	s17	24	1,00	20,00	11,4583	5,25009
	s18	24	2,00	18,00	8,2500	5,11817
	s19	24	5,00	20,00	12,2917	4,79564
	s20	24	1,00	19,00	11,5000	6,00000

Table 9 reveals that Italian was preferred by 24 participants for the purpose of the item 9 (*I would like to communicate with people who speak this language* Mean= 4,8750), the item 5 (*I am interested in the culture of the country where this language is spoken* Mean=6,0833) and the item 4 (*I find the geography interesting in this country where this language is spoken* Mean=8,1250).

**Table 10. Item analysis according to Japanese 1= the most important 2=the 2<sup>nd</sup> most important 3= the 3<sup>rd</sup> most important**

Language		N	Minimum	Maximum	Mean	Std. Deviation
Japanese	s1	49	1,00	20,00	8,1633	6,43022
	s2	49	2,00	20,00	12,2041	4,63222
	s3	49	1,00	20,00	9,2857	5,39290
	s4	49	1,00	20,00	9,7959	5,00408
	s5	49	1,00	19,00	8,2857	5,36190
	s6	49	2,00	17,00	8,2449	4,21075
	s7	49	1,00	20,00	8,5714	6,05530
	s8	49	7,00	20,00	17,3469	3,79995
	s9	49	1,00	18,00	5,6327	4,03471
	s10	49	1,00	20,00	11,9388	5,10069
	s11	49	1,00	20,00	12,2857	4,94975
	s12	49	1,00	18,00	9,5510	4,33042
	s13	49	1,00	20,00	11,9796	5,63652
	s14	49	3,00	20,00	9,7347	4,28065
	s15	49	3,00	20,00	16,1633	3,67620
	s16	49	5,00	20,00	15,1429	3,99479
	s17	49	2,00	19,00	11,5510	4,85224
	s18	49	1,00	14,00	6,1224	4,15147
	s19	49	1,00	19,00	5,9592	5,09067
	s20	49	2,00	20,00	12,0408	5,28346

Table 10 reveals that Japanese was preferred by 49 participants for the purpose of the item 9 (*I would like to communicate with people who speak this language* Mean=5,6327), the item 19 (*I think this language will help me financially in the future.* Mean=5,9592) and the item 18 (*I think this language will help me to gain prestige* Mean= 6,1224)

**Table 11. Item analysis according to Russian. 1= the most important 2=the 2<sup>nd</sup> most important 3= the 3<sup>rd</sup> most important**

Language		N	Minimum	Maximum	Mean	Std. Deviation
Russian	s1	24	3,00	19,00	9,2917	5,68353
	s2	24	1,00	20,00	11,1250	5,53497
	s3	24	1,00	18,00	7,7500	5,46332
	s4	24	1,00	20,00	10,2500	6,31251
	s5	24	1,00	18,00	9,4583	5,26662
	s6	24	1,00	16,00	7,7917	4,91651
	s7	24	1,00	19,00	9,2083	5,47706
	s8	24	11,00	20,00	18,9167	2,56933
	s9	24	1,00	18,00	6,5000	5,13301
	s10	24	4,00	20,00	12,0000	4,32385
	s11	24	4,00	19,00	12,9167	4,30285
	s12	24	2,00	19,00	11,0833	4,42244
	s13	24	1,00	19,00	9,6667	5,78353
	s14	24	2,00	18,00	10,1250	4,09997
	s15	24	3,00	20,00	15,0000	4,58732
	s16	24	8,00	19,00	14,2083	3,07838
	s17	24	2,00	20,00	10,3333	6,24616
	s18	24	1,00	19,00	6,8333	4,89602
	s19	24	1,00	16,00	5,7500	4,72965
	s20	24	3,00	19,00	11,7917	5,29133

Table 11 reveals that Russian was preferred by 24 participants for the purpose of the item 19 (*I think this language will help me financially in the future. Mean=5,7500*), the item 9 (*I would like to communicate with people who speak this language Mean=6,5000*) and the item 18 (*I think this language will help me to gain prestige. Mean=6,8333*).

**Table 12. Item analysis according to other languages 1= the most important 2=the 2<sup>nd</sup> most important 3= the 3<sup>rd</sup> most important**

Language	N	Minimum	Maximum	Mean	Std. Deviation	
Other	s1	6	1,00	19,00	8,8333	7,60044
	s2	6	1,00	17,00	9,6667	5,27889
	s3	6	2,00	16,00	11,3333	5,20256
	s4	6	1,00	19,00	10,5000	7,14843
	s5	6	2,00	18,00	9,1667	6,27429
	s6	6	3,00	16,00	7,0000	4,81664
	s7	6	4,00	18,00	14,0000	5,40370
	s8	6	17,00	20,00	19,1667	1,32916
	s9	6	1,00	7,00	4,1667	2,22860
	s10	6	5,00	9,00	6,3333	1,36626
	s11	6	3,00	18,00	10,5000	5,43139
	s12	6	4,00	20,00	12,5000	5,16720
	s13	6	1,00	16,00	8,0000	6,35610
	s14	6	7,00	19,00	10,1667	4,66548
	s15	6	17,00	20,00	18,3333	1,21106
	s16	6	8,00	19,00	14,6667	3,82971
	s17	6	2,00	16,00	10,3333	5,95539
	s18	6	3,00	14,00	8,0000	4,73286
	s19	6	4,00	12,00	8,8333	2,78687
	s20	6	3,00	14,00	8,5000	3,93700

6 participants preferred Korean, Norwegian, Flemish, Bulgarian, Greek and Portuguese. Table 12 show that they preferred these languages for the for the purpose of item 9 (*I would like to communicate with people who speak this language* Mean=4,1667) item 10 (*I think that the pronunciation of this language sounds beautiful* Mean=6,3333) item 6 (*By learning this language I can appreciate this country's points of view on my own country in their language* Mean=7,0000)

#### **Conclusion:**

After analyzing interview responses, we can conclude that the participants in this study criticize language planning and policies and find them inadequate. They find foreign language education in Anatolian high schools poor because of lack of motivation, lack of equipment and teacher quality. They think that teachers use wrong techniques and base their teaching only on grammar. They are also criticized to lead their students to the rote learning

They also point out that English is taught better in private schools and suggest that everyone should have the right to choose a language to learn and teachers should use the correct accent.

They also pinpoint that students are not willing to learn and they lack of motivation. Thus, it is impossible to teach a foreign language to someone that is not ready to learn.

As a final point of the research, it can be concluded that findings from this small scale study reflect the current situation in the second foreign language education and may be used as a basis of further researches.

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**Appendix:**

**Languages:**

1. German                      2. Arabic                      3. Chinese                      4. French                      5. Spanish  
 6. Italian                      7. Japanese                      8. Russian                      9. Other..... (Please write only 1 language.)

Using the table below, choose your reasons in order of importance:

1. most important.....20. least important

I would like to learn ..... because;

	I need this language to promote myself academically.
	I am curious about the literature of the country where this language is spoken.
	I would like to learn about the political relationship between my country and the country where this language is spoken.
	I find the geography interesting in this country where this language is spoken
	I am interested in the culture of the country where this language is spoken
	By learning this language I can appreciate this country's points of view on my own country in their language
	I would like to do business with the countries where this language is spoken.
	I find this language closer to me in the sense religion.
	I would like to communicate with people who speak this language.
	I think that the pronunciation of this language sounds beautiful.
	I would like to understand and sing the songs in this language.
	I would like to follow publications in this language.
	I think this is a widely spoken language .
	I believe this language will increase my confidence.
	I think this language will help me better understand my mother tongue.
	I think I could express my feelings better in this language
	I think this language is popular.
	I think this language will help me to gain prestige.
	I think this language will help me financially in the future.
	I think this language will contribute to my learning another language.

4<sup>th</sup> International Conference on New Horizons in Education

# Cultural differences of international students in Turkey and problems they experience

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## Abstract

The number of students who come to Turkey for the purpose of education from different countries and different cultures is increasing. Often these students come from the countries in Balkan, Middle Eastern, Africa and Turkish Republics. These students experience various problems in adapting Turkish culture as a new way of life and this has negative impact on the educational success of the international students in Turkey.

In this paper, adjustment problems experienced by undergraduate international students in Turkey and the application of social work to solve these problems will be discussed.

*Keywords:* International students, adjustment problems, social work applications.

## 1. General information about the students who come to Turkey for Bachelor's Degree

Students, worldwide, who want to have higher education usually, choose USA, Canada, Australia and European countries. The leading causes of these countries to be chosen are better condition of the education level when compared to student's homeland, cultural diversity, and wide range of opportunities for students. In addition to this, according to a report of Roslyn Kunin and Associates, Inc. (2009), it is known that students who go abroad for education contribute to the economy (Ozer, 2012). In this way, both the students and the countries that give education have mutual advantages.

When the international student move is investigated for Turkey, the rise in the number of students to be registered is observed. For example, according to 2009 data, as the number of students to come to Turkey for education was 2713, in 2010 it became 7273. (Ozoğlu & at all, 2012) It is seen that Students who come to Turkey for education purpose are usually from Africa, Middle East, Turkic Countries, and Balkan Countries. One of the reasons for these students to choose Turkey is the "Islam Phobia" which was scattered around the west countries after 9/11 attacks in USA that led to a restraint on students' acceptance to west countries. Another reason can be shown as the cultural and language root which dates back to Ottoman Empire era. On the other hand, rise in the education opportunities in Turkey caused to rise in the number of International Students. Although it is seen to have rise in the number of international students, it is very low when compared to other countries. According to Özoğlu & at all (2012), the main reason is Turkey's undeveloped International Student policy.

According to Student Selection and Placement Centre's gender distribution data, number of male students is higher than female students. For example during 2010-2011 education periods, when the number of female students was around 10 thousand, the number of male students was around 17 thousand. This condition which

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can be considered as gender discrimination, gives information about the cultural background of international Students who come to Turkey for education purpose.

When the homeland of the students which choose Turkey is analyzed, higher number of students come from Azerbaijan, Republic of Northern Turkish Cyprus, Turkmenistan, Iran, Bulgaria, Germany, Greece, Mongolia, Afghanistan, Kazakhstan, Bosnia and Herzegovina, Kyrgyzstan, Russia, Albania, and Syria.

## **2. *Education Services For International Students in Turkey***

There are other services to be distributed by Youth and Sports Ministry, Prime Ministry Abroad Turks and Relative Society Chairmanship (ATRSC), in addition to services which are given to Turkish Students. For Example, when the social and cultural activities and missions given by ATRSC's International Students Chairmanship are observed, the main topics are;

- To ensure the success of students during their education period in Turkey,
- To do different workshops in Turkey and abroad in order to maintain relationships during and after the education period,
- To develop programs in order to provide better life quality, facilitation and opportunities for the International Students in Turkey,
- To improve scholarship opportunities in order to attract successful international students. (<http://www.ytb.gov.tr/index.php/uodb-menu-sol/uodb-gorevler-sol.html>, 5<sup>th</sup> June 2013).

The missions of Youth and Sport Ministry are to develop policies which support personal and social development of youth for both Turkish and International Students, to ensure the coordination between governmental structures, to determine the procedure and principal causes of services and project related to youth, to develop projects and supervise the results of projects. Higher Education Credit and Hostels Institution, youth centers, facilities, federations, and youth camps which are under the Ministry provide services for International Students. These services can be held under the topics of accommodation and recreation.

Scholarships, which can be determined as the most important service to be distributed to international students, are distributed as scholarship under the Greater Student Project which is to empower relationships after the break of soviet union in 1992, scholarship of The Scientific and Technological Research Council of Turkey (TUBITAK), Government Scholarships which are provided by ministries and institutions, scholarships of some private foundations and associations.

International Students in Turkey, whose number is over 30 thousand, are educated under 24% State Scholarship, 13% Government (including structures connected to government) Scholarship. There are no registry data about foundation and association scholarships. In the context of these scholarships, health, language education, university tuitions expenditures, and monthly allowance which are considered yearly. For the non-scholarship students, there are health centers which are called "Medico" where they can get free health service.

## **3. *Difficulties for Students to adapt Turkish Culture and its Influence on Education Success***

Even though international students pay attention, during the selection process, to the cultural harmony and countries' closeness, it is possible for them to have compliance issues. Leading causes of compliance issues which lead to cultural shock and stress are language inadequacy, psychological problems, exposure to discrimination, and economical difficulties. These problems may get denser with the addition of bigger difference between students social environment at their homeland and host country. According to a research which is done by Thomson & at all (2006) with the attendance of international students at University of Australia, it is founded

that bigger difference between culture of students' homeland and host country causes cultural stress and has a negative effect on the welfare of international students. Staying away from family, friends and cultural values, have negative effects on students to cope with stress. When discriminatory attitudes and security issues are added to this situation which can be considered under lack of social support, increases stress and decreases success (Thomson & at all, 2006).

Wang (2009) 's study on Chinese international students' cross-cultural adjustment in the United States, in which he investigated the effects of some factors on adaptation of international students in the intercultural, such as the roles of acculturation strategies, self-construals, perceived cultural distance, and English self-confidence. As a result of the research, it was determined that positive correlation between the above-mentioned factors and lengthy period of residence in the U.S., participation in the host society, direct communication, English self-confidence, marital status, perceived cultural distance, help in psychological adjustment and sociocultural adjustment.

Bastien (2011) in his study found psychological adjustment also significantly associated with acculturation strategy and cultural distance. This also suggests the need for targeted support interventions to facilitate the psychological and socio-cultural adjustment of international students in the academic field.

Özçetin (2013) researched the problems faced by international students in higher education in Turkey and the factors that influence these problems. In this research he investigated the adaptation problems of international students and search age, gender, economic situation, shelter, the host city, friend relationship, participation in social- cultural and sports activities and the nature of their training that affects social adaptation. As a result of this research, dormitory life, Turkish speaking, loneliness and the problems caused by cultural differences are the most important things that affect the international students in the education process in Turkey. According to the results there is a relationship between social adaptations and the genders of students, levels of income, and social relationships.

Pirliyev (2010) conducted an analysis about the level of adaptation of international students coming from Middle Asia by using "structural equation model". The finding of his research indicates that the difficulties relating to cultural adaptation of these students have adverse outcomes on the general adaptation process while language development has no significant contribution to the process; there is no correlation between the educational and cultural adaptation, and between the language development and cultural adaptation whereas there is a connection between the language development and educational adaptation.

In another study conducted by Özoğlu et all (2012) it revealed that cultural differences was one of the most important factors affecting social adjustment of international students in Turkey. The challenges faced by the students in adapting the Turkish culture are complicating their adaptation to daily life and time to time get the students closed to distractive level. The research also revealed that students from different cultures are uncomfortable from some of the behaviours of Turkish students who tend to ridicule when they see them in such traditional clothes. Some students misunderstood because of the clothing styles and accordingly express feelings of discomfort.

To sum up, major problems of international students in adaptation process stem from the difficulties of cultural differences and language barrier. These socio-cultural differences cause international students to have a fear of failure and feel ashamed when talking to Turkish students, and become a discouraging factor in classroom participation and social inclusion. It means that the cultural adaptation problems have negative impact on the educational success rate of international students. Therefore, it is necessary to attach importance to structure and implement initiatives towards tackling the adaptation problems of international students along with the opportunities of accommodation and scholarship. In this regard, social work profession might take significant roles in responding the problems of international students and in improving their educational success through efforts developed in cooperation with agencies in micro, mezzo and macro level. The general overview of social work practice regarding the subject matter can be found in the next section.

#### 4. *Social Work Applications for Solving International Students' Problems*

International students consider many reasons in selecting different countries to continue their education. Some of the factors are the quality of education, opportunities offered to international students, cultural affinity and the possibility of securing jobs after education. Though the decisions taken by international students are being done willingly and expressed as steps to creating a better career, students end up encountering various problems as a result of change of country. As mentioned earlier, the adaptation problems that are experienced due to cultural differences can be described as complex and stormy period in the life cycle of such students and this consequently worsens the conditions for international students.

On the one hand, international student a young person is struggling with the challenges posed by the physical changes; on the other hand, he is trying to answer question of "who am I", as well as trying to find meaning in his life and studying in an environment that is very different from their own cultural values, perhaps away from the support of family and friends. In addition, people coming from war and conflict prone environment find it even more difficult to adjust to such problems encountered by international students. In this sense, important professional support should be increased as well as the physical opportunities provided to students such as housing, scholarships, health and so on.

A multi-dimensional approaches and studies must be performed again for solution of these problems in different sizes. Individual, family, group, community, and resolving the problems of society and meeting the needs of preventive, performing studies covering the developer-converter functions, social work profession and discipline located in size of the service and policy-making, determined to remove the needs of international students and the solving of their problems remain significant. Most often, Social work practices that can categorize micro, mezzo and macro levels, basically, the provision of states of well-being of international students and aims to increase educational success.

Micro-level applications are referred to as individually-based social work practice which includes verbatim dialogues with international students. Acting by the "Within the surroundings of the individual" concept made in consideration of the international student's family, friends, school, dormitory environment, and so on, identification of systems that interact with students also refers to the study of these systems as well. Owning an active role in the solution of the problem with the value of self-determination personally experiencing the problem ensures the participation of international students, uncovering the strengths of the framework as well as support the empowerment approach reflects other aspects of the application.

Cover international students who are experiencing a similar problem or have a similar need to create the group, group-oriented method of social work, in other words, the mezzo-level applications. Interaction of groups that can indicate open or closed group features could be the nature of socialization and education groups. Given the importance of international students in the age characteristics and interaction we can say group will be more focused on the effectiveness of social work practices. Different topics or problems each week, depending on the nature of the group could be addressed in a group, such as the groups where different members of the group can participate (open group), groups where member can't be changed (closed group) can be made. Among the group there has to be members with similar problem or members who have experienced this problem before, the capacity of problem-solving of international students participating in the study will increase, through role-play performed in a group will help you know how to deal with similar difficulties faced in the society. Different institutions and organizations working within the field of social work carried out by experts.

Social work practices are forming a macro community, service, and policy elements. Youth in a society, are the most dynamic element of the socio-cultural structure. Future professionals' information managers and decision-makers in terms of the candidates are young people in higher education, social investments are important in these components. This will give many additives to international students' own country as well as the country they are educated in this sense. Therefore, the spread of higher education in the country next to the creation of successful

policies to attract international students to the country is necessary to expand the services offered to students. In this sense, youth, international students, knowing of the problems faced by the students and social workers participation in the policy-making process is very important.

## CONCLUSION

In subject of the international students, Turkey, like other developed countries, show development about becoming preferred and attractive country. In order to solve the problems of international students, and to ensure their participation in socio-cultural activities in Turkey and help them succeed in their education, it requires the monitoring of strategic policies to enable them to live in Turkey.

Cultural differences, whether in Turkey or in other countries, is one of the most critical factors affecting the success and adaptation of international students during their education. Therefore, Turkey, in order to have an effective strategy for international students, is expected to develop strategies in order to reduce or remove cultural differences and the negative effects of this problem. Within the framework of social work practices, in order to solve cultural difference problems of international students, various practices can be performed with individuals, groups, and at the community level. For example, create opportunities for international students to show their cultural activities. This may create attributes that reduce feelings of strangeness and enhancing self-confidence of international students as well as provide cultural awareness for the Turkish students. Doing those cultural activities and programs that will enable Turkish students to develop and communicate with international students on a regular basis, will reinforce cultural diversity and versatility as well as increased international student success.

More broadly, can be improved depth and importance of the topic with discusses it by conferences and symposia held in cultural diversity and multiculturalism themes. The problems targeted have to do with concepts of discrimination, exclusion, alienation and can be addressed as multi-dimensional, by different professions and disciplines, in addition to planning practical activities by producing the policy and services; could be considered. For example, small arrangements, may be possible in order to do discounts for international students in theatre, cinema and entertainment places, organize promotional theatre activities a week or once a month in the Turkish culture by the institutions of higher education, providing themselves to present introductory information in country foods, clothing styles, music issues.

Another dimension of the subject is that a portion of international students different from other students are likely to experience psycho-social problems and may have serious difficulties in adjustment as they come from the civil war in African countries, endless war and conflict environments in the Far East and the Middle East. Negative experiences in the war environment leads to serious problems in people's lives and it becomes difficult to adapt to a new society and hence to a new culture. There should be helping of international students who come from war environment for the purpose of education in Turkey through the provision of services that facilitate their adaptation such as psycho-social support programs, counselling services, job opportunities or scholarships. Orientation of international students to the culture of Turkey helps increasing their educational success and psycho-social well-being. For this purpose, policies that will be established and services that will be configured is thought to be important in terms of student mobility between the countries and the quality of education.

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4<sup>th</sup> International Conference on New Horizons in Education

# Cultural safety in university teaching and learning

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## Abstract

World population mobility as well as distance learning has led to increased multiculturalism on campuses and virtual classrooms. Immigration and travel calls for more accurate knowledge of cultural health and safety. This paper explores cultural safety, stereotyping and possible actions in the direction of raising awareness in a multicultural teaching and learning environment. The example of Nursing Education is used.

**Keywords:** Multiculturalism; stereotyping; cultural safety; nursing; health; intervention; indigenous people.

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Motto: We are like all other people, like some other people and like no other person (Kluckhohn & Murray, 1948).

## 1. Introduction

World population mobility as well as distance learning has led to increasing multiculturalism on campuses and virtual classrooms. Due to globalization, nearly all universities list students with different cultural backgrounds. Concurrently with the education phenomena, immigration of all kinds and purposes, along with travel, be it for business or pleasure, call for deeper understanding and more accurate knowledge of cultural health and safety. Cultural diversity has been on the agenda of numerous governments, while Canada, Australia and the United States remain traditional leaders in multiculturalism policy. One may ask why it is important to understand other cultures. Leininger (2002) argued that without critical awareness, researchers and service providers tend to impose their beliefs, values and patterns of behaviour upon cultures other than their own, making it harder to recruit and sustain the participation of minorities.

The level of comfort for all cultures on campus need to improve, in order to insure safety and well being if we are to live and study together. A safe environment is necessary for scientific inquiry, exchange and dialogue to take place. Therefore, efforts are being put forth by universities around the world to build awareness of cultural diversity for the professionals of tomorrow, considering multiple initiatives to accept and celebrate cultural diversity. One university that has taken these types of initiatives is the University of Botswana. Botswana is a multi-cultural society, with several different languages spoken throughout the country. The student body at University of Botswana is a reflection of this society. As Lubinda (2010) reports, the University organizes an

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annual Cultural Diversity Day to celebrate their community. Students and faculty carry out research in the languages and cultures of various tribes. University of Botswana has taken a leadership role in compiling dictionaries and developing language codification (Lubinda, 2010).

In most universities of North America, there is some form of cultural diversity (Bennett & Salonen, 2010). Cuyjet, Howard-Hamilton and Cooper (2011), emphasize the importance of student organizations for cultural safety, competence, and diversity. They stress the importance of both curriculum activities and co-curricular life on campus. Additionally, these authors underline the importance of creating a positive relationship between the university administrators and the student organizations in order to improve, promote and celebrate cultural diversity in the campus setting.

Brustein (2007) emphasizes the importance of including international studies in more university programs. He suggests that while most universities prepare students for one specific field, they must also learn to work and live in a global society. He suggests that if some form of international studies were included in the mandatory course lists, students would have better job prospects when they graduate. For example, the University of Pittsburgh established a Certificate in Global Studies and philosophy degree in international and area studies, which are complimentary to other programs. Also, several universities in the United States, notably Michigan State University, encourage research to be done with international contributions. These are but simple beginnings of the measures that some American universities are taking to help build culturally aware professionals.

In Canada, similar but more specific efforts to raise cultural competence are being made by universities. Indigenous Peoples of Canada are seeking to create health care professionals that will improve the quality of their health care. Case in point, the University of Saskatchewan, the First Nations University of Canada and the Saskatchewan Institute of Applied Science and Technology have created a nursing program specifically geared towards Northern Saskatchewan's demographic map and culture (Anonson et al., 2008). This program gives the opportunity to several Aboriginal students to prosper in school and later on in their professional careers.

## **2. History of Concepts - Cultural Competence, Cultural Safety, Cultural Humility**

### **2.1. Cultural competence**

Cultural competence can be viewed and interpreted from many perspectives. The basic concept of cultural competence is simply knowledge of culture. Researchers have developed models to more specifically determine what cultural competence is. The conceptual framework of cultural competence includes a spectrum of three components: cultural awareness and beliefs, cultural knowledge, and cultural skills (Sue, 2006). The level of proficiency in a combination of these three elements illustrates how culturally competent an individual or organization is.

More complex models exist as well. One model used globally is the Purnell model for cultural competence (Purnell, 2002). It is composed of 12 domains that demonstrate many dimensions of culture: overview/heritage, communication, family roles and organization, workforce issues, biocultural ecology, high-risk behaviors, nutrition, pregnancy and childbearing practices, death rituals, spirituality, health care practice, and health care practitioner. This model, when compared to Sue's model, shows contrasting views of cultural competence. No one single model will ever be complete, but it is important to be aware of the many different models and their particular strengths.

Nursing is one specific profession where concepts of service learning and providing are used. A recent study of graduates from six different nursing programs by Kardon-Edgren et al. (2010) evaluates their cultural competency using Campinha-Bacote (2010) Inventory for Assessing the Process of Cultural Competency among Healthcare Professionals-R (IAPCC-R) as a measurement tool. The authors found that, on average, nurses were

culturally aware. Most programs differed in terms of cultural diversity of the students and faculty, however all programs included some type of service-education in the community. Although many factors contribute to cultural competency, the results prove that these programs are producing culturally aware nurses.

## **2.2. Cultural safety**

The concept of cultural safety was first explained by Maori nurses working in New Zealand. Their goal was to demonstrate their perspective on nursing programs. Cultural safety is a way of describing the ethics involved during trans-cultural interactions. It emphasizes that in a multiculturalist relationship, each individual has his or her own beliefs and morals, partially based on their culture. The practice of cultural safety “involves recognizing negative attitudes and stereotyping of individuals because of the ethnic group to which they belong” (Polaschek, 1998).

The literature surrounding cultural safety expands over different contexts. No matter the specific topic that a study reflects on, one key component that is almost always mentioned is cultural education. To develop culturally sensitive professionals, there must be culturally sensitive education (Wilson, Sanner & McAllister, 2010; Bennett & Salonen, 2010).

Cultural safety is important especially in the healthcare setting, both for the professional and the healthcare receiver. When entering into a healthcare relationship, all parties involved have their own ethnicity, culture and background (Capell, Veenstra & Dean, 2007). In order to maximize the results of healthcare, there is a necessity to educate future and existing professionals about cultural competence. Elsegood and Papadopoulos (2011) took the initiative to offer an online culture competence course to practitioners at Child and Adolescent Mental Health Services (CAMHS) in the United Kingdom, to then evaluate their potential progress in this domain. After the 8-week course, many practitioners reported that what they had learned will contribute to better care for their patients. However, the self-evaluation was done subjectively and the researchers only collected qualitative results. Thus, the challenge of evaluating culture competency persists.

## **2.3. Cultural humility**

Cultural humility can be best described as a state of mind. According to Tervalon and Murray-Garcia (1998) cultural humility is a commitment to self-evaluation and critique and to build a mutually beneficial relationship. Most of the research on cultural humility is done in the field of medicine, so the mutually beneficial relationship they describe is addressing the patient-physician relationship. The general attitude in this relationship is that the health caregiver is the expert. Cultural humility occurs when the caregiver takes time to learn from the patient about his or her cultural identity (spirituality, gender, race, ethnicity, family role, etc.), thus improving the care being delivered. The caregiver-patient relationship can be loosely related to the teacher-student relationship. Cultural humility in the classroom would occur when the teacher or instructor recognizes the cultural identity of the students as individuals, with the goal of improving teaching and learning.

These concepts (cultural competence, cultural safety and cultural humility) complement one another. In fact, cultural humility encompasses cultural safety, which cannot be achieved without cultural competence. Desouza (2008) differentiates cultural competence from cultural safety. She defines cultural competence as the process of learning about other cultures, whereas cultural safety is recognizing an individual's identity, partially based on the individual's culture. Furthermore, cultural humility can only occur when the person who is viewed as a higher authority is culturally competent. For cultural humility to be effective, the individual must be

culturally competent and safe, generally when in contact with a large group, or specifically when in contact with an individual. Essentially, cultural competence is the base, with cultural safety and cultural humility being stepping stones toward creating better professional relationships.

### **3. Insuring cultural safety on campus**

Decades ago, Geertz (1973) characterized culture as dynamic, all encompassing and made meaningful by understanding the interpretations of human behaviours and actions. Supporters of this view understand culture as complex, rather than static, and related to the processes of ‘meaning-making’ (Vandenberg (2010). Complexity only grows when a variety of cultures come into play. Multiculturalism becomes then a multifaceted compound phenomenon. The resulting interpretation of multiculturalism is so diverse, that chances of successfully integrating all of the different races and cultures into some type of harmonious gathering prove to be slim. Some organisations have tapped into the issue, trying to rationalize multiculturalism in their country or workplace. The outcome isn’t always positive, as many traditional college campuses and their surrounding communities continue to be perceived as unwelcoming, or at best, neutral to the presence of diverse students (Cuyjet, Howard-Hamilton & Cooper, 2011).

A number of scholars caution about strengthening rather than reducing stereotypes about people who are different in students during their learning years. If cultural engagement is not organized and delivered with careful planning, it can easily reinforce oppressive outcomes (Hess, Lanig & Vaughan (2007).

### **4. Culture clash? What causes conflict, racism and discrimination?**

When individuals from differing cultural backgrounds interact, there can be miscommunication, misunderstanding, and frustration. These obstacles can be overcome by making all parties more culturally sensitive. It is important for people to recognize how cultural backgrounds affect individual perceptions and actions; and how cultural awareness can improve the relationship between people from differing cultural backgrounds.

Is this a realistic achievement in today’s world of diverse cultures and ethnic groups?

Different approaches have been used by universities across the globe. When teaching cultural awareness, a series of concepts specific to different cultures are used. This approach may lead to categorizing, even stereotyping and a way of thinking detrimental to bridging the gap between cultures. Stereotyping and generalizing a person’s characteristics to an ethnic group or population, such as distrusting Chinese people because they are perceived as communist or fear Muslims as they are judged as terrorists can be disastrous for the person and the group he or she belongs to.

A whole new different issue is brought by the Indigenous Peoples of Canada. The problem with grouping indigenous peoples and other marginalized groups under the premise of “multiculturalism” or a wider theme of “diversity” is that it fails to explore the ways in which the ongoing colonization of aboriginal peoples shapes contemporary modes of race and racism in settler nations (Carleton University, 2011). Aboriginals believe that the white people and all other peoples from other countries are living on their land as interlopers and should be accepting of them. Non-Indigenous look at the aboriginals as a drain on society’s funds and hold misconceptions about them as a burden on Canada. Therefore, Indigenous people are still subjected to racism, discrimination and inequality. Oftentimes, discussions of Aboriginal issues in the class elicit strong emotions, including anger and frustration. Lately, cross-cultural competency and educational equity are receiving greater interest and consideration. Yet, the challenges and barriers that are currently being faced at the classroom level

have yet to receive sufficient attention. Comments of students after having participated in workshops or presentations about aboriginal people include 1- This makes me feel bad about being white. 2 – This infringes on academic freedom. 3 – I am not aboriginal, so this does not affect me. 4 – I don't know enough about aboriginal peoples to answer or speak to issues that might come up. Unfortunately, the Aboriginal people's resentment of the white population does not help improve the situation of cultural safety in the classroom (Carleton University, 2011).

## 5. The concept of stereotyping

Among various programs offered in Higher Education, most programs in the Health domain include some curriculum content related to transcultural or multicultural health care. In fact, the Nursing discipline pioneered the transcultural Health movement through the work of Madeleine Leininger in the United States. Her model was rapidly adopted by Nursing Programs around the world. In parallel, Nursing theory on cultural diversity began in Australia, addressing the needs of Maori and other Indigenous people.

Nursing in North America has considered cultural diversity and Transcultural health care since the 1960, and several theorists have dedicated their career to framing practice by a variety of theoretical models applicable to an increasingly culturally diverse population. Europe has followed recently, in the context of the European Union and of their recent immigration policies and practices, as well as following the free exchange of workers within the Union. Nursing has a privileged role within the Health Care system of any country, therefore, it bears the responsibility to care for the needs of a progressively more diverse population. Other professions benefiting of Higher Education like Medicine or Psychology have joined the efforts of adapting their curriculum to multiculturalism among their students or their clients.

Lack of cultural competence in Health care may lead to overlooking a statement, not verifying information or a fact. Dominant opinions become stereotypes with a potential to influence interventions in Health care. Nevertheless, refraining from using preconceived ideas about the client is paramount in Health care. Stereotyping chokes scientific criteria used for deductive thinking or generalizing. A stereotype is a preconceived idea applied to all individuals of a group, disregarding uniqueness. Positive or negative, this idea shapes the image perceived as projected by the person judged. Does the image reflect factual reality, or is it the result of the observer's belief (stereotype)? This dangerous generalization of one's preconceived idea may very well be at the root of creating the human hierarchy between societies and cultures, and explain ethnocentrism. More and more people and militant groups claim their identity in light of differences between humans and between cultures. In spite of all differences, humans have a lot in common. Many characteristics are universal, many other are common to groups of people, while some traits are individual, a signature of each one being unique. To neglect specific individualities may lead to unforeseen consequences. Generalizing to every individual what is known of a group of people is equally dangerous.

Generalizing through the process of induction may be abusive and lead to false conclusions. Yet, generalizing follows an intelligent process of acquiring, organizing and sorting out information. It is a tenet of the learning process. Concluding through the process of deduction constitutes another tenet of the learning process. In the process of learning, the student may focus on acquiring and organizing information, disregarding the source and missing the distinction between a fact and an opinion, perception or impression. This presents with a danger of abusive generalizations and stereotype building. The information stored becomes subjective and, in the case of Health care professionals, influences clinical judgment and may induce professional misconduct.

Although extensive use of subjective generalizations is not advisable, it is important to understand that learners, especially undergraduate students, need to use this process to organize received information, to incorporate new concepts and definitions. The first few university years represent a time of acquiring and

integrating basic professional knowledge, principles and practical experience into a coherent ensemble based on logic, common sense, sound judgment, critical thinking and intuition. For instance, students are shown a clinical picture made of a set of symptoms generally describing a particular diagnosis (a concept or construct); main characteristics of a people are regrouped to describe a certain culture. These are but stereotypes we are using to teach our students. Then, they are asked to step away from the generalization process, from what they have just acquired, use critical thinking and not blindly apply the cultural picture to all individuals included as part of a specific ethnic group, or they may be wrong assuming an individual will respond as all other people from his group. The human being is a complex holistic system, having a lot in common with all other humans, some commonalities with a group, and most importantly, some individual particularities that absolutely call for consideration and respect. How is then the student to distinguish between sound generalization and individual particularities, without prejudice? How can the student find the balance? Limits are ambiguous and difficult either to comprehend or perceive.

## **6. Transcultural stereotyping**

The perception of the observer is always tainted by his own culture. It's like seeing the world through one's glasses. In spite of one's conscious effort to look beyond limitations imposed by their own language, logic and values system, only an incomplete perspective of the other's culture can be achieved. All elements of the other culture are defined and referred to in comparison with what is known a priori by the observer. As Stewart and Bennett (1991) explain, transcultural interactions run the risk of distortion, given each culture's different ways of perceiving, organizing and prioritizing elements of reality.

Usually, a culture is studied through questioning, using tools specific to the observer's culture. This process may in itself include bias, hence significant information may be missed. Unique perspectives may be ignored or misinterpreted. For instance, race, ethnicity, sex or sexual orientation are classified according to taxonomic definitions, often dichotomous (ex. black or white, heterosexual or homosexual). Nonetheless, some cultures have distinct understanding about specific subtle nuances of phenomena (ex. white, black, mulator or métis), placed on a conceptual continuum. Canadians and Native Indigenous Peoples of Canadian territory retain a richer and more diversified vocabulary for defining and describing snow than Italians or Brazilians. Their winter experience modelled their language and helped them develop a very particularly perceptive acumen toward their environment. New concepts have been generated; consequently, their reality can be very different from the one experienced by the observer (Machado, 2001).

Creating stereotypes may be risky. As an example, in general, nodding by Asians is being taught as not always signifying that something heard is understood. In fact, many Asian people mean that they understood by nodding. Furthermore, having Asian heritage doesn't always mean that the person was born and raised in Asia, therefore cultured in Asia. Many people of Asian descent were born in North America or immigrated as children. Others have been living in North America for generations. Acculturation has occurred depending on the time spent in the adoptive country and on many other factors. No inference should be made based on stereotypes.

## **7. Should stereotyping be abolished?**

Transcultural Health should only describe a very general image of a particular culture. Professionals should keep an open mind and remember that their own perception is influenced by their own culture. A wise professional uses and manipulates generalizations with care. Preconceived ideas about different cultures have limitations; consequently, every individual should be understood within the context of his own culture, with respect given to uniqueness under a holistic and personalized lens. People should be able to define themselves

individually as a representative of a certain culture, sharing common characteristics, adding some group traits and some personal ones that can tell them apart from every other human being.

### **8. Teaching Cultural Competence in Health Care : the example of Nursing**

Teaching cultural competency in Nursing does not benefit from the same approach in all Nursing Programs. Even after a few decades of teaching Transcultural Health, courses are a challenge in terms of format, delivery, method and evaluation, and learning outcomes. Results are often less than desirable, many graduates feeling helpless before their patients from different cultures. They encounter difficulties in communicating, evaluating and performing nursing interventions on them.

Underwood (2006) proposes a strategy meant to bring students to reflect on cultural diversity by asking them at the beginning of the course, to write some questions related to 3-5 different cultures in their environment. Students need to be reassured that no question is shameful or awkward. Questions are compiled and sorted according to cultural domains used by valid transcultural models such as Leininger and McFarland (2002), Giger and Davidhizar (2004) or Purnell and Paulanka (2003). This process will identify recurrent themes, as well as perceptions, beliefs, experiences and preconceived ideas of students. As well, it will highlight learning needs and objectives, and direct course content and possible interactive class or virtual discussions.

Another valuable strategy for teaching transcultural health remains the direct immersion into another culture, by means of international practicum. Nursing Programs increasingly use out-of-country field, clinical or community placements to increase cultural awareness and appreciation. A newly acquired perspective allows students to discover universal human characteristics and to understand the differences in values, beliefs, attitudes and customs. When the language of the host is different than the one of the student, new ways of communicating are learned, specifically non-verbal skills like presence, touch or facial expressions. Additionally, students uncover the influence of the socio-political system on health care and see a better picture of the advantages and disadvantages of the health care system in their own country.

Learning outcomes depend on the cultural competence of the educator, whose culture of origin, passed experiences and values become a great influence on their teachings. Nurses of a diverse cultural background are particularly suitable to teach transcultural health. They also make great teaching aids or invited guests. Some studies show that educators having had more intercultural contacts are the most open to other cultures (Kardong-Edgren et al., 2010). Cultural competence develops positively while direct care is performed on patients of a different culture or on vulnerable populations. Getting to know people in their own shared environment stimulates learning more than class teaching, textbooks or travels.

In a recent study, Wilson et al. (2010) conducted focus groups to evaluate the perceptions of both faculty and students in the mentoring program to become a nurse. What they found important in the overview of cultural competence is that the cultural diversity of the nursing workforce is related to the personality and cultural competency of the faculty.

In spite of a definite utility for obtaining and organizing knowledge, concepts of transcultural teaching may lead to stereotyping and prejudice. A conscientious health care provider takes group characteristics, societal and human nature complexities into consideration, while balancing and prudently using generalizations and individual beliefs and values. The need for ethical care across health systems warrants the inclusion of transcultural teaching in all health care disciplines by direct contact with a culturally diverse population. Health care practices should be based on rigorously acquired scientific evidence, the only way to distinguish between knowledge and belief, thus avoiding unfavorable stereotyping and promoting ethical care.

## 9. A Canadian University initiative on cultural safety

One mid-size Canadian University is progressively implementing actions toward raising awareness and cultural safety in a multicultural teaching and learning environment, since the number of International students has grown importantly in the last few years.

Canada is already home to many immigrants of first generation. Many more have parents or grandparents who immigrated. Newcomers to the University may be International students or even immigrants and not aware of the issues related to multiculturalism or that Indigenous people may still be victims of discrimination and inequality. In an effort to raise awareness, several initiatives have been implemented or are the object of discussion for future completion.

- A few Committees were formed with the purpose of consulting on future actions and manifestations; and to provide a forum for exposing all forms of racism and discrimination towards different cultures, minorities, religions, sexual orientation or preference or towards vulnerable groups.
- Workshops and presentations on cultural safety are given throughout the campus, some of them being mandatory for different students or programs.
- Aboriginal peoples issues, interests and culture are promoted by means such as Aboriginal Awareness Week or Exhibit of Residential Schools.
- Aboriginal content in different courses and in each academic program is becoming the norm.
- A number of seats in several programs are designated for Aboriginal candidates in order to insure opportunity for developing a critical mass of indigenous professionals who would better understand and serve their communities.
- The Educator hiring policy is favorable to Indigenous peoples and other minorities.
- An Indigenous Sharing and Learning Centre is being built on campus.

## 10. What remains to be done?

Many initiatives and actions have taken place on campuses across Canada in the last two decades. As populations mobility has increased and technology has improved at high rates, many more initiatives need to come alive, in order to advance student success and insure cultural safety. Old initiatives that produced some expected outcome must be updated and improved. New initiatives need to be carefully tailored around research results and take into account the rise in people's movement for equal rights and ethical treatment, respect, and abolishing discrimination of all kinds.

These are some ideas that could be integrated into new initiatives:

- There should be a raised awareness of the ethnic and cultural variety among students. What do they bring and what are the advantages of diversity that we seek as a nation?
- The realities and legal aspect of immigration should be known to all students, as well as the civil rights of immigrants according to the Canadian constitution.
- Educators should take the lead in instructing their students about cultural diversity and should become knowledgeable themselves; one way to do so is through reflection on diversimilarity (Ofori-Dankwa & Lane, 2000).
- Teaching basic and universal communication skills, civility and respect for people of all kind.
- Aboriginal (indigenous) issues are distinct among all multiculturalism issues. They should be addressed separately. A distinction should be made between indigenous peoples and immigrants. When presentations, workshops or other forms of teaching are used pertaining to indigenous peoples, the following should be taken into account:
  - Presenting only history of native people and colonialism will only raise awareness;
  - Adding the presentation of discrimination, inequities and inequalities, goals and needed interventions, will raise cultural competence;
  - A variety of feelings are stirred into descendents of colons, while they become aware of the effects of colonialism on Indigenous peoples. It is important to learn how to address and cope with these feelings (ex. white people's feelings of guilt), in order to avoid a new rise of antipathy toward Aboriginal peoples;
  - Adding communications skills susceptible to help relations between Indigenous peoples and other cultures including colonialists raises cultural competence to the level of cultural safety.
- Among immigrants, first generation, versus second and third, refugees and temporary workers face different issues and levels of acculturation.
- A myriad of aspects of what culture represents make addressing multiculturalism excessively complex and intricate. For instance, the issue of religion may hinder efforts towards multiculturalism. Faced with a legal obligation to tolerate if not accept newcomer's religious beliefs, the host culture may feel overwhelmed and threatened.
- Maintain the North-American Higher Education present trend of naming a senior academic administrator like a vice-president, for student diversity. This allows some power to implement initiatives and bylaws on campuses. Relying solely on governance and volunteer work may not bring on the desired effect of cultural respect and safety for all.
- Student organizations should be involved in the cultural safety movement on campus, as they can play an important role in the success of the unresolved issue of multiculturalism.

## 11. Conclusion

Cultural safety in Higher Education represents an ongoing challenge. In time, through world mobility and inter-cultural marriages, initiatives and interventions toward a culture of respect for one another and for the value of every individual, the multiculturalism goal may be achieved on and off campus.

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# Decentralization in –and of- education

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## Abstract

Decentralization and centralization of Education both seem to be related to “democracy” which is understood as a way of life. Yet, it is also related to some other factors and forces: such as the level of literacy, economic conditions, traditions and types of government. These and some other factors and forces also seem very affectfull in democratization, as well as decentralization ideas, and practices. For instance, various studies illustrate that first of all administrators at different levels are not willing to give up their existing, institutionalized authorities and powers, towards more democratic practices. But, instead, they seem to approve and willing the other administrators to be changed, and give up some of their authorities and powers, towards more democratic decentralized practices. In addition, for instance, with the existing world-wide trends towards globalization, they may also expect, with different scope and speeds again, having some significant changes towards democratization of their educational systems.

Keywords: decentralization, centralization, education

## 1. INTRODUCTION

### On Democracy and Education

As it is most often pointed out that, since there is not a “better” one on the seen, democracy is the best way of dealing with human affairs, in terms of “governing” the people, under the state umbrella. In this sense, the government is then understood as an establishment “for” and “by” the people. In addition, a fundamental object of a democracy is accepted as promoting the happiness and well-being of the people, namely the population. In this case, democratic school then, will try to teach children and utilize the means of happiness and it must also teach them “what the democratic nobility is”. But, since the fundamental object of democratic education is to try to lift the whole population to a higher level of intelligence, living conditions and happiness, it is a must to give all the children the necessary habits, understanding and skills before they leave the school ( Elliot in Krug, 1965.pp.115).

An obvious question is then to be answered at this points; would be that, is it possible to have the “desired” or “necessary” outcomes; firstly, if you do not have an “enlightened” population who are not and will not be in schools, and secondly, if -for their existing conditions-you do not trust them in using and practicing their democratic rights and fulfilling their duties, as the citizens of democracy.

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There seems, somewhat a dilemma at this point. On one hand, democratic institutions can not be considered as “safe”, if a great majority of the population is not trusted in terms of their activities as the main “actors” and “subjects” of the democratic state and government. On the other hand, it is very clear that democracy must also be learned. This is the case in terms governmental affairs, it doesn’t matter if it is in municipal, state, provincial or in national levels. Of course as it is similar to the other “learning” conditions, learning the “democracy” require some of the “basics”, such as willingness, guidance and practice.

Then the democratic citizenship may come into the picture with the necessary skills in order to be able to meet the responsibilities, and to seek and use the “rights” of citizenship. For this reason, then education in this picture is not and must not be a process and service which is carried out within the school buildings for specific age groups, but it must be for all, and both a service -including in teaching and practicing democracy- and investment.

As it is often stated that democracy is to be dealt with simply as a question of political morality and economic abundance which would be a route to political democracy. So, it is also mostly pointed out that the democracy as being more “appropriate” for countries where those necessary conditions are existed (Potter,1954.pp.112). Yet, a free men must set their goals and nobody should tell them what to do, and they must do it for themselves (Gardrier,1962.pp.161).

What then, are we going to wait for the “suitable conditions” to arrive, or is there any other way to create the “appropriate” situation? First, we observe that some of the most conservative – which means not democratic in many ways – regimes accomplished great things, both by tearing down the old orders, but at the same time by establishing the new ones, even democratic ones. But, of course, the rationalization of any political order is closely related to somewhat, creating, or “making” new citizens for, and in, that “new” society. Literacy and the necessary skills, including technical ones, for the mass of people are also the other vital skills in that matter (Moore,1967.pp.440).

In any democratic society, it is necessary to have a consensus on objectives and goals of education. Education then is considered a process for: (1) Individual excellence, (2) A society of equals, (3) A government of free man, (4) An economy of security and plenty, (5) A civilization of beauty and grandeur, (6) An enduring civilization, (7) A world community (Casterter,1981.pp.4).

Yet, since school systems in a democracy is to be responsible somewhat for preparing students, as products with certain qualities, and socialize them for a complex adult roles. But, this process requires some specialization, and as a result, some autonomy on the side of schools and their teachers, which may be another concern with peoples’ interests and decisions on education, and all types of educational matters, within the system. At this point, it is known that school systems are consisted of client-serving organizations, and they are at least semi-bureaucratic ones in which their role structures are quite different; but, still operate according to specific rules, and regulations of the procedure (March,1970.pp.973-975).

### On Decentralization of Education

It is mostly stated and well accepted that one of the obvious and clear evidences for an educational system to be considered as a “democratic” one is that of its being, at least to some extend, “decentralized”. People mostly come into close contact with are mostly schools, hospitals, highways, and people of fire departments which all are basically the matters of local or provincial governments.

The first concern at this point is that the question of who runs our city, province or state. Secondly, if we have any sayings in all of those activities in our close environment and region. This obviously becomes quite a

clear sign and evidence of existence of a democracy. Of course, having different and/or special interests, ethnic groups and so on, and if their differences and interests are taken into consideration functionally, these are also some other positive signs of democratization. All of these are also related to the question of what are the

basic and irreversible sources of power; social, economic, political and philosophical. Along this, in order to be considered as a democratic one, any decision and/or practice in education must be depended upon the main philosophy that every child to be treated both equally and efficiently. But, we also have to remember that, first, some of the significant changes most often come from industry, not from the government; especially not from the local or regional government. Secondly, during the recent years capitalist enterprises have changed their organizational forms, shapes and practices, and they become more and more “multi-national” (Ehlers, 1981, pp. 55 and 88). So, this also requires some kind of re-adjustment of the idea and practices of decentralized education. Yet, as it is the case in terms of the “industrialization” and “information age”, these and other concerns and practices can not be dealt with in the same way, in all cases for different countries, with their different levels of educational and overall development.

But, as a part of general process and practice within the overall system of government, decentralization of education still has some merits which are mostly originated from and it is more suited to democratic principles. In addition, it seems better and more sufficient in understanding local needs, problems and potentials and establishing and carrying out educational plans and practices in more flexible ways. Besides, decentralization of education gives people of different groups more and better chances for cooperation having a voice in educational matters. It would also be a way to create a better understanding of the central government and its activities in education, and utilize educational investments properly at the local and/or regional levels. Yet, people in decentralized system of education may not be interested enough, or knowledgeable, or accustomed to in making decisions on educational matters. It is also difficult to have the necessary manpower, economic resources, to carry out educational activities objectively and to control the financial matters. Especially to deal with the economical inequalities, either within the area or state and/or nation-wide, may sometimes become a serious burden. Overcoming local and/or regional prejudices and to deal with the old habits, stressing on short-term benefits and interest of people; providing a nation-wide equality and working in harmony with the national objectives seems some other shortcomings of decentralization of education.

But, as it was pointed out before, democratic institutions, including educational ones, will be safer if a great majority of population are trusted, and if they share common understandings as well as democratic practices.

Yet, giving parents greater choices of school and reorganizing the system through open enrollments and more emphasis on choice and diversity, as it was the case in Great Britain recently, did not seem to be creating the expected results. For instance, less popular schools lost funding as their numbers of students declined. The needs of some future parents, or at least some parts of society are seemed forgotten. Because, the idea that providing greater choice leads to higher academic standards did not worked out and instead of academic excellence, “popularity” of schools seemed having more preferences, and priority for parents (Scott, 1994, pp. 73 and 79).

### The Place of Centralization in Education

In some cases the state may act as a teacher, but the important thing is that what and how she intends to teach. In a society, aiming to arrive in a democratic way of life and establishing a real democratic state, the content and methods of teaching will be different from a totalitarian oriented approach. In this case, and especially for the “emerging” democracies, and especially during the “learning” and “adjustment” periods, to

have a more centralized settings and fulfilling most of the state duties by the central government may be more appropriate and beneficial. But, if we call this as a transition period towards having a “workable”, and “real” democracy, it is better and desirable that this “transition” will not be “permenant”.

This also implies having a continious effort towards -even at different levels and types- decentralization, including in education, which is a very difficult, tiredsome job to be accomplished.

Yet, especially for those countries in which the differences between and among the regions, in terms of economical wealth, level of education, ethnicity and some other characteristics of people are significant, and if it does not seem possible to create a balance, or eliminate these differences, by using the local and/or regional institutions and resources, then the central government comes into the picture, which means, centralization maybe the key at this point.

This way administring the related duties centrally, and distributing and using available resources more effectively and efficiently for the peoples’ benefit as a whole, would be much easier and faster.

In this case, legal and financial powers and responsibilities are mostly accumulated at the center, and a significant portion of state work carried out by the central government. This way, unity within the country and in state administration may be established much easier. In addition, to carry out governmental responsibilities in a more economical, rational way, and to eliminate various types of inequalities, including educational ones, having a better chance to use more and better skilled and specialized personel, methods and technology seem among the other advantages of centralization of education. Of course, two questions then seem to be asked: The one is that “How much centralization is to be considered as appropriate, and permissible, in terms of democracy and democratic education?”. The second one is that “How long do these centralized settings, ideas and practices should be lasted or permitted?”

Actually, to answer these two questions in an affirmative or in a negative way mostly depends upon the levels of “progress” of any respected society, in terms of her their accomplishments in establishing sound, workable institutions of democracy, and getting accustomed to democracy as the “way of living”. Otherwise, it is not very diffcult to have a symbolic re-organization work based on “decentralization” in education. But, if some of the habits, understandings of “old times” are not changed and improved and if understandings of rights, responsibilities of democratic citizenship are not created, you may very well be in a position to re-create some new power groups and a new hierarchy dominating the people in different ways, re-establishing, even informally, the former system, as a new type of “oligarshy” under the name of “decentralization”.

Yet it doesn’t seem to be right in almost all cases “to be too different”. When we think of another fact that, in general, lower-income groups and minorities do not seem to show much interest in school board elections and the policies of school boards, in general, reflect the thinking of the upper socio-economic levels in the community.

It seems quite clear that if the conditions are not suitable enough, sometimes, while we are trying to facilitate greater choices, in order to build a more democratic and fair system of education, we are possibly creating a more differentiated system, by providing better chances in education for the children of “better to do” families, in which we are helping with a new type of social reproduction (Scott,1984.pp.85).

Of course, besides some of its advantages, centralization also has some limitations as well. For instance, it may limit the chances of people trying to be citizens of democracy and it encourages red-tape which slow-down all governmental activities. In addition, it is very difficult and time-consuming to find out solutions to the local needs in education.

## The chance for decentralization

The fundamental object of democracy is to promote the happiness and well-being of the people, regardless of their differences. The democratic school then has given the responsibility for teaching children the means of happiness and providing the necessary skills to be able to live accordingly.

As Madison pointed out, the accumulation of all powers in the same hand or hands may be defined as “tyranny” (Griswold, 1960, pp.102).

In order to have a democracy in a country, there seems quite clear that there are some “prerequisites”, such as a suitable economic condition; believing in, and willing to live with and, according to democratic principles and philosophy, which are involved in some “learning” and behavioral patterns, related to “democratic citizenship”.

One of the signs of an “existence” of democracy in a country is decentralization of education. Of course, decentralization is one of the dependable evidences in this respect, even though, under some circumstances, it has some advantages, as well as limitations.

In some cases, centralized settings and practices too, in education may be both democratic and beneficial to be carried out.

For instance, working on modernization process on one hand, along the democratization efforts, and wide disparity between manpower needs and real demands, and rapid population-growth on the other hand, make almost impossible to deal with their educational problems as well as democratizing their educational systems in developing countries. For instance, individuals mostly look on education as a means of getting a job in these countries. Under this condition, even if they give priority to democratizing their education, they may not have much chance. In addition, since they do not have enough experience and facilities to be used as citizens of democracy, their educational systems have a much heavier job and more and complex responsibilities for carrying out. In this case, especially before or after arriving at their “take-off” points, these countries may get more benefits, and go faster in development and democratization process, by using centralized procedures and practices.

Yet, countries with their well-established democracies and democratic practices in their educational systems are still trying to have better educational systems and practices of education by creating “much better” democracies especially by providing more and voluntary choices for their children.

In any reform or change the question of “Where does it come from?” is another point which is important to be considered by the people (Evans, 1996, pp.197).

It seems understood quite clearly that creating more choices is not automatically leading to higher standards and it is not proved as a dependable tool to build a more democratic and fair educational system, especially in terms of providing better education for the children of the low-income groups and minorities.

In addition, when we stress more and more on decentralized organizations and practices, we observe that first, the lower-income individuals again, and then the common citizens do not show enough interest, both in school-board elections and school affairs. The differences of opinions, concerning the proper functions of the schools, and using pressures by some interest groups for their own benefits within the community seem making difficult to carry out decentralized policies and practices in education.

Yet, it is still vital that democratic education is to be shared, questioned, helped and sacrificed by the citizens of democracy. If we are willing to live in a democracy and if we like it to be “democratic” in education also, we have to be aware of the fact that it is obviously difficult, and these are the democratic, unescapable tasks to be carried out.

One of the last thought may be related to those various differences again, in dealing with democratization of educational systems of our own, in terms of existing issues, problems and prospects.

It should be remembered that the “climates” in different lands and/or countries are also different .

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# Deepening the skills of staff in public administration

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## Abstract

For the definition of training needs of staff working in the public service-oriented solutions in the area of transport infrastructure is needed to define the scope of competencies at different administrative levels. The strategy of development of human resources in public administration based on the strategy of human resources, this strategy is based on the strategy of public administration, specifically its long-term goals.

The paper shows the specific programs increase professional competence and their use in the Moravian Silesian region and the Czech Republic

*Keywords:* public administration, specific programs, professional competence, Moravian Silesian region

## 1. INTRODUCTION

Transport infrastructure is an integral part of the strategic documents of the Czech Republic (CR) and its territorial units. The quality of transport infrastructure depends not only on the financial, technical implementation, but also the quality of human resources working in this field, their knowledge and skills. In public administration should be that increasing education and deepening the skills of staff should be one of the tools for improving the quality of services. Current information age places considerable demands on the knowledge and skills of employees, gone is the time when the employee was a carrier of physical labor. Today there is a tendency for workers bringing intellect, innovation and accepting responsibility. The paper shows the specific programs increase professional competence and their use in the Region and the Czech Republic<sup>†</sup>.

## 2. PERFORMANCE OF PUBLIC ADMINISTRATION

Central authority active in this field is the Ministry of Transport (see the organizational structure of the Ministry of Transport and Communications and the Regional Authority viz. Annex 1) at the Moravian-Silesian Region (the MSR) mode of transport MSR and subject him departments at various administrative units. The scope of news articles in the area of transport infrastructure is defined by law: Law No. 13/1997 Coll. on the road, as amended, (2013) defines the scope of management of transport infrastructure and duties of administrative authorities to the relevant communications (see Figure 1). Performance of the transport department is generally subject to the rules and laws applicable to public administration, so we will continue to talk about

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Transport Department MSR generally as a public service and analyze the training of employees in this sector from the viewpoint of the general rules of public administration training at the regional level<sup>‡</sup>.

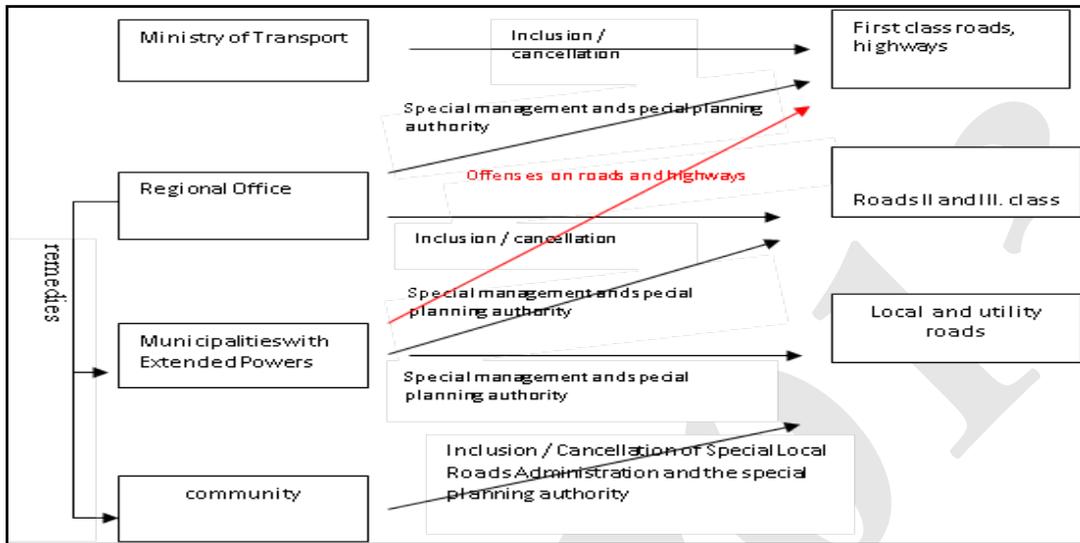


Figure 9 Generalized performance of the various authorities in matters of road infrastructure

If we were to rely on the definition of education by Koubek (2002), the concept of education workers in time and space convertible. It depends on the social environment, the organization in which they operate, the culture and the education level of the population, the nature of work and the technologies used, training of personnel defines the activity as an activity involving activities:

1. Adjustment of the labor skills of the staff changing needs of the position ie deepening work skills.
2. Increasing the usability of workers, ie the development of knowledge and skills to perform, other work practices, expanding their ability to work (increasing flexibility).
3. Activities associated with retraining processes, retraining for occupations that organization needs. Caring for retraining is part of an organized training.
4. Adaptation of new employees by the new specific requirements, techniques and technologies used, the style of work in the organization.

The formation of work skills in the modern HR work that goes beyond just professional capacity to work of the employee, including the formation of personality worker (his behavior, work behavior), consciousness (needs, accepted values, interests, attitudes, norms) and motivations that influence individual and collective performance.

### 2.1. Training of staff in public administration

The strategic objective of government is to increase citizen satisfaction with government performance and quality of communication. As mentioned above, public administration extends into the area of transport infrastructure and thus affects citizens' satisfaction with the quality of transport infrastructure. The basic precondition for quality and flexible use of staff is shaping capabilities, increasing their knowledge and skills. Development and education of employees in the public administration is left to the employee's decision is

<sup>‡</sup> The issue is aimed at employees of local governments in terms of civil servants training, subject to Resolution No. 1542 "Regulations for the training of employees in administrative offices" and is different from the law 312/2002 Sb. on officials of local governments.

exhaustively defined by the Act on education officials of local government units pursuant to Act 312/2002 Coll. (2013). If we wanted to define increasing knowledge and working skills can be derived from Koubek (2002) on the basis of and in accordance with the law.

### 2.1.1. *The area of general education*

It includes the employment firm anchoring of ethics and values in the personality of employees in public administration. Public officials is governed by a set of rules, regulations and obligations under the law. Every employee should be a system of government to be loyal, the problem can be overcome certain contradictions which are against the beliefs and principles of the employees. By Pomahač and Vidláková (2002) it is possible to maintain and improve the ethical behavior of public officials upon receipt of written rules and in particular codes of ethics for civil servants, the necessary education and further training of employees and the influence of role models superiors at work. The values professed in public administration should be based on the expectation that the employee is here to serve the public, not for its own benefit and profit.

### 2.1.2. *Furthermore, increasing knowledge includes vocational education, which falls into*

1. Here is the activity of public administration required secondary education. In the last few years to improve the performance of public administration is a necessity in higher education program in the group fields of law, law and public administration, in some menus work is also featured in the university majoring in economics and management. Orientation allows in public administration with creating the requirements for the jobs correctly defining the needs for simple work to shorten and streamline adaptation employees. Currently, creating so-called competence models. Generally this activity according to the definitions included in the following program, ie input regarding the education of employees at all levels.
2. Receive refresher training courses - deepening qualification concerns<sup>§</sup>
  - *Input education relating to the head office of a senior official and officer involves getting:*
    - ◆ Knowledge of the fundamentals of public administration, in particular the general principles of organization and activities of public administration and urban planning, fundamentals of European administrative law, principles of finance, ethics rules.
    - ◆ Basic skills and habits necessary for the performance of administrative activities, basic knowledge of the use of information technology.
    - ◆ Basics of communication and organizational skills needed for the job in their work
    - ◆ Fundamentals of management control for managers.
  - *Continual education that applies to officers and includes:*
    - ◆ Deepening, update and specialized education officials focused on the execution of administrative activities. Thus defined education we could include seminars, conferences, training cycles).
    - ◆ The deepening of language skills (language skills for the right terminology in the appropriate language).
  - *Verification of special professional competence of head office, a senior official and officer includes:*
    - ◆ Getting general and specific knowledge to perform the job (the list of competencies and their abbreviations see Annex 1) - There is a necessity to know the staff of the Transport Department issues concerning laws, regulations and ordinances relating to land-use planning, road, knowledge maps, environmental education, legislation, etc.
    - ◆ Training of senior officials including the general and special part. The first one concerns the knowledge and skills in management officials. A special section includes an overview of the activities set out in an implementing regulation exercised by subordinate officials. For more

<sup>§</sup> official who has special competence, may pass under the Act

information on executive education can be obtained at the website of the Ministry of Interior\*\*.

### 3. Retraining – requalification

It can be defined as the activity of acquiring knowledge, which in the case of the transfer of employees to a total or partial retraining the full extent of the law 312/2002 Sb. An example may be a shift worker from the Department of cadastral management to the Department of Transport. The employee meets the conditions for the exercise of new job part. For their employment must pass a special examination of professional competence in the field of road transport and decisions on supervisory activities in road management.

### 4. Vocational rehabilitation is likely to be in the public administration as a means of increasing knowledge is not used or used in such a small extent that this form of literature knowledge fails.

#### 2.1.3. Area of development

By Koubek (2002) to include the acquisition of a wider range of knowledge and skills than those required for employment, development-oriented are more than the work as a career, which will allow the individual to develop adaptive labor supply. It allows to create, shape the personality of an individual and to contribute to the achievement of organizational goals and improving interpersonal relationships. In the case of improvement of qualification (hard skills), which includes knowledge of the Administrative Code, laws on communications, construction law and in the case of personality formation including improving communication skills, assertiveness, stress levels, etc., occurs in public administration based on legal obligations to employees set a 18 day lift plan training for three years when the annual evaluation, each employee is required to develop a plan to further improve their knowledge and skills (which identifies its shortcomings), such a development plan is then mandatory for employees. Specific group in planning education are elected representatives, increasing their knowledge and skills is not defined by the Act 312/2002 Coll. However, the public administration is the target group addressed and she offered several educational events throughout the year. The above defined education being touched training organization conducting the training on the acquisition of knowledge and skills through courses, seminars, etc., gaining expertise and knowledge of the subsequent verification of eligibility by examination or mentoring and through workshops. In recent years, however, focuses on education by increasing the knowledge and skills through learning organization. By Bielczyk (2005) is a learning organization is defined as a comprehensive model of human resource development, in which all workers continuously learning from everyday experience. The necessity of this form of knowledge is increasing the need for learning is individual, based on his natural need of learning, learning new things, and curiosity and use of this potential for the benefit of companies - public administration and at the same time learning team, which is part of the individual. Employees in the learning organization are able to gradually analyze what needs to be done to improve the overall situation in the organization, finding solutions to aggressively acquire new knowledge and experience and be willing to share their knowledge with each other. The introduction of a learning organization can be strengthened able to motivate managers to initiatives in the transfer of information and knowledge, and identification of targets employees of the organization.

#### 2.2. Forms and evaluation staff training

Individual courses are displayed on the website of the Ministry of Interior. These courses are structured according to a hierarchy of management - organizational structures - government, local government, according to the roles - employment status - clerk, head clerk, an elected representative. Courses can be analogous to forms of study in higher education (individual educational institutions and the number of programs are listed in Table 4). Full-time study takes place at the training center (Benesov - overnight, Prague - day), combined studies is then a

\*\* <http://www.mvcr.cz/clanek/vzdelavani-vedoucich-uredniku-uznani-rovnocennosti-vzdelani.aspx> (20. 5. 2011)

combination of teaching through electronic mediums in elevation and meetings with tutors. Distance learning is mediated by self where the substance is submitted to the batch with tutoring. In order not training employees only isolated process in public administration, it is necessary to evaluate the effectiveness of the investment into education and assess any additional learning needs. Nowadays, not only for self-assessment, but also the implementation of evaluation tools BSC (Balanced Scorecard) in public administration.

### 3. DEVELOPMENT OF THE DEVELOPMENT AND EDUCATION OF EMPLOYEES IN PUBLIC ADMINISTRATION

Table 2 Summary of accredited educational institutions by region and accredited educational programs Source: Annual report on the state of training of local government officials in the area of special professional skills for 2009

Name of accredited educational institutions in 2009	Region	Number of accredited programs SPC
Academy J. A. Comenius Karvina	MSR	3
Academy of Public Administration o.p.s.	The city of Prague	1
CTU in Prague, Faculty of Architecture	The city of Prague	3
The City of Prague - Prague City, Prague Academy of Public Administration o.p.s	The city of Prague	1
Institute for Local Administration	The city of Prague	42
Institute for the Development of European Regions o.p.s	Pardubice region	3
INTEGRA CENTRUM s.r.o.	South Moravian region	3
RCTE - Regional Centre of Training and Education Ltd.	Ústí region	1
College of European and Regional Studies ops	South Bohemian region	1
College of Social - Administrative Institute of Lifelong Learning Havířov o.p.s.	MSR	3
Training Centre for Public Administration of the Czech Republic, o.p.s.	The city of Prague	1
University of West Bohemia, Department of Lifelong Learning	Plzen Region	1
Total accredited programs SPC		63

The professional development of employees is the obligation for the performance of activities in the Public Administration to obtain a qualification. Increasing the special professional competence (SPC) in the Czech Republic carried out through teaching full-time and elearning courses. These programs are focused on issues of public administration institutions. The broader issue of the training and education of employees in more than one program in the training centers, which are mostly accredited academic institutions (see table 1<sup>††</sup>). Each of these programs is the completion of the test and getting the certificate of SPC to the employee within a specified period from the acquisition of competence in public administration successfully completed. <sup>‡‡</sup> MSR has a stake in the education of employees in public administration, participates in mediation of four educational programs accredited SPC on its territory, civil servants must complete the required courses specific expertise six months of starting employment.

#### 3.1. Development of SPC in the Czech Republic

With regard development of obtaining a certificate of special professional qualifications (somewhere SPC) during the years 2009-2011 there was an annual decrease of applications submitted for testing proficiency in

<sup>††</sup> *Institut Praha*. [online] 2013 Available from: <http://www.institutpraha.cz/>

<sup>‡‡</sup> Civil servants must complete the required courses specific expertise six months of starting employment.

public administration. During each quarter of 2009 -2011 there is a decrease in the number of registered employees in the development of skills upgrading, the 3rd and 4 quarter of 2011 is associated with an increase in applications filed from 2010, but does not meet the quotas from 2009. Only in the first quarter of 2012 there is an increase in the number of new applications filed compared to 2009-2011 (see Table 2)

Table 3 Development applications for the SPC quarterly

	2009	2010	% ratio 2010/2009	2011	% ratio 2011/2010	% ratio 2011/2009	2012	% ratio 2012/2011	% ratio 2012/2010	% ratio 2012/2009
1.Q	813	604	74,29	369	61,09	45,39	920	249,32	152,32	113,16
2.Q	686	450	65,60	407	90,44	59,33				
3.Q	454	334	73,57	422	126,35	92,95				
4.Q	544	380	69,85	498	131,05	91,54				
Year % ratio	2497	1768	70,80	1696	95,93	67,92	x	x	x	x

Most are in the first quarter of 2012 required counties in educational programs related to skills upgrading in the vehicle registration (REG), these education requirements appear already in year 4 quarter of 2011 (64 entries) and the result is likely to be the introduction of a new information system registry vehicles.

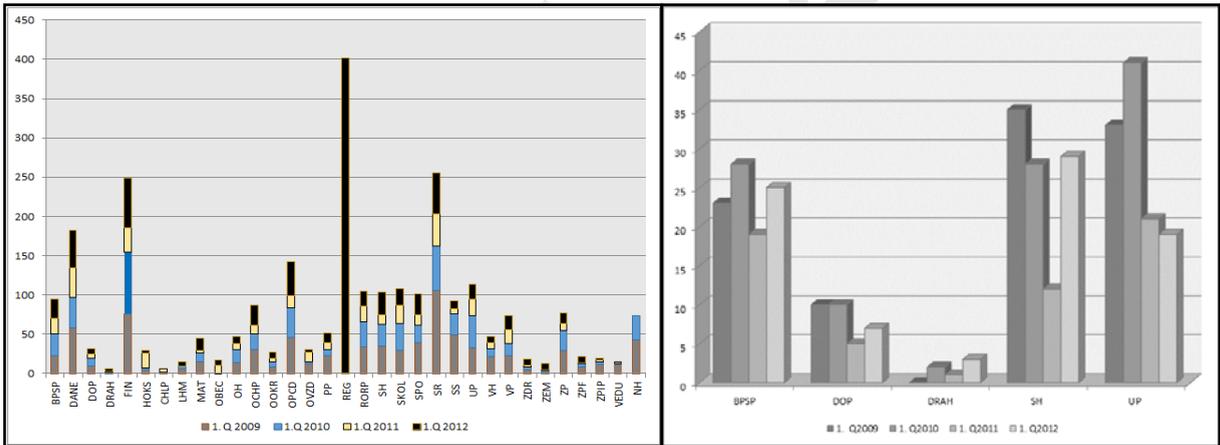


Figure 10 Development of applications SPC first quarter of 2009 - 1 quarter of 2012 (left), of applications in selected SPC (right)

It is largely used in training and education in the field of taxation, finance, population records and the land-use decision-making and decision-making in the field of construction law and expropriation (see figure 2).

In the case of evaluation of training activities, transport workers union can be considered as the flagship educational programs for obtaining SPC programs focused on the issues:

- BZPS It applies in misdemeanor proceedings in matters of safety and traffic flow in the area of transport and road management and administrative proceedings related
- DOP in road transport
- DRAH Valid for administrative decision-making and oversight activities in the operation of railways and railway transport
- SH Valid for administrative decision-making and oversight activities in road management
- UP in land use planning

In the quarterly comparison, most graduation requirements SPC for employees in the Department of Transport of the Czech Republic passed in the first quarter of 2010, at least in the quarterly comparison in the first quarter of 2011. This trend turned up in the first quarter of 2012, where there is again an increase in applications for completion SPC. Most were filed applications for capacity building programs for UP (spatial planning) and in administrative decision-making and oversight activities in road management. Overall, in 2011 the use of these programs in the Czech Republic ranked BSPS at 9 position on 20 DOP to 29 expensive for SH 6 and 10 position UP, total was the education offered 31 programs SPC. Most of the certificates of special qualification in 2009 was recorded in MSR. In 2010 it was granted the most certificates in the Central Region and in 2011 in Prague.

### 3.2. MSR position in obtaining a certificate SPC.

Most certificate showing increasing special expertise in MSR was issued in 2009, then joined the downward trend in the number of issued certificates of competence. (see Table 3, public service employees MSK). In 2011, used in MSR public officials to obtain a certificate of special professional competence in the field of spatial decision-making and decision-making in the field of construction law and expropriation.

Table 4 Overview of the certificate of professional competence for the year 2009-2011 by region

region	2009	2010	2011
The City of Prague	232	191	159
South Bohemian Region	133	126	73
South Moravian Region	255	204	141
Highlands region	85	83	54
Karlovy Vary Region	109	70	57
Hradec Kralove region	146	133	75
Liberec Region	133	84	68
Silesian Moravian Reg	<b>316</b>	<b>231</b>	<b>146</b>
Olomouc Region	135	98	70
Pardubice region	147	85	45
Plzen Region	113	95	74
Central region	286	250	151
Usti Region	224	147	127
Zlin Region	124	98	81
summary	2438	1895	1321

Overall MSR in obtaining a certificate SPC reported in 17 of the 31 above-average values (17 values is larger than modus). As one of the counties use the opportunity to gain expertise in the management of civil registration, taxes and finances to a greater extent than other regions. Also, the number of certificates issued in the capacity of road holding, BPSP DOP shows efforts to develop knowledge for the creation of transport infrastructure. Overall more about MSR, see Table 3, Table 5 (reight) 1, figure 3).

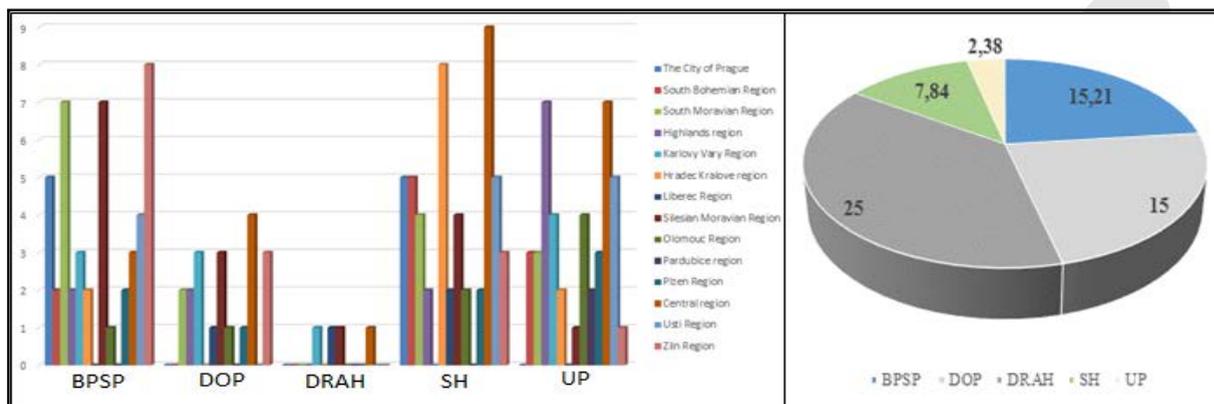


Figure 3 Share of the use of programs for the departments of transport in the Region to use the individual program in the Czech Republic

MSR is slightly below average in the success obtained certification for the first proper time relative to the total number of registered SPC is, when the county ranked at 7 instead of the 14 counties. (average 81.91% success rate). Problems in the organization of programs and subsequent tests were caused by canceling applications. A high percentage of applications were canceled in 2010 due to the equivalence of education (36% of the total number of canceled), which created a problem when planning for (lectures SPC) and tests. According to the survey, internal documents of the Ministry, it was found that there is a systemic change in the recognition of qualifications in the case of equivalence of education.

Table 5 Sum of achievement for proper testing specific expertise by region (left), sum of cancellations in SPC% per year 2010 - 2011 (right)

Region	Pass the examination in due course		
	2009	2010	2011
The City of Prague	65,98	75,13	67,74
South Bohemian Region	83,80	78,51	78,57
South Moravian Region	81,92	82,30	85,71
Highlands region	73,12	70,11	84,62
Karlovy Vary Region	84,26	90,00	86,44
Hradec Kralove region	82,43	86,26	89,33
Liberec Region	70,80	78,41	77,46
Silesian Moravian Region	83,17	79,67	81,88
Olomouc Region	89,71	80,85	86,11
Pardubice region	89,36	88,10	91,11
Plzen Region	81,74	80,39	77,78
Central region	70,61	77,78	76,73
Usti Region	72,97	77,12	77,21
Zlin Region	80,45	72,73	87,65

	Cancel Registrations 2010	cCancel Registrations 2011
The City of Prague	97	62
South Bohemian Region	21	23
South Moravian Region	60	38
Karlovy Vary Region	23	14
Highlands region	17	18
Královohradecký region	39	19
Liberec Region	38	14
Moravian Region	89	51
Olomouc Region	28	16
Pardubice Region	27	9
Plzen Region	18	11
Central region	72	40
Usti Region	51	27
Zlin Region	28	8
Sumary	608	350

The next most common application is the abolition of termination of employment (25%). In 2010, in the Public Administration reported 608 cancellations applications for SPC (see Tables 4, 5), the most common reason



corresponds to the current state of public administration, which is characterized by organizational changes and staff reductions. However, it is necessary to minimize cancellations to avoid variations in educational planning, staff development and inefficient funds expended in the development of civil servants. Also, success of public administration in the proper term is slightly below the national average, so it should be considered whether the conditions for the implementation of tests and preparation is sufficient.

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## Annex 1

*List of abbreviations specific professional qualifications to perform administrative activities* (Source Institute Prague)

BPSP in misdemeanour proceedings in matters of safety and traffic flow in the area of transport and road management and related administrative proceedings;

CS in the organization of civil service performance;

DANE the administration of taxes and fees;

DOP in road transport;

DRAH in administrative decision-making and oversight activities in the operation of railways and railway transport;

FIN for financial management of local governments and its review;

HOKS in the preparation and implementation of economic measures for crisis situations;

CHL in ensuring health and the environment from the harmful effects of chemicals and chemical products;

LHM in forestry and hunting;

MAT in managing registers and citizenship;

OH in waste management and waste containers;

OCHP in nature and landscape protection;

OOKR ensuring the protection of the population and crisis management;

OPCD in the conduct of civil registration and issuance of identity cards and travel documents;

OVZD in air pollution;

PP in heritage preservation and management of museum collections;

EMH in the prevention of major accidents caused by hazardous chemical substances or chemical preparations;

SH in administrative decision-making and oversight activities in road holding;

Schools in education;

SPO in socio-legal protection of children;

SR in land use decision-making and decision-making in the field of construction law and expropriation;

SSP in the implementation of state social support;

NW in the management of benefits and social care services;

UP in spatial planning;

VEDU leading authorities;

VH in water management;

VP in misdemeanour proceedings in the matter of public policy, civil cohabitation and property; ZDR in health care;

ZEM in agriculture;

ZP in the management of commercial activities;

ZPF in the protection of agricultural land and the assessment of environmental impact;

OBEC general part.

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# Depression levels of the elementary school teachers

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## Abstract

The aim of this research is to examine depression levels of the elementary school teachers in terms of the following variables: gender, age, marital status, occupational seniority, contractual-tenured-paid working, working in combined or independent classrooms, number of students in the classroom, place of duty, occupational acceptance, occupational satisfaction and finding the occupation appropriate to one's personality.

Universe of the study is composed of all teachers who are working in 186 city center elementary schools and village schools managed under city administration in Erzurum province of Turkey. Sample of the study is composed of 194 classroom teachers who are working in 40 elementary schools that were randomly selected among the schools in the universe of the study. Personal Information Form and the "Beck Depression Inventory" were used as data collection instruments in the research. In view of these findings, no significant difference was observed among the depression levels of the elementary school teachers in terms of gender, age, occupational seniority, marital status, types of classrooms where they teach, their place of duty and type of employment. It was observed that there was a significant difference among the depression levels of the elementary school teachers in terms of number of students in the classrooms, occupational acceptance, occupational satisfaction and finding the occupation appropriate to one's personality.

**Keywords:** Elementary school teacher, depression

## 1. INTRODUCTION

Education can be defined as knowing the story of the universe, Earth, life systems and consciousness as well as recognizing the role of humanity in this story. The primary objective of education is to enable people to fulfill these roles (Langford, 1999). Teachers take on sacred duties of raising individuals for every occupation that the society needs, fulfilling the information need of the society and shaping the future of the nations (Kuran, 2002). Elementary school years constitute an important period in children's physical, psychological and social development. Elementary school teachers are experts who are responsible for education during this period. Teachers are the primary models that students look up to in their socialization process. The teachers, who are taken as models, contribute positive or negative effect to the personality development of the students. A teacher's role and his/her behaviors hold great importance in the classroom. Therefore, teachers have to pay attention to their behaviors. Teachers' support, attention, compassion and love for their students encourage them at the same level as the negative effects that occur when teachers unfairly criticize, punish and humiliate their students. If the teachers experience psychological problems, this devastation increases more in terms of quantity. Depression is one of the most significant psychological problems. Depression is a serious and well-defined psychological

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problem that has distinctive symptoms and that must be taken seriously. Everyone may experience emotions such as sadness, grief and unhappiness in a period of his/her life. These emotional stages, which are generally temporary and related with the experienced situations, can be occasionally experienced at extreme levels and for a longer time although no clear reason is observed to cause it. Such types of emotions may disrupt individuals' relationship with themselves and the people around them.

Depression manifests itself in some emotional, mental, behavioral and physical symptoms. A depressive mood is the most noticeable symptom of depression. Depressed people are generally unhappy, pessimistic and hopeless. They feel sad and lonely. They may lose interest towards themselves and their surroundings. At times, this depressed mood can be accompanied by symptoms such as tension, uneasiness and extreme skepticism. These people can be ill-tempered from time to time. They occasionally feel apathy; they cannot cry, laugh or feel closeness to anybody (Tuğrul and Sayılğan, 1997).

Researches conducted on the prevalence of depression in Turkey and other countries showed that 20-30% of the general population have one or several of depressive symptoms whereas 10-15% of the general population have symptoms that can be diagnosed as depression and that have to be treated (Köknel, 1989). World Health Organization (WHO) reports that 3-5% of world population (approximately 150-200 million people) have depression symptoms at various levels (Baltaş and Baltaş, 1999). In his research, Dilekmen (2011) found that teachers in Turkey experience some psychological problems and reflect this condition on their students as negative behaviors in six different categories. Yıldırım (2007) found that teacher support reduces stress and depression levels of students. Reynolds, Wallace, Hill & et al. (2001) found that there is a positive relationship between depression and negative self.

Kashani and Sherman (1988) stated the importance of social skills, lack of self-efficacy and mother-father child relationships in depression experiences of children. They stated that depressed people have insufficiencies in self-rewarding, self-assessment and self-monitoring. In his study, Tennant (1988) stated that negative experiences of children in preschool period are influential in depression, and sources of stress, especially divorce of parents, are significant in explaining the depression in adults. In his study entitled "memoirs of teachers", Bakır (2005) observed that the depression levels of teachers who work in cities are higher than those of the teachers who work in villages; the depression levels of teachers who work as substitute are higher than those of other teachers; and the depression levels of female teachers are higher than those of male teachers. In their study, Humensky, Kuwabara, Fogel and et al. (2010) concluded that the educational environments, in which there are individuals with depression symptoms, negatively affect the school performance causing negative mood, interaction problems with peers, failure to concentrate on courses and reducing success. Gold, Smith, Hopper and et al. (2010) concluded that creating cognitive awareness can be effective in reducing anxiety, depression and stress of the elementary school teachers.

Many different studies have been conducted on the subject of depression. However, there is not enough number of studies found in terms of these variables in this study that is related with elementary school teachers. This study tested how depression levels of the elementary school teachers differed in terms of the following variables: gender, age, marital status, occupational seniority, contractual-tenured-paidH working, working in combined or independent classrooms, number of students in the classroom, place of duty, occupational acceptance, occupational satisfaction and finding the occupation appropriate to one's personality.

## 2. METHOD

### 2.1. Research Design

The research is a descriptive study conducted in compliance with survey model in terms of variables.

### 2.2. Universe and Sample

The universe of the study is composed of all teachers who are working in 186 city center elementary schools and village schools managed under city administration in Erzurum province of Turkey. The sample of the study is composed of 194 classroom teachers who are working in 40 elementary schools that were randomly selected among the schools in the universe of the study.

### 2.3. Data Collection Instrument

Personal Information Form that was prepared by the researcher and the “Beck Depression Inventory” that was developed by Beck, Ward, Mendelson, Mock & Erbaugh were used as data collection instruments in the research. The Beck Depression Inventory was first formed by Beck, Ward, Mendelson, Mock & Erbaugh in 1961. It was revised in 1971 reproduced in 1978 (Groth-Marnat, 1990). It is one of the most common studies that are used in clinically determining the symptoms of depression. It was developed in English in 1961. It was used in more than 2000 studies and translated into many languages. It exhibited intercultural reliability and validity at high levels. Two independent adaptation studies were conducted in Turkey for the Beck Depression Inventory. One of them is the adaptation study entitled “Beck Depression Scale” that was conducted by Buket Tegin (Erkal) (1980). The other is the study entitled “Beck Depression Inventory” that was conducted by Nesrin Şahin (Hisli) (1988-1989). Internal consistency coefficient and item-total score correlations of the scale were examined for reliability studies. In view of the obtained results, internal consistency coefficient of the scale was found to be 0.93 while its item-total score correlations were observed to range from .45 to .72. Criterion-related validity and structural validity were examined for the validity studies of the scale.

The Beck Depression Inventory is an instrument commonly used in measuring the phase and intensity of depression. It is a scale that is of 4-point Likert type. The inventory, which is composed of 21 questions, measures characteristic behaviors and symptoms of depression. Its implementation takes approximately 10-15 minutes (Groth-Marnat, 1990). This condition increases the practicability of the scale. Reliability: It was obtained in different times with tests that the average internal reliability of the Beck Depression Inventory is 0.86 whereas its internal reliability ranged from 0.73 to 0.92. Similar reliabilities were also obtained for the 13-item short form. Cronbach’s Alpha values of the Beck Depression Inventory exhibit high internal consistency ranging from 0.86 to 0.81.

### 2. Procedures

The Beck Depression Inventory and the Personal Information Form, which were data collection instruments, were implemented by the researcher in the schools that were identified as the sample of the study. The researcher introduced himself and gave some information about the aim of the research for each implementation. Moreover, teachers were informed on how to answer the inventories, and their questions were answered during the implementation session. The implementation took approximately 10-15 minutes to complete for each teacher. The participants’ answers were checked after the implementation session was over. Measuring instruments, which were answered outside the standards of measuring instruments or left blank, were not included in the evaluation. Upon completion of implementations, all inventories were checked by the researcher. The number of teachers that completed the implementations was observed to be 194. SPSS 17.0 software program was used for the statistical analyses. T-test, Kruskal-Wallis Test, Mann-Whitney U Test, one-way ANOVA, LSD and Dunnett’s T3 tests were used in the analyses.

### 3. Findings

The data obtained in the research were subjected to statistical processes and the results were given below.

Table 1

Means, Standard Deviations and T Values Regarding the Depression Scores of the Elementary School Teachers in Terms of Gender

Dependent Variable	Gender	N	$\bar{X}$	Sd	t	p
Depression	Female	118	8.57	6.78	-.181	.856
	Male	76	8.75	6.08		

No significant difference was found among the mean depression scores of the elementary school teachers in terms of gender ( $t_{192} = -.181$   $p=.856$ ). In view of this result, no significant difference was found among the depression levels of the elementary school teachers in terms of gender.

Table 2

Mean Ranks and Kruskal-Wallis Test Values Regarding the Depression Scores of the Elementary School Teachers in Terms of Age Groups

Dependent Variable	Age Group	N	Mean Rank	$\chi^2$	p
Depression	20-29	173	16.40	4.374	.224
	30-39	88	15.62		
	40-49	66	16.20		
	50-59	222	14.58		
	Total	559	15.85		

No significant difference was found among mean ranks of the depression scores of the elementary school teachers in terms of age groups ( $\chi^2_{(3)} = 4.374$ ,  $p=.224$ ).

Table 3

Mean Ranks and Kruskal-Wallis Test Values Regarding the Depression Scores of the Elementary School Teachers in Terms of Occupational Seniority

Dependent Variable	Occupational Seniority	N	Mean Rank	$\chi^2$	p
Depression	1-5 years	33	101.08	7.	.198
	6-10 years	60	110.74		
	11-15 years	45	87.69		
	16-20 years	33	95.27		
	21-25 years	12	85.46		
	26 years or more	11	74.50		
	Total	194			

No significant difference was found among mean ranks of the depression scores of the elementary school teachers in terms of occupational seniority ( $\chi^2_{(5)} = 7.320$ ,  $p = .198$ ).

Table 4

Means, Standard Deviations and T Values Regarding the Depression Scores of the Elementary School Teachers in Terms of Marital Status

Dependent Variable	Marital Status	N	$\bar{X}$	Sd	t	p
Depression	Single	41	9.00	6.63	.393	.694
	Married	153	8.54	6.48		

No significant difference was observed among the depression scores of the elementary school teachers in terms of marital status ( $t_{192} = .393$ ,  $p = .694$ ).

Table 5

Mean Ranks and Mann-Whitney U Test Values Regarding the Depression Scores of the Elementary School Teachers in Terms of the Types of Classrooms Where They Teach

Dependent Variable	Type of Classroom	N	Mean Rank	U	p
Depression	Combined	18	107.17	1410.000	.442
	Individual	176	96.51		
	Total	194			

No significant difference was observed among mean ranks of the depression scores of the elementary school teachers in terms of the types of classrooms where they teach ( $U_{192} = 1410.000$ ,  $p = .442$ ).

Table 6

Mean Student Number Groups and Standard Deviation of the Classrooms Where Elementary School Teachers Teach

Student Number Group	N	$\bar{X}$	Sd
20 or fewer	52	9.21	6.89
21-30	100	9.50	6.25
31-40	42	5.76	5.88
Total	194	8.64	6.50

One-Way ANOVA was conducted in order to find whether or not there was a significant difference among mean depression scores of the elementary school teachers in terms of student number groups of the classrooms where they teach, and the results of this analysis were given in Table 7.

Table 7

ANOVA Regarding the Difference Among the Depression Scores of the Elementary School Teachers in Terms of Student Number Groups of the Classrooms Where They Teach

	Sum of Squares	Sd	Mean Square	F	p
Intergroup	449.527	2	224.763	5.566	.004
Intragroup	7712.932	191	40.382		
Total	8162.459	193			

It was observed that there was a significant difference among mean depression scores of the elementary school teachers in terms of student number groups of the classrooms where they teach ( $F(2-193)= 5.566, p=.004$ ).

In view of the Post-Hoc analysis (LSD) that was conducted in order to detect from which groups that the difference resulted, the depression scores of the elementary school teachers who teach 20 and fewer ( $p=.010$ ) and 21-30 ( $p=.001$ ) student number groups were found significantly higher than the depression scores of the elementary school teachers who teach 31-40 student number group.

Table 8

Mean Ranks and Mann-Whitney U Test Values Regarding the Depression Scores of the Elementary School Teachers in Terms of Place of Duty

Dependent Variable	Place of Duty	N	Mean Rank	U	p
Depression	Village	26	103.92	2017.000	.530
	City Center	168	96.51		
	Total	194			

No significant difference was observed among the depression levels of the elementary school teachers in terms of place of duty.

Table 9

Mean Ranks and Mann-Whitney U Test Values Regarding the Depression Scores of the Elementary School Teachers in Terms of Types of Employment

Dependent Variable	Type of Employment	N	Mean Rank	U	p
Depression	Contractual	9	88.39	750.500	.618
	Tenured	185	97.94		
	Total	194			

No significant difference was found among mean ranks of the depression scores the elementary school teachers in terms of types of employment ( $U_{(192)}=750.500$ ,  $p=.618$ ).

Table 10

Mean Ranks and Kruskal-Wallis Test Values Regarding the Depression Scores of the Elementary School Teachers in Terms of Their Acceptance of Teaching Occupation

Dependent Variable	Occupational Acceptance	N	Mean Rank	$\chi^2$	p
Depression	Low Level of Acceptance	16	140.53	15.243	.000
	Acceptance	87	103.21		
	High Level of Acceptance	91	84.48		
	Total	194			

A significant difference was found among mean ranks of the depression scores of the elementary school teachers in terms of accepting teaching occupation ( $\chi^2_{(2)}=15.243$ ,  $p=.000$ ).

In view of the conducted Dunnett's T3 analysis, the depression scores of the elementary school teachers who had low level of occupational acceptance were found significantly higher than the depression scores of the elementary school teachers who had high level of occupational acceptance ( $p=.000$ ).

Table 11

Mean Ranks and Kruskal-Wallis Test Values Regarding the Depression Scores of the Elementary School Teachers in Terms of Their Satisfaction with Teaching Occupation

Dependent Variable	State of Satisfaction	N	Mean Rank	$\chi^2$	p
Depression	No Satisfaction	11	152.27	28.842	.000
	Low Level of Satisfaction	26	134.73		
	Satisfaction	97	92.30		
	High Level of Satisfaction	60	79.73		
	Total	194			

A significant difference was found among mean ranks of the depression scores of the elementary school teachers in terms of satisfaction with teaching occupation ( $\chi^2_{(3)} = 28.842, p = .000$ ).

In view of the conducted Dunnett's T3 analysis, the depression scores of the elementary school teachers who were not satisfied with teaching occupation were found significantly higher than the depression scores of the elementary school teachers who were satisfied with teaching occupation ( $p = .021$ ) and the elementary school teachers who had high level of satisfaction with teaching occupation ( $p = .007$ ). Furthermore, it was observed that the depression scores of the elementary school teachers who had low level of satisfaction with teaching occupation were found significantly higher than the depression scores of the elementary school teachers who were satisfied with teaching occupation ( $p = .005$ ) and the elementary school teachers who had high level of satisfaction with teaching occupation ( $p = .000$ ).

Table 12

Mean Ranks and Kruskal-Wallis Test Values Regarding the Depression Scores of the Elementary School Teachers in Terms of Finding the Teaching Occupation Appropriate to Their Personalities

Dependent Variable	Appropriateness to Personality	N	Mean Rank	$\chi^2$	p
Depression	Low Level of Appropriateness	29	130.36	14.494	.001
	Appropriateness	101	97.51		
	High Level of Appropriateness	64	82.59		
	Total	194			

A significant difference was found among mean ranks of the depression scores of the elementary school teachers in terms of finding the teaching occupation appropriate to their personalities ( $\chi^2_{(2)}= 14.494$ ,  $p=.001$ ).

In view of the conducted Dunnett's T3 analysis, the depression scores of the elementary school teachers who found the teaching occupation slightly appropriate to their personalities were found significantly higher than the depression scores of the elementary school teachers who found the teaching occupation appropriate to their personalities ( $p=.024$ ) and the elementary school teachers who found the teaching occupation very appropriate to their personalities ( $p=.002$ ).

#### 4. Discussion

No significant difference was found among the depression levels of the elementary school teachers in terms of gender, age, occupational seniority, marital status, types of classrooms where they teach, place of duty and types of employment. This condition showed that the stated variables did not diversify the depression of the elementary school teachers. This also showed that the stated variables affected the depression levels of the teachers similarly. Furthermore, the fact that the responsibilities and working conditions of the teachers were the same in terms of the stated variables might have been influential on this result.

It was observed that compared to other elementary school teachers, there was a positive significant difference in the depression levels of the teachers who accepted their occupation; who were satisfied with their occupation; who found this occupation appropriate for their personalities; and who had a low number of students in the classrooms where they teach. Reynolds, Wallace, Hill & et al. (2001) found a positive relationship between depression and negative self. In their study, Humensky, Kuwabara, Fogel and et al. (2010) concluded that the individuals with depression symptoms negatively affect educational environments while causing negative mood, experiencing interaction problems with their peers, failure to concentrate on courses and reducing success. When these results are taken into consideration, it can be stated that the teachers, who work in crowded classrooms,

who perform their occupation unwillingly, who are not satisfied with their occupation and who do not find this occupation appropriate for their personalities, will experience more depressive symptoms, may hurt students more and may have negative self-perceptions. Making occupational improvements by paying attention to the results regarding the stated variables can positively affect the related disadvantaged groups. Gold, Smith, Hopper and et al. (2010) concluded that creating cognitive awareness can be effective in reducing anxiety, depression and stress of the elementary school teachers. When this research result is taken into consideration, studies must be conducted, which will increase cognitive awareness in reducing depression states of the teachers who work in crowded classrooms; who perform their occupation unwillingly; who are not satisfied with their occupation; and who do not find this occupation appropriate to their personalities.

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4<sup>th</sup> International Conference on New Horizons in Education

# Design, development and evaluation of flash software that could be used in vehicles for the education of autistic students

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## Abstract

In the processes of design, development and selection of software needed for the individuals in need of special education, the characteristics of these individuals should be observed. Software might be used as the support material for the education of the individuals in need of special education. In many researches done, it has been concluded that computer supported programs provided long term orientation by increasing the motivation of the individuals with a disability and that they enjoyed working at the computer.

With the introduction of developing technology which surrounds all aspects of life as well as education, it should be provided that children with mental disabilities apart from regular students should also make use of from these technologies. In this research done in this context, it was aimed "concept teaching" based on simulation and animation by using mobile tools in the education of children with mental disabilities. Visual programs supported by technology made very significant contributions to the students of concept teaching in the schools and rehabilitation centers offering these resources.

Application of this study was made with 21 students from four different school and rehabilitation center located in the Sakarya province of Turkey. In the result of the evaluation of the data obtained from the application, use of visual programs supported by technology proved positive contributions in concept teaching.

Keywords: Mentally disabled students, concept teaching and technology.

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## 1. Introduction

With the increasing use of information and communication technologies, educators state that trend towards global education is inevitable and global education practices should be given importance and be started. Rapid advances in communication technologies have influence on the structure and format of the education and forces educators to develop new training programs and models of teaching and learning (İşman, 2005). As İşman stated, with the use of technology actively have made radical changes in their education systems by developing different methods in education and training to raise contemporary individuals.

Individuals with mental disabilities is often defined as the “state of being significantly in retard of normal students in the process of development and showing inability in adaptive behaviors”. (Özsoy, Özyürek, Eripek, 1988). In spite of the existence of the individuals in this definition throughout the history, their training does not go back that far.

“Individuals in need of special education due to their communication-related mental, sensory, emotional, social, physical properties are individuals in need of more special services in their normal training process. Different educational efforts are needed for the training of these individuals. Special curriculum development, the use of special material, use of special education experts, special physical arrangements in training places and the like are the properties which should take place in the training of individuals with special educational needs.” (Güven, 2003). With developing technology, education systems and teaching methods also vary. Technology used in every field of education and training has also started to be used in the education of individuals with special educational needs. This makes them learn many things in a short time, as well as reinforce what they learnt by reiterating in different times to ensure permanence.

In the studies on special education, different teaching methods were developed but technological studies in these methods have been started to be used in the last few years. However, children with intellectual disabilities also live in the developing and changing age like other people and they are curious about tablets, mobile phones and computers. Here is the point where information technologies provide great use to educators in teaching them concepts that they are going to use in daily life by using their curiosity. A lot of factors that are difficult to be implemented by classical education can be put into reality by information technologies. “According to many studies which includes comparisons between the traditional teaching / training programs and computer-aided education show that computer supported software have positive effects on the learning of on children with disabilities.”(Pişkin, 1995; Heimann et all, 1995; Moore, McGrath ve Thorpe, 2000; Bosseler ve Massaro, 2003; Hetzroni ve Tanous, 2004; Özdener ve Erkoç, 2006).

“Studies done in this context show that computer-assisted programs increase the motivation of children with disabilities and make them gather their attention and they enjoy very much studying at a computer” (Bayram, 2008, s.3).

### 1.1. Objectives of the research

In this research, animation and simulation-based concept training in the training of mentally retarded children by using mobile devices is aimed. Objectives expected with the software developed as a result of this research are;

- To gain these individuals to the society again,
- To create awareness in the community
- To present the concepts regarded as the first step in their development,
- To make them use of the technology,
- To put training in every moment of their life not only in only rehabilitation centers.

### *1.2. Research universe*

The universe of this research includes students with intellectual disabilities studying in the special education and rehabilitation centers in the province of Sakarya. Concepts were thought to these students by using Mobile Teaching Software.

### *1.3. Sampling process*

Research application was conducted in three parts. In the first phase, readiness of the student was determined by applying pretest. Thus, it was determined which concept would be the starting point in the training. Second phase is the training / education phase. In this phase, the desired concept was thought and whether it had been understood or not was determined by applying an interim test. In the last phase, it was checked whether the concept thought was learned permanently or not by applying the final test.

### *1.4. Limitations*

The limitations of the software developed for mobile devices are listed as follows:

- Each student's socio-economic status may not be suitable to possess a tablet computer.
- Use of tablets might be seen costly and for this reason, schools and rehabilitation centers might prefer using traditional education models.
- Teachers for the education might oppose using technology.

### *1.5. Research model*

Pre-test and posttest control group experimental model was used as the research model. Post test results of experiment and control group were analyzed by using Paired Samples t-Test in the end of the implementation.

### *1.6. Data collection*

Data used in this research were collected by applying the software, developed for the mobile gadgets, in the education of the children. This software was used in four different schools for twenty one students in the province of Sakarya. It was aimed that the mentally disabled students were thought "concept teaching" by using pre-installed developed software on the tablet computers.

## 2. Software Developed for the Mobile Computers

Sections of the software used in “Concept Teaching” in the education of the mentally disabled students are as follows;

### 2.1. Main Menu

Main sections of the software are seen in the figure-1. User is directed to other sections of the software by clicking the links on this screen.

- Registration
- Pre-test
- Education
- Report
- About



Figure 11. Main Page

These menus, sub-menus will be explained one by one.

### 2.2. Registration

As it is seen in the figure-2, school name and student's name is input to the system to use in the process of education. To turn back to main page, Main Page button is used below the screen.

### 2.3.

Figure 12. Registration

### 2.3 Pre-test and Post-test

These tests are the tests used to determine the readiness of the students and how much they learned in the end of the education. As seen in the figure-3, there are double test, triple test and drag tests. Which test is to be used is determined according to the student's learning ability level.

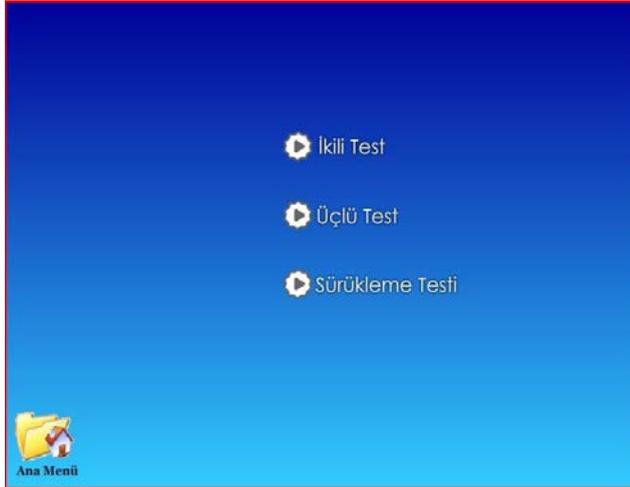


Figure 13. Pre-test

After selecting the test, you will see the sub-menu “Concept Subjects”. From this screen, concept to be thought to the student is selected.



Figure 14. Pre Test Concepts

When “Transportation Vehicles” link is clicked (Figure-5), pre-test – Double Test screen is seen. Software asks the student in voice “which one is the train?”

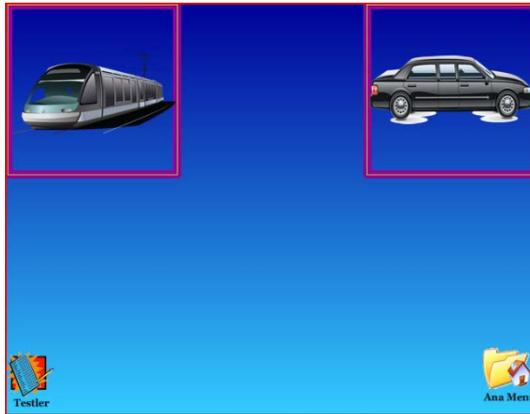


Figure 15. Pre Test Double Test. "Transportation Vehicles"

If the answer is correct, the software says to the student "Correct, Congratulations" and applauding sound comes and another question comes.

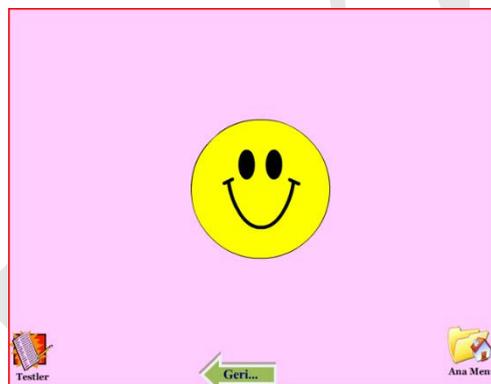


Figure 16. Pre test Double Test Correct

If the answer is not correct Figure-7: Pre-test, Double Test Transportation Vehicles- Incorrect screen appears and says to the student "Try again!"

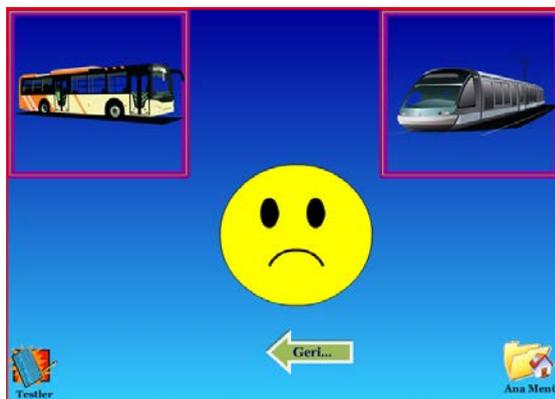


Figure 17. Pre test Double Test Incorrect

#### 2.4. Education

After applying the pre-test, the subjects to be thought are determined and then students passes to the second phase. The subject to be thought is selected from the figure-8 screen.



INTE 2013

Then, Education – Transportation Vehicles screen appears (Figure-9)



From this screen, Transportation Vehicle to be taught is selected. The view of the selected vehicle (figure-10) appears on the screen and the size of the vehicle grows in the screen and tells the type of the vehicle five times repeatedly. To make the student repeat, the screen doesn't change until the next command.



### 3. Analysis of the data

During research made in Sakarya Center and Hendek District upon 3 different groups, the data have been collected from 5 students from each group whose learning levels are the same. Before teaching concepts by enhanced program preliminary made test results of each group are shown on table below by giving 1 to known concepts and 0 to unknown concepts and by taking averages of group data. Second test data were obtained by using the same methodology after giving education. Last test data were obtained 2 months after the education by the same methodology mentioned above. The significance of relationship between preliminary test and second test has been tested by paired samples t-test. To test permanence of taught concepts to students' relationship between preliminary test and last test has been tested by using the same method and the results have been shown on table below. The names of schools and students from whom the data have been obtained were not given because it was thought that it would not be ethical.

#### 3.1. Data of first group

Rehabilitation Centre: A

Name of the Student: X

Table 1.

VEHICLES	Pre-test	Interim-test	Post-test
Bicycle	1	1	1
Motor Cycle	0	1	0
Automobile	1	1	1
Train	0	1	1
Airplane	0	1	1
Bus	0	1	1

By looking at data on Table-1, it was observed that; as a result of preliminary test students in that group did not know the majority of concepts; in interim test made after getting education through the program used in enhanced mobile devices concepts have been learnt; and in last test after some time passed they learnt majority of concepts and their learning is permanent.

Table 2.

MEASURE	N	$\bar{X}$	S	Sd	t	p
PRE-TEST	6	0,33	0,516	5	-3,12	0,025
INTERIM TEST	6	1,00	000			

By running paired samples t-test in SPSS for pre-test and second test data in Table 1, results in Table-2 have been obtained. Because the t value is minus it has been observed that there had been significant change between preliminary test and interim test data and that the program had a contribution in teaching concepts. Because P value is  $0,025 < .05$  this contribution is statistically significant.

Table 3.

MEASURE	N	$\bar{X}$	S	Sd	t	p
PRE-TEST	6	0,33	0,516	5	-1,12	0,045
LAST TEST	6	0,83	0,408			

By running paired samples t-test in SPSS for pre-test and last test data in Table 1, results in Table-3 have been obtained. Because the t value is minus it has been observed that there had been significant change between preliminary test and last test data and that the program had a contribution in permanency of concepts. Because P value is  $0,045 < .05$  this contribution is statistically significant.

## 3.2. Data of second group

Rehabilitation Centre: B

Name of the Student: Y

Table 4.

VEHICLES	Pre-test	Interim-test	Post-test
Bicycle	1	1	1
Motor Cycle	0	1	1
Automobile	0	1	1
Train	0	1	1
Airplane	0	1	1
Bus	0	1	0

By looking at data on Table-4, as a result of preliminary test, students in this group did not know the concepts compared with group X and after being educated through the program enhanced in mobile devices in interim test it has been observed that they had learnt majority of concepts and in last test after some time passed this learning is permanent.

Table 5.

MEASURE	N	$\bar{X}$	S	Sd	t	p
PRE-TEST	6	0,17	0,408	5	-5	0,04
INTERIM TEST	6	1	000			

By running paired samples t-test in SPSS for pre-test and second test data in Table 4, results in Table-5 have been obtained. Because the t value is minus it has been observed that there had been significant change between preliminary test and interim test data and that the program had a contribution in teaching concepts. Because P value is  $0,004 < 0,05$  this contribution is statistically significant.

Table 6.

MEASURE	N	$\bar{X}$	S	Sd	t	p
PRE-TEST	6	0,17	0,408	5	-3,162	0,025
LAST TEST	6	0,83	0,408			

By running paired samples t-test in SPSS for pre-test and last test data in Table 4, results in Table-6 have been obtained. Because the t value is minus it has been observed that there had been significant change between preliminary test and last test data and that the program had a contribution in permanency of concepts. Because P value is  $0,012 < 0,05$  this contribution is statistically significant.

### 3.3. Data of third group

Rehabilitation Centre: C

Name of Student: Z

Table 7.

VEHICLES	Pre-test	Interim-test	Post-test
Bicycle	0	1	1
Motor Cycle	0	1	1
Automobile	0	0	0
Train	0	0	0
Airplane	0	1	1
Bus	0	1	0

By looking at data on Table-7, as a result of preliminary test, students in this group did not know the concepts at all and after being educated through the program enhanced in mobile devices in interim test it has been observed that they had learnt majority of concepts and in last test after some time passed this learning is permanent.

Table 8.

MEASURE	N	$\bar{X}$	S	Sd	t	p
PRE-TEST	6	0,00	0,000	5	-1,12	0,025
INTERIM TEST	6	0,67	0,516			

By running paired samples t-test in SPSS for pre-test and second test data in Table 7, results in Table-8 have been obtained. Because the t value is minus it has been observed that there had been significant change between preliminary test and interim test data and that the program had a contribution in teaching concepts. Because P value is  $0,025 < .05$  this contribution is statistically significant.

Table 9.

MEASURE	N	$\bar{X}$	S	Sd	t	p
PRE-TEST	6	0,00	0,000	5	-2,236	0,076
LAST TEST	6	0,50	0,548			

By running paired samples t-test in SPSS for pre-test and last test data in Table 7, results in Table-9 have been obtained. Because the t value is minus it has been observed that there had been significant change between preliminary test and last test data and that the program had a contribution in permanency of concepts. Because P value is  $0,076 < .05$  this contribution is statistically significant.

## 4. Conclusion

The use of mobile device application that was developed in this study showed that computer aided education facilitates mentally disabled children's learning. Using animations and simulations in conceptual teaching helped retaining of the learning. Results of the students' tests and teachers' opinions showed that mobile devices helped the education of mentally disabled students. Animation and simulation-based mobile devices used in this study with the classical concept teaching materials, teaching materials, the difference between the cross-testing may be a subject of further studies.

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4<sup>th</sup> International Conference on New Horizons in Education

# Design within the historic environment: A survey on admiration preferences

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## Abstract

Today, the new designs applied within historic environments are realized with approaches that vary between two extremes. A permanent doctrine related to such examples, which are sometimes criticised positively and sometimes negatively in terms of their effects on the existing texture, has not yet been put forth.

This paper is on the works created with similar and/or opposite approaches for new incompatible-looking buildings within the historical environment and the admiration preferences of these works. The potential designs formed on a street of Safranbolu, which is a world heritage site, have been evaluated by the students who attend the elective course named 'New Buildings in Historical Environments-Studio' given at the Department of Architecture in the Karabük University. This rehabilitation work aiming at conservation-development, which is rebuilt based on current allowed building heights, is aiming to search for means of solution on behalf of compatibility of old and new.

*Keywords:* design within the historic environment; Safranbolu-Baysal Street; Karabük University Department of Architecture

## 1. Introduction

MIM448 New Buildings in Historical Environments-Studio is carried out as one of the elective courses in the eighth semester at the Department of Architecture of the Faculty of Safranbolu Fethi Toker Fine Arts and Design in the Karabük University (Table 1).

Table 1. European Credit Transfer System (ECTS) form of the course named 'New Buildings in Historical Environments-Studio'

### GENERAL INFORMATION

<b>Code</b>	MIM448	<b>Title</b>	New Buildings in Historical Environments-Studio				<b>Semester</b>	8	
<b>Lecture</b>	1	<b>Practice</b>	2	<b>Laboratory</b>	0	<b>Credit</b>	2	<b>ECTS</b>	5
<b>Level</b>	Bachelor's Degree	<b>Language</b>	Turkish	<b>Type</b>	Elective	<b>Education System</b>	Formal Education	<b>Prerequisites</b>	None
<b>Objective</b>	To introduce the design approaches in historical environments, to discuss the topic on the examples.								
<b>Content</b>	Explanation of the historical environment concept, introduction of the design approaches that can be applied for infill buildings in historical environments together with their examples, examination and assessment of the topic on a featured environment.								

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**Learning Outcomes**

Upon successful completion of this course, students will be able to:

- Get sensitive to historical environments.
- Explain the design approaches in historical environments.
- Analyze historical environments.
- Design new buildings in historical environments.
- Survey admiration preferences of designs in historical environments.
- Criticize the new designs applied within historic environments.

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**Lecturer**

assist.prof.dr. Süheyla BİRLİK

**WEEKLY SCHEDULE**

1. week	The historical environment concept
2. week	The factors that cause deterioration of historical environments
3. week	Reasons of conservation of historical environments
4. week	Analysis of historical environments
5. week	The design approaches in historical environments
6. week	Examples of new buildings in historical environments / determination of topic of homework (library and internet researches)
7. week	Mid-term exam
8. week	Conservation-development aimed urban rehabilitation studies: an example in Safranbolu / determination of design and term paper studies
9. week	Field study: identification-documentation
10. week	Field study: partial rehabilitation
11. week	Design: field rehabilitation-redevelopment
12. week	Design: field rehabilitation-redevelopment
13. week	Design: field rehabilitation-redevelopment
14. week	Subjective evaluation
15. week	Presentation
16. week	Final exam
17. week	Final exam

**CATEGORY**

Expertise/Field Course

**LEARNING ACTIVITIES & TEACHING METHODS**

Brainstorming

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Case Study  
 Discussion  
 Field Trip/Study  
 Homework  
 Lecture & In-class Activities  
 Practice  
 Problem Solving  
 Project Design/Management  
 Reading  
 Report Preparation and/or Presentation  
 Social Activity  
 Team/Group Work

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### CONTRIBUTION TO PROGRAM

Program Qualifications	Contribution Level				
	1	2	3	4	5
To be able to express intellectual thoughts verbally and in written			X		
To have information on topics related to environment, art, history of architecture, to follow current developments					X
To be able to use different means in concrete expressions of abstract thoughts				X	
To protect historical environments and to be able to apply architectural restoration techniques					X
To be able to show the physical environment control data in their works					
To be able to create original designs taking advantage from traditional and new concepts related to architecture					X
To be able to adapt into their own designs information acquired from building scale to urban environment					X
To be able to reflect on their own designs innovations in construction technology and material fields				X	
To think critically on the subject of design, to be able to generate alternatives to changing conditions					X
To know the scientific research process very well, to report information and findings obtained and to be able to present them in required places					X
To be able to perform intradisciplinary and interdisciplinary works on an appointed subject			X		
To be possessed of social sensitivity and occupational ethics					

### ASSESSMENT METHODS AND CRITERIA

Mid-term Exam	%20
Quizzes	
Homework	%20
Project	%30
Term Paper	%20
Laboratory Work	
Other	
Final Exam	%10

### WORKLOAD DISTRIBUTION AND ECTS CREDIT

Learning Activities	Hour	Week	Workload (hour)
Duration (excluding the exam week)	3	14	42
Duration of Study Outside the Classroom (pre-study, practice)	0	0	0
Mid-term Exam and Individual Study for the Mid-term Exam	5	1	5
Quizzes	0	0	0
Homework	7	1	7
Project	36	1	36
Term Paper	30	1	30
Laboratory Work	0	0	0
Other	0	0	0
Final Exam and Individual Study for the Final Exam	8	1	8
	Total Workload		128
	Total Workload / 25.5 (h)		5.02
	ECTS Credit		5

## 2. Design within the Historic Environment

When the current developments are considered -in terms of contextual compatibility-, the approaches that can be adopted in the new building designs in historical environments can be collected under the following headings:

- similar approach
- opposite approach
- harmonic contrast approach

### 2.1. Similar Approach

#### *imitation*

to rebuild by copying the characteristics of the past (Figure 1)



Figure 1. Safranbolu; Turkish Retired Workers Association Safranbolu Branch Presidency / Karabük (photos: Süheyla Birlik)

#### *version*

to rebuild by addressing the characteristics of the past from a different viewpoint (Figure 2)



Figure 2. Göreme; Ataman Hotel / Nevşehir (photos: Süheyla Birlik)

### 2.2. *Opposite Approach*

to build by reflecting the characteristics of the own era (Figure 3)



Figure 3. St. Stephen's Cathedral; Haas House / Vienna (photos: Süheyla Birlik)

### 2.3. *Harmonic Contrast Approach*

to build by using the characteristics of both the past and the own era (Figure 4).



Figure 4. Matthias Church; Hilton Budapest Hotel / Budapest (photos: Süheyla Birlik)

### 3. Safranbolu-Baysal Street

Baysal Street (Figure 5), which has possession of both old and -incompatible with the texture- new buildings, is the preferred model application area in this study.



Figure 5. Baysal Street (south silhouette) / current situation

*conservation-development aimed rehabilitation study*

Potential designs (Table 2) has been developed in the manner of:

- restoring of the old buildings
- rebuilding of the new buildings incompatible with the texture based on current allowed building heights

Table 2. Baysal Street (south silhouette) / potential designs



*subjective evaluation*

The current situation and potential designs have been evaluated by the students (twenty seven persons; fifteen girls, twelve boys) who study at the fourth-grade at the Department of Architecture in the Karabük University in the 2012-2013 Academic Year and attend the course named 'New Buildings in Historical Environments-Studio'.

The subjects were asked to answer the questionnaire forms prepared by the Semantic Differentiation Scale for the street silhouettes for which the sequence of display is specified by drawing of lots.

Table 3. Semantic Differential Scale / frequency distribution

	strongly agree	agree	partially agree	neutral	partially agree	agree	strongly agree	
	+3	+2	+1	0	-1	-2	-3	
impressive					2	0		unimpressive
orderly			1 0					unorderly
well-balanced				1		0		poorly-balanced
spectacular					0 1	3		unspectacular
original						1		ordinary

a=current      b=imitation      c=version      d=opposite      e=harmonic contrast

#### 4. Conclusion

According to the statistical data obtained as a result of the evaluation by the architect candidate students of the current situation and potential designs of Baysal Street, which is located within the historical texture of the city of Safranbolu, the 'admiration preferences' have been listed as:

imitation	→	version	→	harmonic contrast	→	opposite	→	current
- 0.296		-0.4148		- 0.5851		- 0.7185		- 0.8370

What is desired to be accomplished with the conscious that may change according to settlements and designers of the potential designs and subject groups of the admiration preferences, is to contribute to the formation of new buildings that will blend in with the historical environments.

#### Acknowledgment

Thanks the 4<sup>th</sup> grade students who studied at the Department of Architecture in the Karabük University in the 2012-2013 Academic Year and participated in the survey by taking the elective course named 'New Buildings in Historical Environments-Studio'.

4<sup>th</sup> International Conference on New Horizons in Education

# Determination of the Mental Cutting Ability of Prospective Mathematics Teachers

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## Abstract

The aim of this study is to determine the mental cutting ability of prospective mathematics teachers. For that purpose, mental cutting test is applied to prospective mathematics teachers to determine the ability in current situation. At the start of study, the test is applied to 232 students and after the validity and reliability analyses took its final form. The questions in the test take two parts such as "pattern problems" and "quantity problems". According to obtained data, accomplished a result that; prospective mathematics teachers' mental cutting level is low and they are more successfully at pattern problems than quantity problems.

Keywords: Mental Cutting, Pattern Problems, Quantity Problems

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## 1. Main text

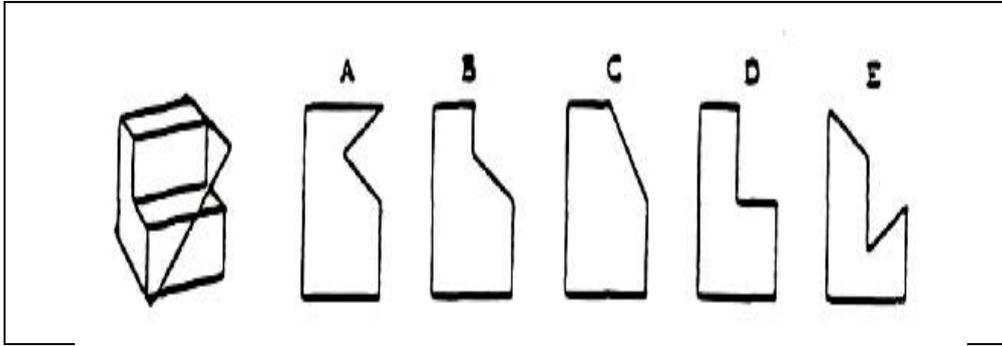
The spatial ability is a common concept that we met in both scientific and all part of daily life, and also the studies for determining and mensuration of the components of this ability is gradually increase day by day. The mental cutting ability which is postulated a component of the spatial ability is overemphasized. The mental cutting test is defined by (Sorby, 2011) as; it is an ability to draw the different point of view of a given object which is cut by a plane.

Although there are many tests in the literature about determining of the other components of spatial ability (spatial visualization, mental rotation etc.), there are only two test known to determine the mental cutting ability. The one of this is; Mental Cutting Test (CEBB,1939) which is used in this study to obtain data, the other one is "The Mental Cutting Test- Schnitte" which is developed by Fay and Quasier-Pohl in 1999 (Quasier- Pohl, 2003).

The Mental Cutting Test (MCT) was first developed for a university entrance exam in the USA and than in Japan and Austrila. This test is consists of 25 items and developed by CEBB (Collage Entrance Examination Board) in 1939. For each problem on the exam, students are shown a criterion figure which is to be cut with an assumed plane (Gorska et al, 1998).

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It is asked for establishing the obtained cross section when a given 3 dimension shape cut by a plane as in the figure above.

The other Mental Cutting Test-“Schnitte” is developed by Fay and Quasier-Pohl in 1999 and accepted a new assessment method for extraordinary high spatial ability (Quasier-Pohl, 2003). Here, the 3 dimension geometric shapes (pyramid, cone, etc.) that cut mentally are hollow. These shapes are cut with aid of a plane or any other geometric shape.

In the literature, the mental cutting test is applied by different application to different students group. For example, Saito et al (1996) evaluated the spatial ability by mental cutting test in their study. After evaluation, they indicated that, mental cutting test reflected the ability of manipulate of 3-dimension mental image and ability of generalization the 2-dimension images to 3-dimension images. According to this, mental cutting test reflects analytical thinking ability besides spatial ability.

Makino et al (1992) examined the students’ problem solving process on the mental cutting test by use eye tracking monitor and verbal protocols as data obtain method in their study. According to analysis results, mental cutting test reflects visualization ability. Hereunder, the students get high grade from mental cutting test, more successfully to visualize mental picture. Suzuki et al (1992), get result in their study that, mental cutting test grades shows significant difference for the benefit of male students.

Sometimes, mental cutting test is used for detection of spatial ability of students one times before graphic education. Nevertheless, usually same students are applied the test twice, beginning and the final of the lesson as pretest and posttest (Tsutsumi et al, 2005). Suzuki et al (1992), applied mental cutting test to students before and after graphic lesson at more than 10 universities in their studies. As a result of application, after graphic lesson activities, mental cutting test grades have shown increase.

Adanez G.P. and Velasco A.D. (2002), in their study, they prepared the mental cutting test’s computer environment version, got a result that, there is a positive and significantly relationship between engineering student’s mental cutting ability and technical drawing performs. Sorby, S., Hamlin, A. and Veurink, N. (2008), pointed 3 dimension spatial abilities’ importance on engineering education, and expresses that in Michigan University has opened a lecture for developing 3-dimension spatial ability for engineering since 1993. Within the context of this lecture; at first, the number of student has shown developing is a few, but as time progresses, the aim was successful in parallel with the studies.

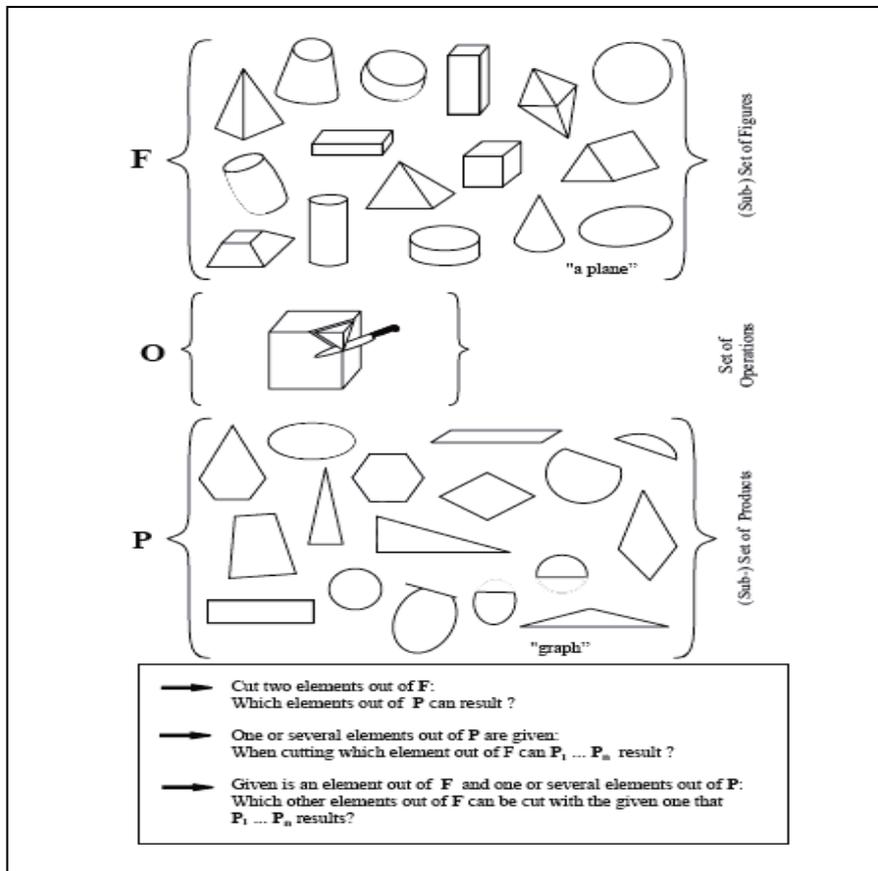


Fig 2: A Sample Question for Mental Cutting Test- "Schnitte"

In mathematics, especially geometry, the level of having mental cutting ability of the students effects the success rate on these lectures and the ability of envisaging the different manipulation of 3-dimension shapes. Therefore, in this study, it is aimed to determine the prospective mathematics teachers' mental cutting ability level and contribute to literature by various bringing forward a proposal in accordance with the obtained results.

## 2. Method

In this section includes some information about study group, data collection and analysis of data.

### 2.1. Study Group

The study group consists of 232 prospective mathematics teachers at two state universities in Ankara which have mathematics education programme.

### 2.2. Data Collection Tool

In this study the mental cutting test which is developed by CEBB (1939) is used as data collection tool. According to this test, it is expected from a student to

- Envisaging the cutting of a three dimension shape by a plane
- Determine the cut part and remain part shapes of three dimension shape cut by a plane after cutting.

The test contains 25 items and consists of two parts. The first part is called “pattern problems” and in this part the right answer is found only by determining of plane patterns. And the second part is called “quantity problems”. As for in this part, the right answer is identified by determining the plane not only by pattern but also quantity (edge length or the degree of the angle between two edge).

The following figure is an example; the one of the question of the test to have opinion about “pattern problems”.

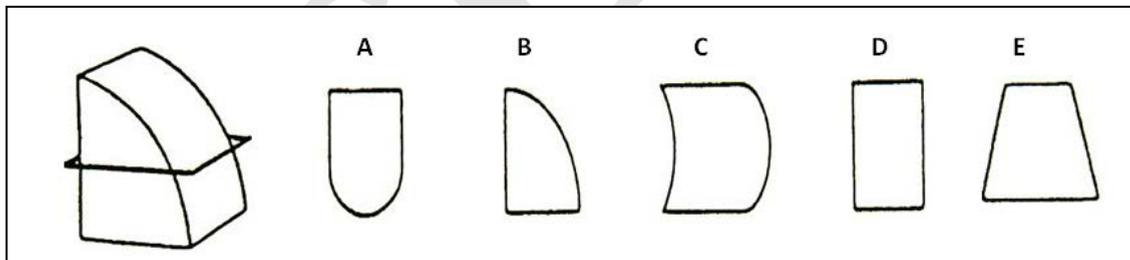


Fig 3: The sample question for mental cutting test (pattern problems)

As the following is a sample problem for “quantity problems”, the other category in the test.

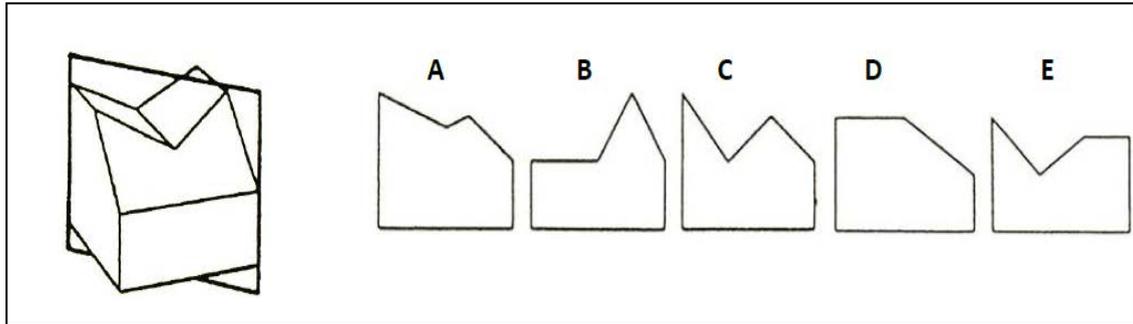


Fig 4: The sample question for mental cutting test (quantity problems)

## 2.2. Data Analysis

The analysis consists of; item analysis, validity and reliability studies and descriptive statistics analysis of the data get from application of the test. The analysis of data is made by IteMan 5.0 program. For validity study; confirmatory factor analysis is calculated by Lisrel 8.7 software and for validity study; Cronbach's Alpha internal consistency is calculated by SPSS 17.0 statistics software.

## 3. Findings

In this part; the item analysis belongs to mental cutting test, validity –reliability analysis and descriptive statistics findings are given.

### 3.1. Findings for Item Analysis

As a result of item analysis, the discrimination index and proportion correct of each item is calculated. According to this; the lowest discrimination index is 0.26, the highest discrimination index is 0.71. The value of proportion correct is the lowest item has 0.20, the highest item has 0.57 parameter. The other items show an alteration between 0.29 and 0.56.

Table 1: Results of Item Analysis of Mental Cutting Test

Number of Items	25
Number of Examinees	232
Mean	11.06
Standart Deviation	4.234
Skewness	0.500
Kurtosis	0.362
Mean P	0.35
Mean Item- Tot.	0.45

### 3.2. Findings for Reliability Study

The items in the data collection tool are graded as dichotomously according to given answers. The reliability study of data collection tool, the Cronbach's Alpha internal consistency is considered. In literature, mentioned that, using KR-20 technic in the dichotomously grading is imperative, but also when each item graded as 1-0, is known, KR-20 and Cronbach's Alpha internal consistency do not give same result (Cronbach, 1951).

According to the results of the analysis, Cronbach's Alpha internal consistency coefficient of mind cutting test was found to be .69.

### 3.3. Findings for Validity Study

To provide evidence for validity of obtained data from mental cutting test, confirmatory factor analysis (CFA) is applied to data. In application of confirmatory factor analysis, the Maximum Likelihood Factor Analysis is used as a technic of factorization.

Before application of confirmatory factor analysis to obtained data from the test, it is investigated that, the data weather counterpoises the normality premise, which a premise of confirmatory factor analysis, or not.

Table 2: Table of One Sample Kolmogorov- Smirnov Analysis

		Mental Cutting
N		231
Normal Parameters <sup>a,b</sup>	Mean	13.64
	Std. Deviation	4.083
Most Extreme Differences	Absolute	.087
	Positive	.047
	Negative	-.087
Kolmogorov- Smirnov Z		1.322
Asymp. Sig. (2- tailed)		.061

When analyzed the result of One Sample Kolmogorov-Smirnov analysis in Table-2, the p value get for mental cutting test is  $>0.05$ . According to this, the data counterpoise the normality premise.

The goodness of fit indexes obtained from confirmatory factor analysis done for mental cutting test are;  $X^2/sd= 1.36$ ,  $GFI= 0.88$ ,  $CFI= 0.83$ ,  $NNFI= 0.82$ ,  $RMR= 0.066$  and  $RMSEA= 0.040$ . In the line with suggested modifications; the 24<sup>th</sup> item is deleted, 11<sup>th</sup> and 13<sup>th</sup> item and 20<sup>th</sup> and 22<sup>th</sup> item are connected. And the Table 3 below shows obtained goodness fit index;

Table 3: Confirmatory Factor Analysis for Mental Cutting Test

Mental Cutting	Goodness of Fit Indices
$X^2/ sd$	1.17
Comparative Fit Index (CFI)	0.91
Root Mean Square Residual (RMR)	0.014
Goodness of Fit Index (GFI)	0.90
Non-Normed Fit Index (NNFI)	0.90
Root Mean Square Error of Approximation (RMSEA)	0.028

According to goodness fit index values; according to  $GFI= 0.90$ ,  $CFI=0.91$  and  $NNFI= 0.90$  index, model is good fit; according to;  $X^2/sd= 1.17$ ,  $RMR=0.014$  and  $RMSEA= 0.028$  index, model shows perfect fit.

In accordance with the first level confirmatory factor analysis, the path diagram obtained for mental cutting test is shown in Fig 5.

After the final situation of reliability and validity studies of the mental cutting test, which is used as data collecting tool in study, the descriptive statistics is applied to data that obtained by this test.

Table 4: Descriptive Statistics for Final Situation of Test

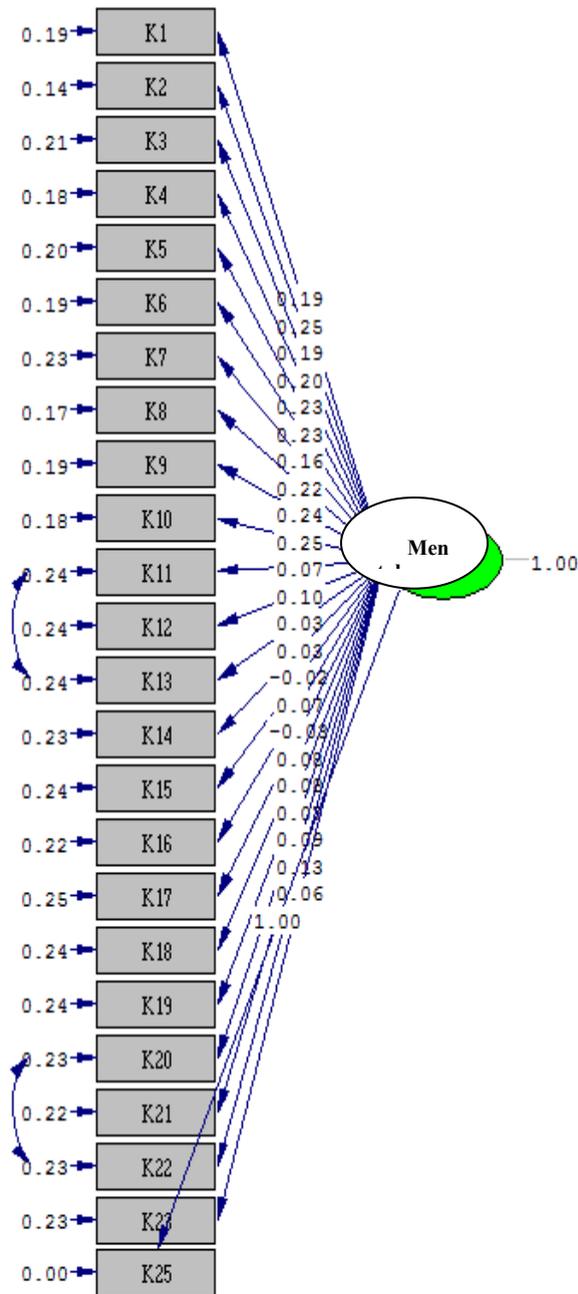
Mental Cutting	
Mean	10.07
Standard Deviation	4.108

The one sample t –test table which is applied for the “pattern problems” and “quantity problems” in the test mean difference is whether significant or not is shown as;

Table 5: One Sample t-Test of Mental Cutting Tests Groups

	Mean	t	df	Sig (2- tailed)	Mean Difference	% 95 Confidence Interval of the Difference	
						Minimum	Maximum
Pattern Problems	6.68	26.438	76	.000	6.688	6.18	7.19
Quantity Problems	2.63	16.817	76	.000	2.636	2.32	2.94

If view Table 5, according to the grades gets from pattern problems and quantity problems of study group, there is a significant difference in favour of pattern problems.



Chi-Square=294.32, df=250, P-value=0.02839, RMSEA=0.028

#### 4. Results and Conclusions

This is an incontestable fact, that spatial ability played a very important role in mathematical thinking. Studies for the development of spatial ability are considered as an important part of mathematics education.

The mental cutting test is determined a sub-dimension of spatial ability and is used often in mathematical process. According to findings obtained from in consist of this study, it is pointed out that the mental cutting ability level of mathematics prospective teachers is low. In addition, if look out the average of different question types in the test, the mathematics prospective teachers are more successful at pattern problems than quantity problems. Consequently, the ability of determining the plane pattern of mathematics prospective teachers is more developed, in other words, it is concluded that, mathematics prospective teachers prefer to focus on general lines of shapes instead of take edges and the angle between the ages.

On the purpose of to improve the mental cutting ability of mathematics prospective teachers; application of the test special to this ability meticulously and enlarge the application area by different type tests will make a proposal to future studies. Also, preparing substantial materials and designs made in computer environment contribute to develop this ability.

By the examination of the mental cutting test relation with the other sub dimension of spatial ability, can be observed which situations this ability steps in and can support developing the ability by intervention in needed situations. By investigation of high level cognitive ability such as problem solving, problem posing or mathematical thinking, with mental cutting ability by future studies, it can be contributed of spatial ability to mathematical area.

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4<sup>th</sup> International Conference on New Horizons in Education

# Determination of university students' metacognitive beliefs (Gazi University sample)

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## Abstract

The objective of this study is to define metacognitive beliefs of university students at Faculty of Education on Industrial Arts in Gazi University. Owing to the fact that the aim in the study is to determine an existing situation, 'descriptive survey model' is used. Therefore, "Short Form of Meta-Cognitions Questionnaire (MCQ-30)" developed by Cartwright-Hatton and Wells is used. The scale consists of 30 articles made with 4-point Likert scaling. Adaptation of the scale to Turkey and its validity and reliability has been made by Tosun and Irak. Study population consists of all the university students available at the university during 2012-2013 Spring Academic Years (647 students). The study group consists of 220 students who take part in the research on volunteering basis. As a result of the study, whether there is statistically difference in 'cognitive reliance, recalcitrance and danger, need to control opinions and cognitive awareness' metacognitive beliefs according to gender and department is revealed. Accordingly, it has been seen that female students have belief to control their feelings much more than male students. In addition, it has been revealed that Departments of Management and Computer Teaching has more positive believes.

Keywords: Gazi University, metacognition, education program

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## 1. INTRODUCTION

Instead of "Metacognition", generally terms such as self-arrangement, directive control, supra-cognition, executive cognition, and beyond-cognition' may be used. It is considered that frequent use of these terms interchangeably in literature makes the concept complicated and conflicting. Therefore, for the purposes of making it easy to understand, the term of 'metacognition' is used. Although it is difficult to know the root of the word of metacognition, this concept is indicated to be considered by some philosophers and scientists in the past. For example, the statement of Spinoza (1632-1677), '... if one knows anything, then he knows that he knows it', is accepted to be the first statement which mentions metacognition. Besides, the first person to emphasize that metacognition means being aware of is Platon. At the same time, Aristo also suggests that there is another independent force which gives awareness to actions other than hearing and seeing. It is seen that many definitions have been made for metacognition in historical background. Some of these definitions are as the following:

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'This is the awareness and arrangement of thinking processed used by students for planned learning and problem solving'	<i>Brown, 1978</i>
'Cognition refers to actual acts and strategies used by the readers, whereas metacognition is a structure which expresses firstly what individuals know about their cognitions and secondly their skills to control their cognitions'	<i>Forrest-Pressley and Waller, 1984, p.6</i>
'This is the knowledge of individuals about several aspects of thinking processes' and 'It is the skills of individuals to arrange their cognitive activities to learn more efficiently'	<i>Gavelek and Raphael, 1985, p.2</i>
'This is dynamic interaction period which should be evaluated immediately'	<i>Meichenbaum and others, 1985</i>
'Secondary level cognitions Opinions about opinions, information about information and thinking about actions'	<i>Weinert, 1987, p.8</i>
'This is the self-follow-up of learning strategies and cognition about their usage'	<i>Borkowski and others, 1987, p.4</i>
'It is to be aware of our thinking while performing some certain tasks and to use this awareness for controlling what we should do in the later stage'	<i>Marzano and others, 1988, p.9</i>
'This is the output of cognitive thinking and consciousness'	<i>McCormick and others, 1989</i>
'This is the skills of any person to have information, awareness and control about his learning'	<i>Baird, 1990</i>
'This is the knowledge of an active student who puts control over learning process about his cognitive processes, which are functions of feedbacks received via learning outputs and the ability of this student to control and follow such processes'	<i>Metcalfe and Shimamura, 1994</i>
'This is the knowledge of an individual about his knowledge, processes and cognitive and emotional situations and the skills of this individual to follow and arrange on the basis of purposes'	<i>Hacker, 1998. p.11</i>
'This is the awareness of an individual about his own thinking and assessing and the capacity to arrange his own thinking'	<i>Wilson, 1999, p.3</i>

Fig.1. Metacognition definitions

Based on these definitions, it is possible to define metacognition as the ability of an individual to think about his learning consciously, to plan, follow and arrange his own cognitions. From this perspective, particularly the skills of students to determine their beliefs about their own learning are significantly important in terms of increasing their levels of metacognitive awareness. On the other hand, the students' capacity to determine their metacognitive beliefs will make them more aware of their own mental processes. On this basis, determining whether metacognitive beliefs of university students are differentiated according to gender and department has

become the subject matter of this study. Therefore, metacognitive belief profiles of these students who are prospective teachers will be revealed.

### *1.1. Objective of Study*

The objective of this study is to define metacognitive beliefs of university students at Faculty of Education on Industrial Arts in Gazi University. Therefore, the dimensions of metacognitive beliefs of students are examined under the levels of 'positive beliefs, recalcitrance and danger, cognitive reliance, need to control opinions and cognitive awareness' according to variables of gender and department.

### *1.2. Method*

Scanning method is used in the study. The descriptive survey model is an approach which aims at describing a situation which previously or still exists in the way how it exists (Karasar, 2012: 77). The study is limited to 220 persons who are students at faculty of Education on Industrial Arts in Ankara Gazi University during 2012-2013 Spring Academic Year and 4 departments available in the faculty. All the students in the faculty are senior students because of non-admission of new students to the department upon the Cabinet Decree No 2009/15546 issued in Official Gazette dated 13.11.2009 and numbered 27405. Distribution of students to take part in the study is as the following: 55,% of 220 students (123 persons) are female, whereas 44,1% of them are males (97 persons). The distribution according to the departments is as the following: 25,5% of 220 students (56 persons) are from Department of Management Education, 24,1% (53 persons) are from Department of Computer Teaching, 21,4% (47 persons) are from Department of Industrial Technology Teaching and 29,1 (64 persons) are from Department of Family and Consumer Sciences Teaching. 'Metacognitive Scale (ÜBÖ-30) whose original name is "Meta-Cognitions Questionnaire (MCQ)" developed by Cartwright-Hatton and Wells in 1997 and created in the form of 30 items again by Wells, Cartwright-Hatton in 2004 (Tosun ve Irak, 2008: 68) is used in the study. Each item in the scale is rated over four-point Likert scaling scale which has the scales of "(1) I strongly disagree" and "(4) I strongly agree". Kaiser-Meyer-Olkins (KMO) value of the scale developed by Wells and Cartwright-Hatton (2004) is 0.90, whereas its Cronbach Alpha value is .93. Its KMO value is found to be 0.89 and its Cronbach Alpha reliability coefficient is found to be .86 by Tosun and Irak upon their works made on a group consisting of 850 (282 males, 565 females) university students during 2005-2006 academic year after its adaptation to Turkish (Tosun and Irak, 2008: 69-70). Items in ÜBÖ-30 are distributed according to five functions contained in the metacognitive beliefs. These are as the following:

1) Positive beliefs (Items 1, 7, 10, 20, 23 and 28): These include the idea that anxiety helps making plan or solving problems and there are positive beliefs about anxiety. At the same time, according to this factor, anxiety is a desirable personal characteristic.

2) Recalcitrance and danger (Items 6, 13, 15, 21, 25 and 27.): This consists of two dimensions. One of them is the belief that 'Anxiety should be controlled so that individuals can perform their functions and they can stay reliably'. The other dimension is the belief that anxiety cannot be controlled.

3) Cognitive reliance (Items 8, 14, 18, 24, 26 and 29): This is related to self-reliance of an individual on his own memory and attention capacities.

4) Need to control opinions (Items 2, 4, 9, 11, 16 and 22): This includes the need to take negative beliefs under control about superstitions, being-punished and being responsible for. This is related to the idea that these beliefs will occur when an individual cannot control them and the person will be responsible and punished for its harmful results.

5) Cognitive awareness (This includes items 3, 5, 12, 17, 19 and 30): This expresses an individual to continuously deal with his own thinking processes (Tosun and Irak, 2008: 69).

### 1.3. Data Collecting and Analysis

Instruments used for data collecting are distributed to the voluntary students by the researcher by obtaining permission from the lecturers who are responsible for course hours determined according to weekly course schedule, necessary explanations are made and after practice of approximately 20 minutes, these are controlled one by one and collected. Data collecting has lasted for approximately 2 weeks by collecting data in this way. Firstly, during the analysis of study data, whether data is normally distributed and whether variances are homogenous is determined and then t-test is employed for comparisons made according to gender and univariate directional variance analysis (ANOVA) is employed for comparisons made according to department.

### 1.4. Findings

Comparisons are made according to variances of gender and department in the research. Variance analysis results are provided below in comparison of sub-dimensions of metacognitive beliefs according to gender variable.

Table1. T-test results of Metacognitive Sub-Dimensions According to Gender

Metacognitive beliefs	Gender	N	Mean	Std. Deviation	t	p
Positive beliefs	Female	123	2,1098	,67610	-1,316	,190
	Male	97	2,2337	,71511		
Recalcitrance and danger	Female	123	2,4431	,58121	-1,138	,257
	Male	97	2,5275	,49866		
Cognitive reliance	Female	123	2,1247	,67299	1,391	,166
	Male	97	1,9931	,72525		
Need to control opinions	Female	123	2,5596	,70618	2,443	,015*
	Male	97	2,3351	,63760		
Cognitive awareness	Female	123	2,9932	,47783	1,203	,230
	Male	97	2,9175	,44431		

\*p<0.05

When Table 1 is examined, there is significant difference according to variance analysis results of positive belief dimensions on the basis of gender variable. This difference is for the female on the basis of dimension of need to control ideas. In the study made by Semerci and Elaldı in 2011 on Determining Metacognitive Beliefs of Students at Faculty of Medicine in Cumhuriyet University, according to t-test results made according to gender, there is statistically significant difference for male students in terms of metacognitive beliefs about the need to control the ideas. This finding indicates parallelism with the finding of study in terms of metacognitive belief dimension.

Table2. Variance Analysis Results of Dimensions according to Variable of Department

Metacognitive beliefs	Sum of Squares	df	Mean Square	F	p	Mean Difference
<b>Positive beliefs</b>						
<i>Between Groups</i>	5,494	3	1,831	3,948	<b>,009*</b>	IŞL-BIL
<i>Within Groups</i>	100,199	216	,464			
<i>Total</i>	105,693	219				
<b>Recalcitrance and danger</b>						
<i>Between Groups</i>	,945	3	,315	1,055	,369	
<i>Within Groups</i>	64,525	216	,299			
<i>Total</i>	65,470	219				
<b>Cognitive reliance</b>						
<i>Between Groups</i>	,625	3	,208	,424	,736	
<i>Within Groups</i>	106,064	216	,491			
<i>Total</i>	106,689	219				
<b>Need to control opinions</b>						
<i>Between Groups</i>	,748	3	,249	,528	,663	
<i>Within Groups</i>	101,856	216	,472	,663		
<i>Total</i>	102,603	219				
<b>Cognitive awareness</b>						
<i>Between Groups</i>	1,106	3	,369	1,731	,162	
<i>Within Groups</i>	46,011	216	,213			
<i>Total</i>	47,118	219				

\*p&lt;0.05

When Table 2 is examined, there is statistically significant difference in the variance analysis results of dimension of recalcitrance and danger according to variable of department. This difference is between the departments of Management Teaching and Computer Teaching. In this case, it can be said that students at the departments of Industrial Technology Training and Family and Consumer Sciences Teaching consider that the anxiety cannot be controlled.

### 1.5. Discussion and Conclusion

There is statistically significant difference for females among the students included in the population in terms of dimension of control need metacognition belief according to gender variable ( $t=2.443$ ,  $p<0.05$ ). This situation indicates that, when compared to male students, female students are afraid of an extremely responsible for results and possible caused by their own behaviours. This finding indicates parallelism with the findings in study of Semerci and Elaldın (2011). That is, significant difference is found in terms of recalcitrance and danger according to gender variables made on 408 students of faculty of medicine (49% as female and 51% male) at Cumhuriyet University. This situation supports the finding. This situation supports the finding.

According to department variance, there is statistically difference between the departments of Management Teaching and Computer Teaching in terms of positive beliefs ( $F=3,948$ ;  $p<0.05$ ). This situation indicated that positive beliefs about anxiety for helping individuals to make plans or solve problems occur in both these departments. In addition, this also reveals that the students at departments of Industrial Technology education and Family and Consumer Sciences think that anxiety cannot be controlled.

When these findings and the related departments are considered, it has been concluded that it is necessary to arrange the education provided for pre-service teachers in a way to increase their self-reliance in improving their metacognitive beliefs. The education provided should be guiding in terms of helping students make plans or solve problems, control their anxiety to perform their functions and to stay under reliance, enable them to be self-reliant on their own memory and attention capacities, to take negative beliefs under control and to deal with their own thinking processes continuously. In this line, the need for re-assessing and revising the training programs provided especially in departments of Management Teaching and Computer Teaching has occurred. Thus, students will become aware of their own positive and negative hesitations and can increase their self-reliance. This positive improvement will make great contributions to pre-service teachers to educate new generations. In this line, it may be suggested that education programs of particularly faculty of educations which aim at educating teachers should be dealt with again in terms of providing students with the opportunities for identifying their learning needs and determining how they learn.

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# Developing an Intelligent Tutoring System for Vehicle Dynamics

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**Abstract**

Intelligent Tutoring Systems (ITS) represent a substantial portion of knowledge from human tutors, therefore they are able to provide a better learning guidance than Computer Assisted Instructions (CAI). One of the most important goals of an ITS is to provide feedback tailored to the learner unique needs. There are several educational activities that are supported by these systems such as: problem solving, example review, educational games, etc. This research focus on interactive simulation to improve the learning curve of vehicle dynamics topics as it has been shown that engineer students usually find math and physics too boring and hard to understand when they are unable to map a topic to a real life problem, therefore a most interactive approach seeks to catch student attention while providing a sandbox to experiment and learn. In this paper we present our first prototype, discuss its design and provide test results based on a two year evaluation process.

*Keywords:* Intelligent tutoring systems; Interactive learning environments; simulation; applications in mechanical engineering;

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## 1. Introduction

The Computer Assisted Instruction (CAI) were introduced by Patrick Suppes at Stanford University since early 1960, these systems have evolved as learning tools providing students with encoded set of exercises and associated solutions. CAI system usually provides problems with a single correct answer, hence here is where the problem arises as more complex scenarios cannot be completely evaluated, as is the case of Vehicle dynamics topics where a single problem may have a lot of potential correct answers, and since we talk about nonlinear problems, it is usually required to perform the whole process to find out if the answer is correct or not. From several researches (Alexander, 1999; Leung, 2003; Jain & Getis, 2003) it has been revealed that there is indeed a difference in students achievements between a CAI assisted group and a conventional group, these differences are mostly positive as shown by Owens and Waxman (1994), Teh and Fraser (1995), Yalcinalp, Geban and Ozkan (1995) and Leung (2003). Even when it has been show the effectiveness of CAI systems, there is still a gap to be filled for more complex topics, and there is where the Intelligent Tutor Systems (ITS) have proved to match and even surpass CAI system performance as reviewed by Glickman and Dixon (2002).

Main goals in ITS research are, how to create computer based tutors more flexible, autonomous and adaptive for particular student needs. There are three types of knowledge that any tutor, being human or artificial needs to have in order to aid student learning (Conati, 2009):

- About the target instructional domain
- About the student
- About the relevant pedagogical strategies

Besides, an ITS needs to have communication knowledge in order to present the required useful information via the computer and the available channels. These different types of knowledge contribute to define the body of an ITS that is integrated basically by four main models according to a general consensus research (Nwana, 1990; Freedman, 2000; Nkambou et al., 2010):

- Domain model
- Student model
- Tutor model
- User interface model

The *domain model*, also called expert model, it is usually built on a theory developed by John Robert Anderson from Carnegie Mellon University that is called Adaptive Control of Thought—Rational (ACT-R), this theory tries to take into account all the possible steps required to solve a problem, this model has the knowledge to evaluate student performance and detect errors. The *student model* can be seen as overlay on the domain model, and it is usually considered a core element in a ITS, this model is responsible of tracking the student progress and raise flags or warnings if the student deviates from the domain model. The *tutor model* is the glue that holds the domain and student models together and is responsible of making decisions about adequate strategies and actions for better learning process. It is required to take actions when the student models set deviated flags (Anderson, H. & Koedinger, M). The *user interface model* finally integrates the required information for a successful communication, such as: knowledge about patterns of interpretation, domain knowledge needed for communicating content and knowledge needed for communicating intent (Padayachee, 2002).

Intelligent Tutoring Systems (ITS) may have discrepancies in their architectures, however, they are still much the same as any other instructional design process, Corbett et al., summarizes ITS design and development in four iterative stages:

- Needs assessment
- Cognitive task analysis
- Initial tutor implementation
- Evaluation

The *needs assessment*, is a common stage of an instructional design process, this analyses the learner based on experts and teacher experience, therefore this is the first step to develop the domain model (Corbett et al., 1997). The *cognitive task analysis* involves the detailed approach for developing a computational model for problem solving, observation of human tutor interaction with students provides invaluable information to develop this stage (Farhana et al., 2002). The *initial tutor implementation* involves setting up a problem solving environment following for a series of evaluation activities, which according to Corbett et al. (1997) are very similar to any other software development. The fourth and final stage called *evaluation* perform studies to find out the usability and impact of the ITS, finding learning rates and achievements level (Corbett et al., 1997).

Our current research focus on the domain model, in this paper we present the framework that is being developed to support the first model and that will serve as the expert system for problems solving and will determine the correctness of student results, this is a very important and vital part of the system, because as we can learn from Conati (2009) researches, one main key difference between a CAI and ITS is that the latter, needs to be able to generate real-time solutions not previously defined by a human tutor. The remaining of this paper goes as follows: In section 2, we provide details for the domain model design. In section 3, the current work status of development is discussed. In section 4, an evaluation of domain model accuracy is compared with real life vehicle dynamics scenarios. In section 5, we provide statistical data about current prototype usage. In section 6, we present our conclusions and future work.

## 2. Domain Model Design

A physics engine is a computer software that provides an approximate simulation of certain physical systems, such as rigid body dynamics and it is the core element in our domain model as our ITS will focus on vehicle dynamics, specifically evaluating vehicle parameters to output performance characteristics under testing conditions, theoretically an endless amount of problem generation can be provided for students as long as the system is capable of process real-time unassisted results by its own.

The model is constructed mainly by three modules:

- Engine Model
- Driveline Model
- Dynamics Model

The specific details of each module are discussed below.

### 2.1. Engine Model

In order to be able to estimate vehicle performance, it is important to determine how this behavior can be computed. The maximum achievable acceleration of a given vehicle is limited by two main factors, (1) Maximum torque at driving wheels, and (2) Maximum traction force at wheels.

The common vehicle engine to be modeled in this research are internal combustion, and its maximum attainable power  $P_e$  is a function of engine angular velocity  $W_e$ , this needs to be determined experimentally by the

student or, the system can provide an expected torque curve for all operative Revolutions per Minute (RPM) using a third order polynomial function, as can be seen in (1):

$$P_e = \sum_{i=1}^3 P_i W_e^i \quad (1)$$

With this approach the students can develop their own formula for determining engine torque curve or simplify the problems using the provided polynomial approach.

The output of this computation is then feed into the driveline module for further analysis as explained below.

## 2.2. Driveline Model

We use the driveline term to represent the whole system responsible to transfer the torque being generated by the engine(1) to the tires(7), among the components being modeled we have: clutch(2), gearbox(3), differential(5), axles(6) and shaft (4), since the power needs to be transferred from system to system, the power at wheels is always less than the power at engine, this is called driveline efficiency and opens a lot of possibilities for problem solving. The overview of the vehicle power transfer can be seen in Fig 1.

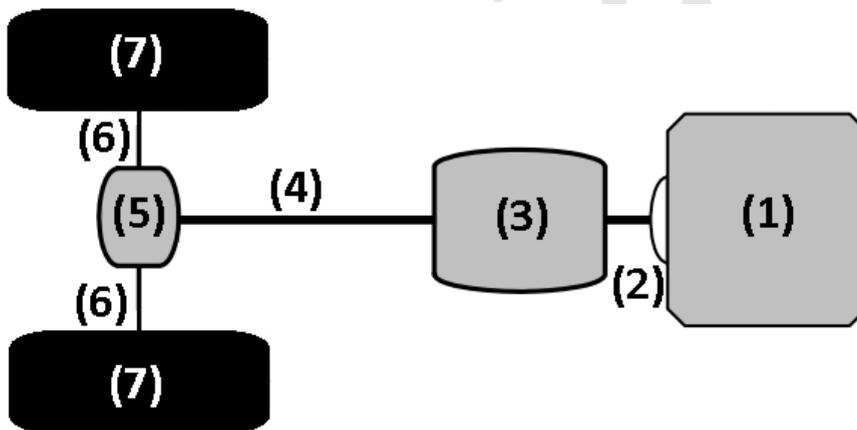


Fig. 1. Vehicle power transfer overview

To find the power at wheels student can develop their own model based on the power laws or run experimental tests varying the whole driveline losses to match specific vehicle characteristics, then the torque finally reaching the wheels can be calculated as in (2):

$$T_w = \eta T_e \quad (2)$$

Where the Greek letter Eta represents the overall system efficiency applied to the engine torque  $T_e$  to get the resultant torque at wheels  $T_w$ . Once we find out the force moving the tires we feed the dynamics model for final analysis.

### 2.3. Dynamics Model

This module is responsible for integrating all the vehicle modeling to find out the maximum possible acceleration that can be reached, the limits of this acceleration can be defined by power limitations, i.e. the engine cannot provide enough power to keep accelerating, or traction limited, i.e., the tires are unable to transfer the power to ground and spins, therefore wasting energy instead of moving the car. To evaluate the required time to reach a desired speed it is necessary to find the traction force  $F_x$  and integrate. This is being done based on the Newton equation of motion and the resultant integral is presented in (3).

$$m \int_0^s \frac{1}{F_x - F_R} dv_x \quad (3)$$

With this motion integral with limits from a standstill 0 up to the goal speed  $s$ , we consider the vehicle mass  $m$ , and the traction force  $F_x$  minus the total resistance force  $F_r$  which is caused by several sources but being the main source the air drag force and inertia, these forces are evaluated considering different parameters of vehicle body structure that students can design on their own. The dynamics model is far more complex however, more in deep analysis would fall out of the scope of this paper, all these models were developed as part of the ITS first stage, in the following section more details about development are provided.

## 3. ITS Development Status

The first challenge in ITS development was to determine what could be the most adequate development framework to use, since vehicle dynamics modeling requires intensive calculations, framework performance was a major decision point and, since a server controlled internet application would give us much more control and feedback about the ITS usage, we decided to develop a Rich Internet Application (RIA), to determine which framework would provide enough performance a series of frameworks were evaluated with a Bubble render animation benchmark developed by Alexey Gavrilov (2009). In the following Table 1. we provide our test results.

Table 1. Frameworks Benchmark Results

Framework Name	FPS
DHTML JavaScript	115
Silverlight 3.0	199
Flash Flex	55
Java Swing	144
Adobe Air	56

Based on benchmarking results, it was decided to use Silverlight as the development framework as it proves to be up to 38% faster than the second fastest evaluation, even after considering the Silverlight inability to run on Linux machines, the Windows and Mac market share is over 92% as reported by W3C (2013), these results coupled to the fact that it is a Freeware framework made the decision easier. By the time of this paper, the newest prototype ITS version is being developed in the most recent version of Silverlight 5.1.20125.0, which provides numerous new features such as: increased isolated storage, improved HTTP stack latency, improved graphics stack with 3D support, real time audio and 64bit architecture support that open possibilities for improving student learning curve by taking advantage of this features.

The first public prototype was released on June 2011, followed by a refresh in early 2012 after extensive user feedback and usability analysis, the Graphical User Interface (GUI) was redesigned to improve the *user interface model*, in the following Fig. 2 we can see two main screens where the student can interact with the ITS, on top it is shown the vehicle management screen, on bottom the real-time vehicle simulation test.

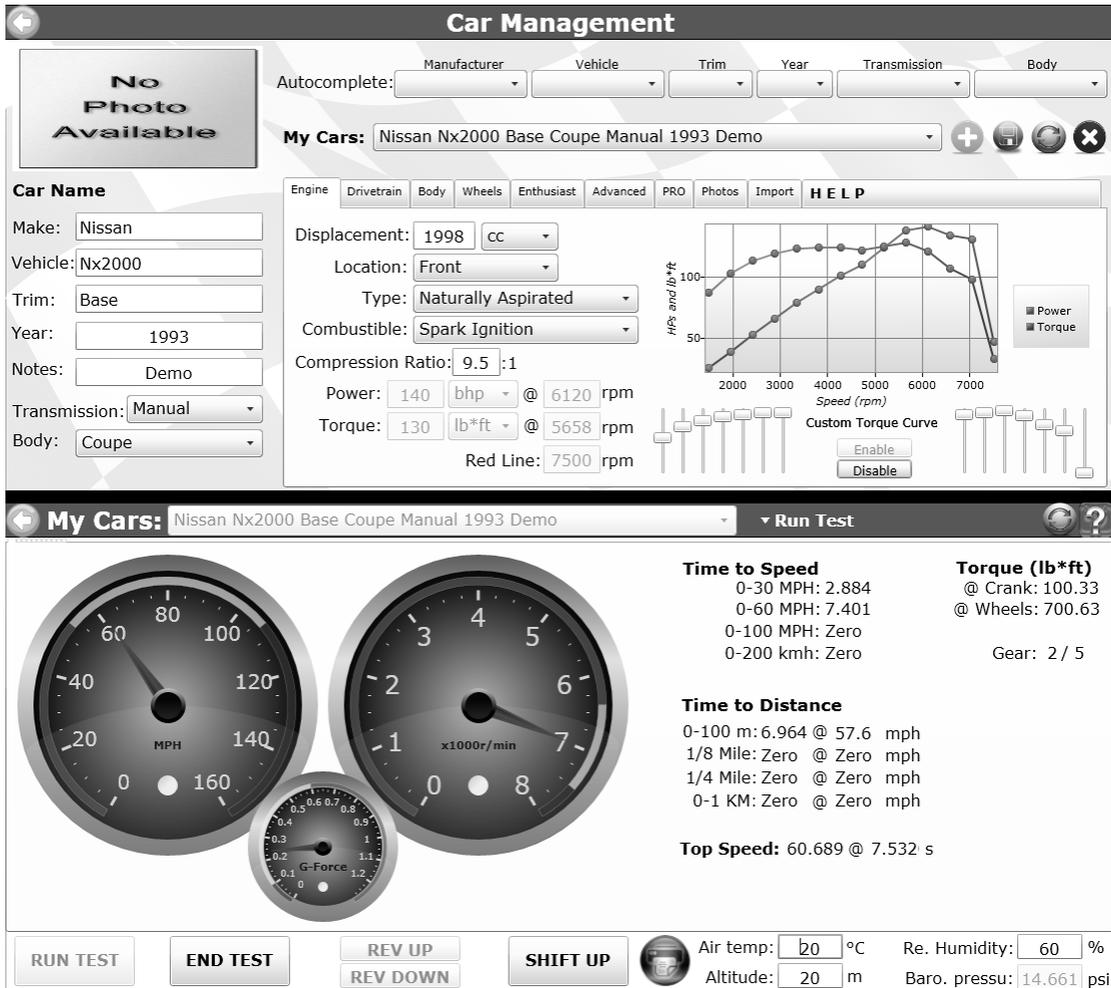


Fig. 2. Main ITS screens for student interaction

On car management screen (Fig. 2, top), the student can design their own vehicle modeling, characteristics are organized in 7 different tabs that provides the student a total of 91 different parameters and configurations to model the vehicle as the problem to be solve demands, while in the real-time test (Fig. 2, bottom), the student can see the effect of different vehicle properties in a non-linear physics problem and therefore confirm or deny his/her proposed solution for a given problem.

In the following section we show our current experimentation of the physics engine and its accuracy to support the domain model.

#### 4. Domain model accuracy evaluation

As reviewed in introduction, it is important that the tutor, in this case an ITS to have different knowledge, in particular in this section we test the domain knowledge, since an ITS must be able to solve problems in real-time, and these problems do not necessary comes from a pre-defined source or defined by a human tutor as in CAI systems, we need to perform exhaustive testing to prove the ITS capability to solve non-linear problems regarding vehicle dynamics domain. To perform the accuracy comparison, a series of experiments with real cars were taken as the gold benchmark, the source of these experiments were provided by the Road&Track Magazine, the parameters to evaluate were the vehicle capacity to achieve a speed of 60 mph (96.5 km/h) and 100 mph (160.9 km/h) from a standstill, and find out how much time is required to travel a distance of a quarter mile (402.3 meters). The main idea is to see how the physics engine works and how close is to real-life experiments, in Table 2, we provide our accuracy results for a partial list of evaluated cars.

Table 2. Domain Model (Physics engine) accuracy benchmark

Tested Vehicle (Year, Brand, Line, Trim)	Real 0-60	Sim 0-60	Real 0-100	Sim 0-100	Real 1/4	Sim 1/4	Res. Acc
2013 Hyundai Genesis Coupe 2.0T	6.3	5.7	14.8	14.3	14.5	14.4	95%
2012 Mazda Mx5 Miata GT	6.6	6.8	17.8	17.7	15.0	15.2	98%
2013 Subaru Brz Premium	6.6	6.6	17.1	16.7	14.9	15.0	99%
2003 Audi TT 225Q	6.7	6.7	16.4	17.1	14.8	15.2	98%
2004 Chrysler Crossfire Base	6.7	6.5	16.2	16.0	14.9	14.9	99%
2003 Mitsubishi Lancer Evo	4.8	5.0	12.7	12.7	13.4	13.6	98%
2004 Subaru Impreza Sti	4.9	4.8	12.6	12.3	13.3	13.3	99%
2003 Nissan 350z Track	5.8	5.4	14.5	13.5	14.4	14.1	95%
2005 Acura RSX TypeS	6.7	6.9	16.6	17.0	15.0	15.3	98%
2005 Chevrolet Cobalt SS	6.2	6.7	15.9	16.5	14.8	15.2	95%
2006 Honda Civic Si	6.6	6.9	16.3	17.1	15.0	15.3	96%
2006 Volkswagen GTI 2.0T	6.3	6.6	16.9	17.5	14.8	15.2	96%
2007 MazdaSpeed 3 GT	6.2	6.3	16.0	14.1	14.5	14.6	95%
2010 Chevrolet Camaro SS	4.6	4.5	10.5	9.2	12.9	12.6	94%
2009 Dodge Challenger RT	5.8	5.6	13.8	13.4	14.2	14.2	98%
2010 Ford Mustang GT	5.3	5.2	12.7	13.0	13.8	13.8	99%
2006 Mitsubishi Eclipse GT	5.8	6.4	14.4	14.7	14.4	14.7	95%

The average accuracy percentage found in Table 2 was calculated from the average of the individual accuracy of the previous 3 tests, as it can be seen, the physics engine which is powering the domain model has an overall accuracy of over 96.8%, it is important to notice that some differences does not necessary mean a problem in the simulated environment as the Road&Track magazines suffer from result inconsistency, which can vary from different causes, e.g., driver weight and skills which were not modeled on the system. For instance, the same 2007 MazdaSpeed 3 tested on different Road&Track reviews, shows differences of 8% in 0-60 test, 14% in the 0-100 test and 3% in the 1/4 mile test, these inconsistencies are not present in our physics engine which allows to be confident in the results, and even when they differ with real-life tests, we can expect the real-life tests to vary greatly from source to source. The first ITS prototype it is available worldwide for free for basic usage or paid for advanced modeling simulation and can be accessed at [www.nxgtrsim.com](http://www.nxgtrsim.com), the specific details about the statistics related to the usage are discussed in next section.

## 5. ITS prototype statistics data

The first prototype version v11.x was launched in June 15, 2011 and primary goal was to find users to provide feedback about the capabilities for the system, it had a successful response from community and by January 2012, it already had 1340 users from 30 different countries, being the most notable United States with 840 users, Canada 84 and Mexico 64, and over 1000 modeled vehicles. With the provided feedback from users around the world the next prototype version was released in mid January 2012 as version v12.x, in this second prototype the research interest was to get user usage analysis and data about how users interact with the system to be able to have enough information to feed the *student model*, in Fig. 3 we show the prototype usage by quarters since v12.x up to current version v13.4.19.

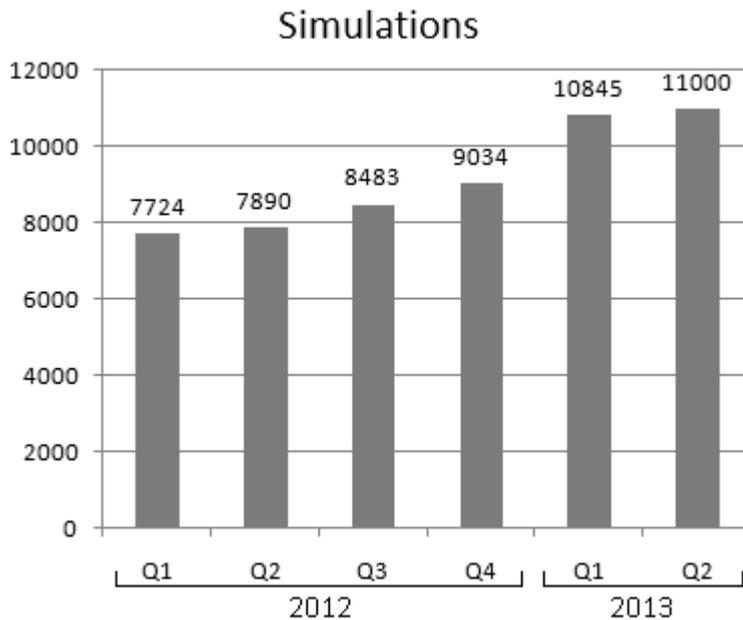


Fig. 3. ITS Prototype 2012-2013 Usage Statistics

As it can be seen in Fig 3., the prototype have had a usage positive increase with a 40.4% increase from 2012 Q1 as compared with 2013 Q1, at the time of this paper, the 2013 Q2 has not finished and the presented data was the result of the current trend. From the sample evaluated we have that users around the world have solved at least 54,976 problems until May 12, 2013 and the numbers keep growing at a ratio of ~800 per week. The countries which are more engaged with the system are United States which usage is over 27,617 simulations which represents the 50.2% of all traffic, in second place we have Canada with 4492 (8.2%), Philippines with 2501 (4.5%), Mexico with 2075 (3.8%), Poland with 1261 (2.3%) and finally United Kingdom with a total of 1162 for a reach of 2.1%.

The data shows that the system has been getting more mature and more people are getting used to the system, in the following section we discuss our conclusions and plans for future work

## 6. Conclusions and future work

Since the first prototype release v11.6.15 to the actual version v13.4.19, there has been a lot of changes, these changes were only possible by the community feedback, after over 50,000 problem solved with an accuracy over 96% we think the physics engine is stable enough to be integrated in the *domain model*.

As reviewed in introduction, a common ITS is composed by four models, in this paper we have focused in the initial *domain model* which have been completed with the development of the physics engine, and in a smaller scale, the *user interface model* which is still on very early stages as only one model has been completed.

As technology advances so does the potential problems to be solved which creates a never ending cycle of *domain model* improvements, so we are constantly developing new modeling, however our future plans involves focus more on the next model which would be the *student model*. With all the usage analysis of the past years, we have a very good understanding about how to detect when the user needs help and which methods have result in a more positive engagement experience. The *student* and *tutor models* needs to be develop at the same time as they are usually linked by an action-reaction event.

Our roadmap would be a next stage for *student* and *tutor models*, followed by an update of the current *user interface model*, after these two stages we can have a complete ITS out of prototyping stage, we do expect to have some 3D environments for improvement user engagement.

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4<sup>th</sup> International Conference on New Horizons in Education

## Development of a self-assessment questionnaire for basic technical drawing skills: a preliminary study

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### Abstract

The aim of this study was to develop and validate a new self-assessment questionnaire (SAQ) for basic technical drawing skills based on the Technical Drawing Evaluation Grid (TDEG) (Metraglia, Baronio & Villa, 2011). One hundred and seventeen first-year engineering students completed the TDEG-SAQ (first version) at the end of a training course of technical drawing. Eight factors relating to different skills were identified. Reliability analysis ranged from 0.74 to 0.92 for the questionnaire factors and was 0.96 for the overall questionnaire. Concurrent validity analysis showed the ability of the questionnaire to distinguish between genders and high school diplomas.

Keywords: technical drawing, engineering graphics, self-assessment, questionnaire, education

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## 1. INTRODUCTION

Engineering graphics instruction is considered a process which has been significantly changing for the last years. The way engineering graphics is taught is changing as well (Clark & Scales, 2000), and engineering curricula have been improved to better prepare students for professional careers (Meyers, 2000). The ability to use 3-D software tools is currently considered the most important theme for industries, and software and technologies are becoming the core of engineering graphics courses. Traditional topics as manual geometry construction techniques and descriptive geometry are currently poorly considered both by students and faculties (Barr, 2012). Despite the efforts in evolving the ways of teaching, problems related with poor skills in engineering drawing seem to apply globally: America (Nicolai, 1998 as cited in Abdullah, Field & Burvill, 2011); Asia, (Abdullah, Burvill & Field, 2011); Australia, (Field, Burvill and Weir, 2005 as cited in Abdullah, Field & Burvill, 2011); Europe (Beckmann & Krause, 2011). Particularly, skills on reading and interpretation of 2D drawings and understanding of the engineering technology contained in the drawn artifact (Abdullah, Field & Burvill, 2011) appear the most common matter to concern. That applies particularly for students without prior experiences in engineering drawing (Beckmann & Krause, 2011) and students from non-technical high school (Metraglia, Baronio & Villa, 2011).

All those problems relate with lacks in knowledge and ability with graphics fundamentals, that, as said above, is losing importance in education programs and it is often considered assumed before engineering graphics courses (Meyers, 2000) where, in fact, it isn't. A distinction in graphics education between 'topics' and 'tools', saying that tools are to be considered as means used for learning about the topics, should be developed (Meyers, 2000).

In contrast with the increasing of the variety of offerings in engineering graphics programs, national and international institutions are promoting the development of instruments to make national qualifications comparable and to help skills better appreciated and recognized, for example in Europe, with the European Qualifications Framework (EQF) (Metraglia et al., 2011) and in America, with the Accreditation Board for Engineering and Technology (ABET) (Barr, 2012). Both EQF and ABET identified a similar set of outcomes – knowledge, skills and abilities – that must be attained at graduation, or at an exam.

For the basics of engineering graphics, i.e. technical drawing, a tool to assess drafting skills has been proposed in coherence with the EQF structure: the Technical Drawing Evaluation Grid (TDEG) (Metraglia et al., 2011). The TDEG takes into high consideration the difference between the ability in reading and understanding drawings and the ability in realizing it, considering fundamental the 'ability to read drawings', in contrast with Meyers (2000), that defines it a 'pertinent area impacting engineering graphics'. The Technical Drawing Evaluation Grid refers the abilities 'to read drawings' and 'to use technical drawing as a language of communication' to 8 A-levels, whilst the capability to produce correct technical drawings aimed to design synthesis refers to 8 B-levels. For each level, specific knowledge, skills and competences are described.

Among the main goals of the Technical Drawing Evaluation Grid there is to be a common self-assessment tool. (Metraglia et al., 2011). A questionnaire based on the TDEG is therefore needed to consent students to understand their preparation and to teachers to know the topics in graphic fundamentals that students consider as the hardest to understand.

However, to build a common tool of reference, the Technical Drawing Evaluation Grid should be designed coherently with the way students tend naturally to learn and cluster knowledge. The self-assessment questionnaire is so intended to understand, despite the way a technical drawing course is taught, the way students learn, so to evolve the TDEG in levels considering consistent topics rather than chunks of skills.

TDEG construction was based on a "concrete/sequential" approach (Butler (1987)), i.e. a traditional step-by-step teaching with theoretical lessons and exercises. Sadowski, Birchman and La Verne (2006) showed that that kind of approach is appreciated by male learners whilst female are expected to behave differently, because females seem to prefer an approach including study projects, experiments and discussion. The assessment grid should take into consideration those different learning styles. One of the aims of this study is to cluster the topics of the

TDEG basing on the way they are learned rather than the way are taught. The grid proposed in TDEG 2011 is expected to reflect in some way in skills self-assessment, and male and females are expected to differ.

Prior experience in engineering drawing, for example in technical high school, is expected to influence in some way the skills self-perception, and the answers in the questionnaire as well.

In this preliminary study, the first 5 A-levels and the first 4 B-levels of the TDEG were investigated. The complete TDEG can be found in the original paper (Metraglia et al., 2011). In Table 1, levels investigated and correspondent competences are reported.

Table 1. Technical Drawing Evaluation Grid – competences for the first levels

Levels	Competences (to be able to ...)
1-A	Interpret the morphology of a part through its representation in views and cuts
1-B	Independently carry out the representation in views and cuts of a part
2-A	Interpret the dimensioned drawing of a part and / or the main elements of an assembly drawing
2-B	Realize the dimensioned drawing of a single part and know how to extract the parts from an assembly drawing
3-A	Recognize the threaded parts represented in a drawing and interpret the thread designation
3-B	Realize the dimensioned drawing of a part containing threaded parts and to complete with thread designation
4-A	Interpret a complete picture of dimensional tolerances and surface finishes
4-B	Realize the dimensioned drawing of a part complete of dimensional tolerances and surfaces finishing
5-A	Recognize the housing of a removable unthreaded connection in a part drawing or its presence within an assembly drawing, and interpret their designation

## 2. METHOD

### 2.1. Design

A convenience sampling of one hundred and eighty first-year engineering students who had attended the course of ‘Technical Drawing’ taught at the Faculty of Engineering of the University of Brescia was selected to participate to the study. Students were mailed a coded questionnaire and asked to answer self-assessment questions on their technical drawing skills. The questionnaire was mailed one week before the final exam not to bias the skills self-perception with the score of the exam. Participation was voluntary and encouraged by the chance to win one of ten 16GB pen-drives extracted by drawing lots among the participants. Participants were naïve about the purpose of the study. Students had four days to return the questionnaire completed. One hundred and seventeen students (65.0%) returned the questionnaire. Data about participants’ gender and high school of provenience diploma were collected.

### 2.2. Materials

A questionnaire was developed by the researchers basing on the first 5 A-levels and the first 4 B-levels of the Technical Drawing Evaluation Grid. Skills and competences described for those levels were considered comprehensive of the program of the ‘Technical Drawing’ course taught at the Faculty of Engineering. The original questionnaire was made by 41 statements. Those statements were reviewed by five first-year engineering

students and the items which seemed ambiguous or difficult to respond to were discussed with the researchers. The original item pool was reduced and revised, and the final questionnaire was composed by 35 statements. Each statement was classified by the researchers as correspondent to one or more skills within a specific level of the TDEG. That classification (see Table 3 in 'Results' section) was not part of the submitted questionnaire. The Questionnaire is reported in Appendix A.

### 2.3. Procedure

Participants were expressly asked to think about each statement and indicate how true it was on a 5 points Likert Scale (1 = Not True; 2 = Slightly True; 3 = Moderately True; 4 = Mostly True; 5 = True). Particularly, the instructions included the following sentence (Keller, 2006): "Give the answer that truly applies to you, and not what you would like to be true, or what you think others want to hear. Think about each statement by itself and indicate how true it is. Do not be influenced by your answers to other statements.". Participants were also asked to indicate their gender and high school of provenience diploma.

## 3. RESULTS

### 3.1. Exploratory factor analysis

A principal component analysis (PCA) was conducted on the 35 items with oblique variation (direct oblimin). The Kaiser-Meyer-Olkin measure verified the sampling adequacy for the analysis,  $KMO = .90$ , and all KMO values for individuals items were  $> .57$ , above the acceptable limit of  $.5$  (Field 2009). Bartlett's test of sphericity  $\chi^2(595) = 2924.43$ ,  $p < .001$ , indicated that correlations between items were sufficiently large for PCA. Eight components had eigenvalues over Kaiser's criterion of 1 and in combination explained 72.50% of the variance. The items that cluster on the same components suggest they represent the self-perception of skills and competencies about: 1- Threads; 2 - Tolerances and roughness; 3 - Folding sheets and specification box; 4 - Interpreting and dimensioning elements from an assembly drawing; 5 - Dimensioning of a part; 6 - Interpreting the morphology of a part through views and cuts and consulting tables; 7 - Recognizing the correctness of views and cuts in a drawing; 8 - Removable unthreaded connections. A summary of the exploratory factor analysis with eigenvalues and percentages of the variance on the various components is reported in Appendix B.

### 3.2. Reliability

All the components but 'Folding sheets and specification box' had high reliabilities, Cronbach's  $\alpha > .8$ . 'Folding sheets and specification box' had a relatively medium reliability, Cronbach's  $\alpha = .74$  – it is anyway to remark that "for ability tests a cut-off point of  $.7$  is considered more suitable than  $.8$ " (Kline, 1999 as cited in Field, 2009). All the values of Cronbach's  $\alpha$  for the components are reported in Table 2.

Table 2. Eight components of TDEG SAQ reliability estimates (N = 117)

Components	Reliability estimate (Cronbach's $\alpha$ )
Threads	.92
Tolerances and roughness	.88
Folding sheets and specification box	.74
Interpreting and dimensioning elements from an assembly drawing	.88
Dimensioning of a part	.82
Interpreting the morphology of a part through views and cuts and consulting tables	.82
Recognizing the correctness of views and cuts in a drawing	.80
Removable unthreaded connections	.88

Items associated with each component are reported in Table 3 - numbers refer to the number of statement as is in Appendix A. Next to the number of each item, in brackets, it is reported the theoretical association 'statement-level on TDEG' that was made by researchers before the study, i.e. the correspondence between the specific skill described in the item and the level of the TDEG where that skill is supposed to be associated.

Table 3. Items for component from factor analysis and theoretical level assigned before the study (in brackets)

Threads	Tolerances and roughness	Folding sheets and specification box	Interpreting and dimensioning elements from an assembly drawing	Dimensioning of a part	Interpreting the morphology of a part through views and cuts/consulting tables	Recognizing the correctness of views and cuts in a drawing	Removable unthreaded connections
17 (3-A)	26 (4-A)	1 (1-A)	7 (2-A)	8 (2-A)	4 (1-A)	2 (1-A)	34 (5-A)
18 (3-A)	27 (4-A)	6 (1-B)	11 (2-A)	9 (2-A)	5 (1-A)	3 (1-A)	35 (5-A)
19 (3-A)	28 (4-A)		12 (2-A)	10 (2-A)	21 (3-B)		
20 (3-A)	30 (4-B)		13 (2-B)	14 (2-B)	25 (3-B)		
22 (3-B)	31 (4-B)		15 (2-B)				
23 (3-B)	32 (4-B)		16 (2-B)				
24 (3-B)			29 (4-A)				
			33 (4-B)				

Considering theoretical TDEG levels as factors, and clustering items for each level according to the data reported in Table 2, levels 2-A, 3-A, 3-B, 4-A, 4-B, 5-A had high reliabilities, with Cronbach's  $\alpha > .82$ . Levels 1-A and 2-B had relatively medium reliabilities, 1-A Cronbach's  $\alpha = .72$ , 2-B Cronbach's  $\alpha = .76$ . Level 1-B had just one correspondent statements and no reliability analysis was possible. All the values of Cronbach's  $\alpha$  for the levels considered as factors are reported in Table 4.

Table 4. Levels of TDEG reliability estimates (N = 117)

Levels of TDEG	Reliability estimate (Cronbach's $\alpha$ )
1-A (1,2,3,4,5)	.72
1-B (6)	-
2-A (7,8,9,10,11,12)	.82
2-B (13,14,15,16)	.76
3-A (17,18,19,20)	.86
3-B (21,22,23,24,25)	.85
4-A (26,27,28,29)	.85
4-B (30,31,32,33)	.83
5-A (34,35)	.88

### 3.3. Concurrent validity (gender)

One hundred and seventeen students returned the questionnaire completed: 90 males (76.9%) and 27 females (23.1%). An independent t-test was run to compare the means for males and females for the components identified through the factor analysis. For the eight components, the variances were equal for male and female participants. On average, male participants considered their skills and competencies for all the eight components higher than female participants did.

For 'Threads', the difference between males ( $M = 3.73$ ,  $SE = 0.09$ ) and females ( $M = 3.61$ ,  $SE = 0.14$ ) was not significant  $t(50) = 0.75$ ,  $p > .05$ . For 'Tolerances and roughness', the difference between males ( $M = 3.61$ ,  $SE = 0.09$ ) and females ( $M = 3.36$ ,  $SE = 0.12$ ) was not significant  $t(56) = 1.62$ ,  $p > 0.5$ . For 'Folding sheets and specification box', the difference between males ( $M = 4.01$ ,  $SE = 0.09$ ) and females ( $M = 4.00$ ,  $SE = 0.18$ ) was not significant  $t(40) = 0.06$ ,  $p > .05$ . For 'Interpreting and dimensioning elements from an assembly drawing', the difference between males ( $M = 3.54$ ,  $SE = 0.08$ ) and females ( $M = 3.23$ ,  $SE = 0.14$ ) was not significant  $t(44) = 1.99$ ,  $p = 0.52$ ,  $p > .05$ . For 'Dimensioning of a part, the difference between males ( $M = 4.23$ ,  $SE = 0.07$ ) and females ( $M = 3.94$ ,  $SE = 0.15$ ) was not significant  $t(40) = 1.76$ ,  $p > .05$ . For 'Interpreting the morphology of a part through views and cuts and consulting tables', the difference between males ( $M = 3.56$ ,  $SE = 0.08$ ) and females ( $M = 2.99$ ,  $SE = 0.17$ ) was significant  $t(39) = 3.09$ ,  $p < .01$ . For 'Recognizing the correctness of views and cuts in a drawing', the difference between males ( $M = 4.12$ ,  $SE = 0.08$ ) and females ( $M = 3.85$ ,  $SE = 0.14$ ) was not significant  $t(46) = 1.62$ ,  $p > .05$ . For 'Removable unthreaded connections', the difference between males ( $M = 3.22$ ,  $SE = 0.10$ ) and females ( $M = 2.87$ ,  $SE = 0.18$ ) was not significant  $t(45) = 1.17$ ,  $p > .05$ .

The comparisons between genders on the eight components are showed in Figure 1. Effect sizes of gender on each component are reported in Table 5.

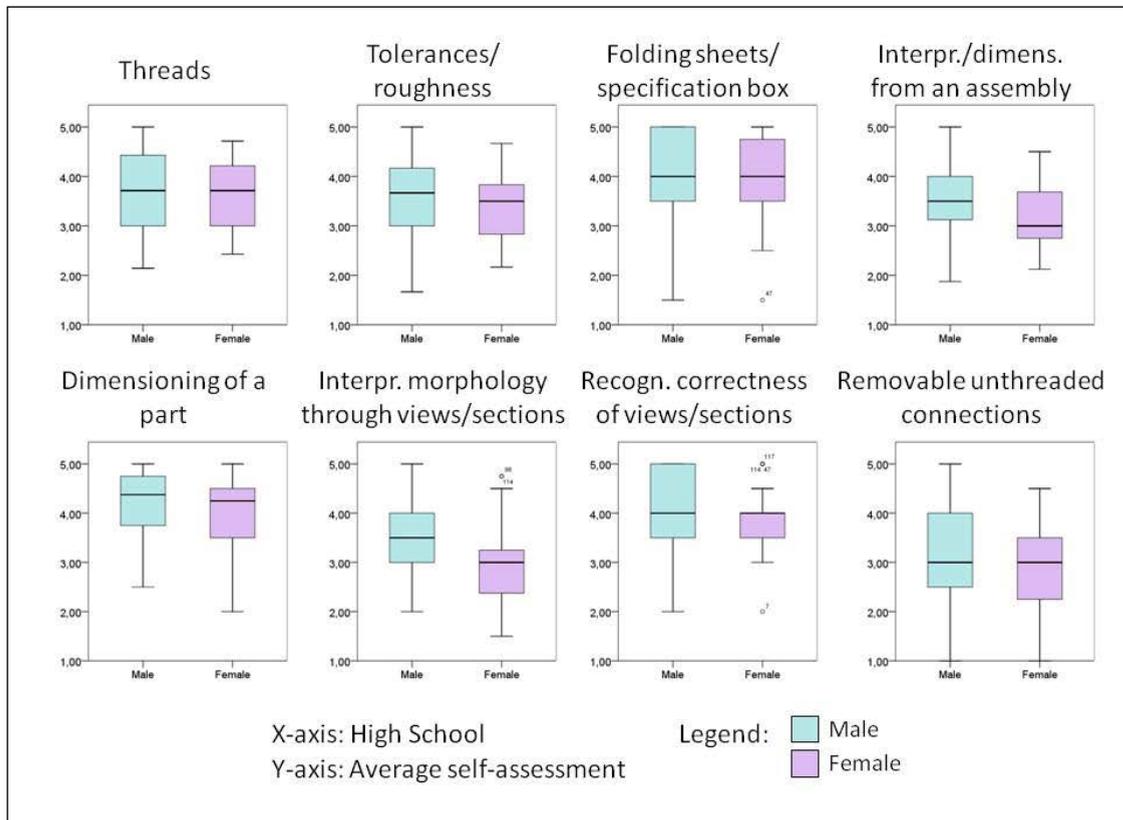


Fig. 1. Comparison between genders (Male = 90, Female = 27) on the eight components from factor analysis

### 3.4. Concurrent validity (high school diploma)

High school of provenience diplomas of the 117 participants were clustered in 3 groups: 1 – Scientific school; 2 – Technical school; 3 – Other school (with little or no background in technical drawing). Sixty-six (56.4%) participants came from a Scientific school; twenty-two (18.8%) from a Technical school; twenty-nine (24.8%) from Other school (Humanities school (six); Commercial school (five); Foreign (not Italian) non-technical school (six); Other schools not classified (thirteen)).

A one-way independent ANOVA (school: Scientific, Technical, Other) was run to test for differences among the means on each of the eight components for the participants considering their high school diploma. Further independent t-tests were run to test differences between pairs of groups when considered matter to concern from ANOVA analysis.

For 'Threads', on average, students coming from technical school ( $M = 4.00$ ,  $SE = 0.19$ ) self-assessed their skills greater than students from other school ( $M = 3.81$ ,  $SE = 0.14$ ) whilst students from scientific schools ( $M = 3.55$ ,  $SE = 0.10$ ) gave themselves the lowest evaluation. However, there was not a significant effect of high school diploma on the self-assessment,  $F(2,65) = 2.88$ ,  $p = .06$ ,  $\omega = .18$ . Turkey post hoc test revealed a difference between Technical School and Scientific school closed to the limit of significance (.058). A further independent t-test revealed that self-assessment for students coming from a technical school was greater than for students coming from a scientific school. That difference was significant  $t(86) = 2.26$ ,  $p < .05$ , and it represented a medium-sized effect  $r = .37$ .

For 'Tolerances and roughness', on average, students from technical school ( $M = 3.79$ ,  $SE = 0.19$ ) self-assessed their skills greater than students from scientific school ( $M = 3.51$ ,  $SE = 0.10$ ) whilst students from other schools ( $M = 3.48$ ,  $SE = 0.13$ ) gave themselves the lowest evaluation. However, there was not a significant effect of high school diploma on the self-assessment,  $F(2,67) = 1.21$ ,  $p > .05$ ,  $\omega = .06$ .

For 'Folding sheets and specification box', on average, students from other school ( $M = 4.36$ ,  $SE = 0.13$ ) self-assessed their skills greater than students from scientific school ( $M = 4.02$ ,  $SE = 0.10$ ), whilst students from technical school ( $M = 3.52$ ,  $SE = 0.18$ ) gave themselves the lowest evaluation. There was a significant effect of high school diploma on the self-assessment,  $F(2,70) = 6.95$ ,  $p < .01$ ,  $\omega = .30$ . Games-Howell post hoc tests revealed that there was a significant difference between students from other school and students from technical school ( $p < .01$ ). A further independent t-test revealed that self-assessment for students coming from scientific school was greater than for students coming from technical school,  $t(86) = -2.38$ ,  $p < .05$ .

For 'Interpreting and dimensioning elements from an assembly drawing', on average, students from technical school ( $M = 3.89$ ,  $SE = 0.18$ ) self-assessed their skills greater than students from other school ( $M = 3.41$ ,  $SE = 0.14$ ), whilst students from scientific school ( $M = 3.36$ ,  $SE = 0.08$ ) gave themselves the lowest evaluation. There was a significant effect of high school diploma on the self-assessment,  $F(2,63) = 3.90$ ,  $p < .05$ ,  $\omega = .24$ . Games-Howell post hoc test revealed significant differences between students from scientific and students from technical school ( $p < .05$ ).

For 'Dimensioning of a part', on average, students from technical school ( $M = 4.06$ ,  $SE = 0.09$ ) self-assessed their skills greater than students from other school ( $M = 4.09$ ,  $SE = 0.14$ ), whilst students from scientific school ( $M = 4.06$ ,  $SE = 0.09$ ) gave themselves the lowest evaluation. There was a significant effect of high school diploma on the self-assessment,  $F(2,78) = 5.49$ ,  $p < .01$ ,  $\omega = .25$ . Games-Howell post hoc tests revealed a significant difference between students from technical school and students from scientific school ( $p < .01$ ) and a significant difference between students from technical school and students from other school ( $p < .05$ ).

For 'Interpreting the morphology of a part through views and cuts and consulting tables', on average, students from technical school ( $M = 3.77$ ,  $SE = 0.19$ ) self-assessed their skills greater than students from other school ( $M = 3.55$ ,  $SE = 0.15$ ), whilst students from scientific school ( $M = 3.26$ ,  $SE = 0.09$ ) gave themselves the lowest evaluation. There was a significant effect of high school diploma on the self-assessment,  $F(2,66) = 3.53$ ,  $p < .05$ ,  $\omega = .21$ . Games-Howell post hoc tests revealed a difference between technical school and scientific school closed to the limit of acceptance value ( $p = .054$ ). A further independent t-test revealed that self-assessment for students coming from technical school was significantly higher than for students coming from scientific school,  $t(86) = -2.61$ ,  $p < .05$ .

For 'Recognizing the correctness of views and cuts in a drawing', on average, students from technical school ( $M = 4.23$ ,  $SE = 0.92$ ) self-assessed their skills greater than students from other school ( $M = 4.10$ ,  $SE = 0.75$ ), whilst students from scientific school ( $M = 3.98$ ,  $SE = 0.09$ ) gave themselves the lowest evaluation. However, the effect of high diploma on self-assessment was not significant,  $F(2,61) = 0.83$ ,  $p > .05$ ,  $\omega = .04$ .

For 'Removable unthreaded connections', on average, students coming from technical school ( $M = 3.66$ ,  $SE = 0.23$ ) self-assessed their skills greater than students from other school ( $M = 3.24$ ,  $SE = 0.17$ ), whilst students from scientific school ( $M = 2.92$ ,  $SE = 0.11$ ) gave themselves the lowest evaluation. There was a significant effect of high school diploma on the self-assessment,  $F(2,65) = 4.74$ ,  $p < .05$ ,  $\omega = .26$ . Games-Howell post hoc tests revealed a significant difference between students from technical school and students from scientific school ( $p < .01$ ). The comparisons between high schools of provenience on the eight components are showed in Figure 2. Effect sizes of high school of provenience diploma on each component are reported in Table 5.

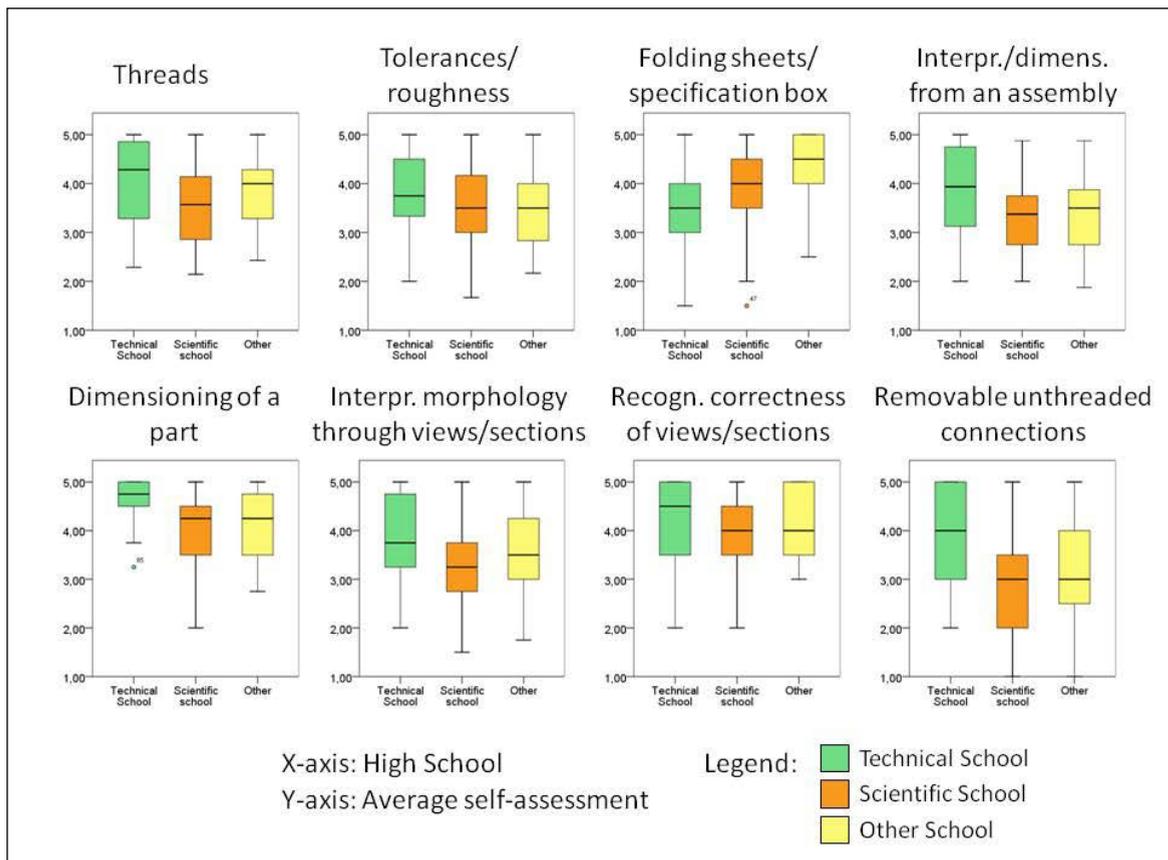


Fig. 2. Comparison between high schools of provenience (Tech. School = 22, Scient. School = 66, Other = 29) on the eight components from factor analysis

Table 5. Effect sizes of Gender and High school of provenience diploma on the components (N = 117)

Components	Effect size of Gender r	Effect size of High school diploma $\omega$
Threads	.11	.18
Tolerances and roughness	.21	.06
Folding sheets and specification box	.01	.30
Interpreting and dimensioning elements from an assembly drawing	.29	.24
Dimensioning of a part	.27	.25
Interpreting the morphology of a part through views and cuts and consulting tables	.44	.21
Recognizing the correctness of views and cuts in a drawing	.23	.04
Removable unthreaded connections	.24	.26

#### 4. DISCUSSION

A 35 items self-assessment questionnaire for basic technical drawing skills based on the Technical Drawing Evaluation Grid (TDEG) was developed by the researchers. One hundred and seventeen first-year engineering

students completed it after attending a basic technical drawing course taught in the Faculty of Engineering of Brescia. Items were constructed by researchers to reflect skills relative to various levels of the TDEG. However, exploratory factor analysis identified eight factors relative to specific skills that don't perfectly match with the ones of the proposed original levels. In particular, students tend apparently to cluster knowledge on specific topics (e.g. threads, tolerances and roughness, dimensioning of a part, ...) rather than to cluster between easier and harder things in understanding or realizing in a drawing. The sequential approach adopted to develop the TDEG is susceptible of improvement, with a redefinition of skills and competencies associated with the TDEG levels, clustering skills by topic rather than referring to a step-by-step procedure of teaching.

The proposed self-assessment questionnaire had on average a high reliability, even if there are some components that need more items to be more reliable. Moreover, dropping out six initial statements, some topics taught in the technical drawing course were not fully considered in the questionnaire, so that the self-assessment questionnaire was not representative of the whole preparation of the participants. The questionnaire showed a good concurrent validity distinguishing between genders and high school of provenience diplomas. The analysis showed that males self-assess their skills higher than females for the eight components, even if not in a significant way. For high school diplomas, the analysis showed significant differences in self-assessment among students coming from technical schools, scientific schools and other schools. Considerations about the possible reasons of those differences for each component are demanded to another research paper. A future research with a new version of the questionnaire will also study the predictive validity of the questionnaire, comparing self-assessments with the real marks students get at the exam.

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**Appendix B. Technical Drawing Evaluation Grid Self-Assessment Questionnaire (TDEG-SAQ)**


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 Items\* (original questions in Italian)
 

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1. I understand if a sheet is correctly folded and the right position of the specification box
2. I understand if views and cuts positions are incorrect in a drawing
3. I understand if views and cuts realizations are incorrect in a drawing
4. I can interpret the morphology of a part through its representation in views and cuts
5. I understand if views and cuts are not sufficient to completely represent the morphology of a part
6. I know how to correctly fold a sheet and represent a specification box in the right position
7. Given a drawing, I understand the information in the specification box
8. In the drawing of a part, I know how to insert the dimensions of its elements
9. I can understand the real sizes of a part from the dimensions in the drawing
10. I understand if the dimensions in a drawing are not sufficient to completely represent it
11. In an assembly drawing I understand what are the various elements composing it
12. I understand if the dimensions in a drawing are incorrectly inserted
13. I know the main techniques about the machining of materials
14. I know how to use and read a caliper gauge
15. In an assembly drawing I know how to add dimensions regarding encumbrance and mechanical interfaces
16. In an assembly drawing I can understand the morphology of the parts composing it.
17. I know how to represent a thread in a drawing (e.g. screw, nut)
18. In a drawing I can recognize the various threaded connections (e.g. screw, nut) .
19. In a drawing I understand if there are threaded parts.
20. I know how to derive the characteristics of threads by their designation
21. I know how to use caliper, screw pitch gauge and tables to take the threading.
22. I know how to realize the dimensioned drawing of a part containing threaded elements in front view.
23. I know how to realize the dimensioned drawing of a part containing threaded elements in lateral section.
24. I know to realize cuts of threads.
25. I know how to represent and dimensions threaded details considering the kind of connection (consulting tables).
26. I know how to add variances to dimension when the dimensional tolerance is already expressed.
27. I know how to insert, once noted, the roughness indication.
28. I understand the meaning of dimensional tolerances in a drawing.
29. I understand the roughness indications in a drawing.
30. I know how to insert a dimensional tolerance once the type of coupling is noted.
31. I know how to insert a dimensional tolerance once the functionality of the coupling is noted.
32. I know how to draw a part with dimensions and dimensional tolerances.
33. I know when no to insert roughness indications being them redundant or discordant
34. In an assembly drawing I can recognize the presence of a removable unthreaded connection.
35. In part drawing I can recognize the presence of a house of a removable unthreaded connection.

\* = For all the items, the possible answers were: Not True; Slightly True; Moderately True; Mostly True; True

**Appendix C. Summary of exploratory factor analysis results for the TDEG SAQ (N = 117)**

Item	Comp. 1	Comp. 2	Comp. 3	Comp. 4	Comp. 5	Comp. 6	Comp. 7	Comp. 8
22	.92							
24	.76							
23	.73							
17	.64							
19	.64							
18	.62							
20	.53							
28		-.72						
26		-.64						
30		-.63						
31		-.48						
32		-.48						.41
27		-.44						
1			.89					
6			.82					
15				-.71				
12				-.59				
16				-.58				
33				-.56				
7				-.54				
29		-.49		-.53				
11				-.51				
13				-.46				
9					.71			
14					.63			
8					.57			
10					.53			
4						.65		
5						.55		
25						.50		
21						.46		
2							.87	
3							.75	
34								.84
35								.75
Eigenvalues	14.90	2.39	1.84	1.52	1.48	1.18	1.05	1.02
% of variance	42.58	6.81	5.25	4.34	4.22	3.36	3.01	2.93

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# Development of motivation scale for teachers

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## Abstract

The purpose of this study is to develop a motivation scale for teachers. The scale is developed based on Herzberg's two factor motivation theory. Initially constructed motivation scale has 51 items and was administered to 150 teachers. The explanatory factor analysis is conducted to identify the factors in the motivation scale. Four factors are identified as a result of the analysis. Four factors explained 60.9 percent of the total variance. Cronbach Alpha internal consistency coefficients varied between 0.811 and 0.904. The results indicated a reliable and valid motivation scale that can be used to measure teachers' motivation in Turkish.

Keywords: motivation scale, teachers, factor analysis

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## 1. INTRODUCTION

Motivation is defined internal state that initiates, directs and sustains our behaviors (Woolfolk, 2001). Motivation divided into intrinsic and extrinsic motivation. While intrinsic motivated people participate the activities for its own sake; extrinsic motivated people participate the activities to get rewards (Moreno, 2010).

Theories that explain how human motivate are behaviorism, cognitivism and humanism (Arends & Kilcher, 2009). Behaviorists contend reinforced behaviors maintain, unreinforced behaviors extinct. That is, behavior is controlled by an external situmulus. If people receive an reward because of their behavior, they demonstrate same behavior more eagerly (Senemoğlu, 2001). Cognignivists explain motivaiton as a struggle of understanding and exploring world. People are motivated to reach equilibrium when they live cognitively disequilibrium (Eggen & Kauchak, 2004). According to humanists, source of motivation is satisfying the needs. Humans interacts their environment in order to satisfy their needs and, needs control human behaviors. Maslow proposed hierarchy of needs. Sequence of needs that must be satisfied (Santrock, 2011):

- \* Physiological. Hunger, thirst, sleep.
- \* Safety. Ensuring survival, such as protection from war and crime
- \* Love and belongingness. Security, affection, and attention from others
- \* Esteem. Feeling good about oneself
- \* Self-actualization. Realization of one's potential (highest and the most elusive need).

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Self-actualizing people are accepted by self and others, spontaneous, democratic, creative, humorous, and independent, that is, psychologically healthy (Slavin, 2006).

Another humanistic motivation theory is Herzberg's two factor theory. First factor is motivator (satisfying) that intrinsic to job is achievement, recognition for achievement, the work itself, responsibility, and growth or advancement. Other factor is hygiene (dissatisfying) that extrinsic to job is company policy and administration, supervision, interpersonal relationships, working conditions, salary, status, and security. This study based on Herzberg's two factor theory (Herzberg, 2003).

The aim of this study is to develop scale of motivation for teachers. So, it can be used to measure motivation level of teachers.

## **2. METHOD**

### *2.1. Writing items of scale*

Initially, a pool of item was assembled from a variety of resources including a thesis, articles, and scales. Items were written according to Herzberg's motivation theories. Trial form of scale consisted of a total of 51 items. Teachers marked Any (1), little (2), moderate (3), very (4), completely (5).

### *2.2. Pilot Study*

Scale was applied to 150 teachers from different branches attending in Zonguldak province in 2011-2012 academic year for validity and reliability study.

### *2.3. Analysis of Data*

Factor analysis was conducted in order to reveal the construct validity of the scale. Eigenvalue is greater than 1 is considered to be significant factors. Items which don't load any factor and items loaded to multiple factor were extracted from scale.

## **3. FINDINGS**

Exploratory factor analyses were conducted for construct validity of scale. Kaiser Meyer Olkin Measure of Sampling Adequacy, Bartlett sphericity test and determinant value of correlation matrix were applied for appropriateness of data for factor analysis. KMO value of the data was 0.866 whereas the value of Bartlett's sphericity test was significant. Seeing that the KMO value was higher than 0.60 and Bartlett's sphericity test yielded a significant result, it was concluded that it would be appropriate to conduct a factor analysis (Büyükoztürk, Çakmak, Akgün, Karadeniz & Demirel, 2008).

Kolmogorow-Smirnow test was used for normality of data. According to analysis it was observed distribution of data wasn't normal. So, principal axis factoring method was applied as a factor analysis method. Common variance values of items were between 0.437 and 0.710.

Factors of scale, explained variance by each factor, internal constituency, factor loadings and corrected item total correlations of items obtained from factor analysis were presented in Table 1.

Table 1. Factor Analysis

	Communication		Progress in Profession		Institution		Expectation	
	Factor Loading	Item-total corr.	Factor Loading	Item-total corr.	Factor Loading	Item-total corr.	Factor Loading	Item-total corr.
10	0.744	0.760						
6	0.708	0.711						
5	0.684	0.670						
7	0.634	0.603						
11	0.628	0.608						
8	0.625	0.594						
2	0.592	0.616						
14			0.615	0.620				
18			0.724	0.687				
20			0.460	0.504				
21			0.795	0.719				
24					0.513	0.540		
29					0.569	0.598		
30					0.534	0.608		
32					0.477	0.564		
33					0.615	0.662		
35					0.690	0.674		
36					0.674	0.693		
37					0.727	0.703		
43							0.717	0.746
44							0.751	0.785
45							0.712	0.747
46							0.620	0.658
48							0.723	0.753
49							0.672	0.664
50							0.656	0.654
Explained variance (%)	36.732		7.358		10.138		6.684	
Cronbach Alpha	0.873		0.811		0.870		0.904	

When examined Table 1, it is seen the scale consists of 4 factors that eigenvalue of it is greater than 1. First factor was named as a communication. This factor has 7 items. Factor loadings were between 0.592 and 0.744 ; corrected item-total correlations were between 0.594 and 0.711. it explained 36.732 % of total variance. Cronbach internal constituency coefficient was calculated as a 0.873. Second factor of scale was named as a progress in profession. This factor has 4 items. Factor loadings were between 0.460 and 0.794; corrected item-total correlations were between 0.504 ile 0.719. It explained 7.358 % of total variance. Cronbach internal constituency coefficient was calculated as a 0.811. Third factor of scale was named as a instution. This factor has 8 items. Factor loadings were between 0.477 and 0.727; corrected item-total correlations were between 0.540 ile 0.703. It explained 10.138 % of total variance. Cronbach internal constituency coefficient was calculated as a 0.870. Fourth factor of scale was named as a expectations. This factor has 7 items. Factor loadings were between 0.620 and 0.751; corrected item-total correlations were between 0.654 ile 0.785. It explained 6.684 % of total variance. Cronbach internal consistency coefficient was calculated as a 0.904. All factors explained 60,9 % of

total variance. Explained variance between 40% and 60% is sufficient for multi factorial designs (Çokluk, Şekercioğlu ve Büyüköztürk, 2010).

#### 4. CONCLUSION

Scale of motivation for teachers developed by researchers can be used to identify sources and level of teachers' motivation. Because motivated teachers can be successful in their profession. So, necessary precaution can be taken.

Scale constitutes 4 four factors. Each factor explain important parts of total variance. Also, factor loadings and corrected item-total correlations items is very high. Factors' internal constituency coefficient least 0.811. According to these data, it can be interpreted the scale (Appendix A) measure validly and reliably motivations of teachers. Also, scale can be tried in different samples.

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#### Appendix D. Motivation Scale

How does Items motive in below? Mark, pls.		None	Little	Moderate	A lot	Fully
2	Active interaction between colleagues					
5	Valueing colleagues reciprocally					
6	Situmalting cooperation in instution					
7	Relations between parents-teacher					
8	Relations between student-teacher					
10	Positive relations among colleagues.					
11	Espousal of profession					
14	Opportunity of carrier					
18	Oppotunity of progress in profession					
20	Salary					
21	Advancement					
24	Security is instution					
29	Not to be monoton					
30	Health care presented by instution					
32	Participating to decisions in instution					
33	Sufficient equipment					
35	Too workloads					
36	Appropriateness of work hours ??????					
37	Sufficient of orientation system					
43	Appreciation of the work from administrators					

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44	Positive critics
45	Social activities presented by instution
46	Participating administration
48	Being fair of administer
49	Interest and help for special issues.
50	Using initiative

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## Development of the professional competence in the ethics teachers

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### Abstract

The current changes made in the state curriculum, designed for primary and secondary schools in Slovakia, opened the possibility of changes in curriculum innovations in educational ethics and its effective management of pedagogical teaching at the level of the school curriculum. An innovative didactic model of teaching ethics has been developed by the research team aimed at implying expectations for the ethics teacher competence as a basis for its targeted and effective professional development through the self and continuing education. As we define the theoretical framework of the ethics teacher professionalization, we also present competency profile of the ethics teacher created by an expert and principles of continuous learning paradigm based on humanistic and constructivist pedagogy.

*Keywords:* Ethics; transformation; humanization; curriculum innovation; competency profile; professionalization of the teacher's continual education.

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## 1. Introduction

The integral part of the Slovak educational system transformation is a normative definition of a competency profile / professional teacher's standards related to changes of the state curriculum based on humanistic educational paradigm. The teaching is a creative and reflective profession, which assumes that the teacher is able to reconcile the normative demands that are placed on his professionalism with a dynamically varying situation in the educational reality with regard to the transformation requirements for humanization and personalization of the state curriculum. The process of a professional development of the mature teacher represents a secular upward cycle of the permanent linking of ones theoretical knowledge, experiential learning in practice and didactic reflection and its integration into the context knowledge and didactic teaching concepts. The integration is possible only under the condition of theoretical reflection of the teacher's pedagogical practice where the teacher examines and reflects his own teaching activities critically and thinking based on the scientific theories. Without this fact the teacher's pedagogical decisions only become some kind of intuitive act and teaching innovation just a random process (Kosová, 2011). Reflection and self-reflection is leading to self-understanding, because their goal is to get to know your own reflection and interpret your own actions and intentions. It is a tool for understanding, evaluating and reshaping of teacher in relation to the educational process and the curriculum (Kasáčová, 2004).

Our main objective was to create a model expert manner competency profile of the ethics teacher reflecting on curricular changes and requirements for educational innovation in teaching this subject in the context of transformational changes of the state curriculum and legislative codification of "national" standard of a professional teacher. This proposed competency profile is the outcome for the targeted and effective professional development of the ethics teachers through the self-education and continuing education focused on innovation and changes in terms of the quality of teaching ethics.

## 2. The model of competency profile of the ethics teacher

The teaching subject of ethics has broaden a traditional composition of mostly doctrinal oriented subjects at primary and secondary schools on educational subject aimed at developing ethically valuable pro-social attitudes and behaviour in students. Emphasizes are placed on the development of social and moral capabilities (virtues) aimed at promoting ethical goals and mental hygiene as primary prevention of behavioural and learning problems of children. Social and moral competence factors represent personality development of the child (communication, positive evaluation of oneself and others, social creativity, expression of feelings and empathy, assertiveness, pro-social behaviour), while the ability of students is accentuated so that they can apply acquired social and moral competences in different life situations.

The curricular changes are opening the possibilities in terms of the change and innovation in ethics curriculum its effective teaching management on the level of the school curriculum. Based on the analysis of the current trends an innovative didactic model of teaching ethics was designed by the research team aimed at the facilitation of an active social learning of the students, leading to the development of the key personal, social and moral responsibilities, pro-social action in different social and cultural contexts (Valica, Fridrichová et al., 2011).

The teacher of ethics is interpreted as a professional who is qualified for theoretically profound and critical analysis of educational phenomena, processes in the teaching of ethics. This allows him to design the content and educational policies and procedures in the way so that they lead to the objectives set by the educational objectives without the ethics teacher manipulating his students and therefore creating optimal conditions for their moral development and self-development. At the same time he is able to explain his pedagogical practices as well as

defend in argumentation, nevertheless, to modify and successfully implement. Having defined the competence profile of the ethics teacher we have reflected on a new public educational program and the teachers' professional standards, the concept and the new curriculum ethics for elementary and secondary schools, an innovative teaching model, which implicates requirements for the competence of the ethics teacher. These were formulated by the addressed teachers of ethics in our study (Poliach, Valica, 2010) and the experts (Korim et al., 2010), who not only placed the emphases on the inter-founded theoretical training component but also highlighted the great importance of a pedagogical-psychological and didactic-methodical as well as the personality - ethical components of professional competence of the ethics teachers.

The proposed model of the teacher's competence profile consists of the following components (Valica, Fridrichová et al., 2011):

- Expert competences
- Moral and ethical responsibilities
- Pedagogical-psychological and didactic-methodological competences
- Self-developing competence

The expert competence of the ethics teacher consists of the content knowledge base, which needs to be given the complexity and multi-factor nature of the educational process. In our opinion, the ethics education is designed multidisciplinary in five related areas:

- The philosophic science is enabling teachers to understand objectives, goals and core values defining value-moral education of students in ethics education.
- The education sciences is enabling knowledge of the state ethics curriculum on the level where the ethics teacher is capable to design, implement and evaluate teaching ethics on the level of the school curriculum.
- The psychological science is enabling the teacher to get familiar with students and their individual developmental characteristics, developmental opportunities for each student in the ethics education.
- The sociological and cultural-logical science knowledge accentuating socio-cultural contexts of education in students in ethics education.

The knowledge base is becoming the professional competence of the ethics teachers in a case there is a multi-disciplinary integration of the knowledge structure and its "transformation" into theoretical concepts, ideas and practices which prove to be useful in a practical teaching. The condition is a reflection and introspection of the meaningfulness of the integrated knowledge base which is by confronted by the efficiency and effectiveness of educational activities of the ethics teaching in pedagogical practice.

The personal and ethical competences of the teacher consist of the personal and social skills, attitudes and values of the ethics teacher, which reflect in its ability to implement its own positive personality characteristics and social-moral characteristics (such as: value orientation, personality traits and behaviour) in the teaching of ethics in relation to the educational principles and interventions that form the basis of the professional ethics teacher. Educational style of the ethics teacher is grounded in the application of educational principles in the teaching of humanizing teacher-pupil relationship and based on unconditional acceptance of his personality and attribution of positive qualities, positive evaluation of student preferences and practices of inductive discipline, encouraging pupils to sociability, creating clear rules in the classroom and creating educational community out of the class. The precondition for the exercise of personal ethics and responsibility is a personal maturity of the teacher, which is manifested in the ability to accept itself, others, as well as to identify and change its position in the given reality based on the attributes that are (Kariková, 1999, p.45-85) specified in the following paradigm:

- an adequate assessment of reality
- the pursuit of self-knowledge

- ability to control your actions
- the ability to create a positive emotional bonds with others
- vigour and creativity
- resistance to stress, morality and character
- sense of humour and optimism
- an adequate communication ability.

Unlike the "classical" expectations where the teacher will be particularly effective in terms of the knowledge transfer to the student, the emphasis is now placed on the responsibility for the personalization and socialization, culture personality of each student. The ethics teacher is a professional, an expert possessing such professional pedagogical-psychological and didactic-methodological competencies that enables him to manage the cognitive and affective learning of students, diagnose, design and creatively look for different variations and alternative educational strategies and procedures appropriate for the moral development of students. Increasing demands on his professional self-reflection call for a theoretical reflection in their pedagogical experience and correction of their pedagogical approaches in ethics education.

The pedagogical-psychological and educational-methodical competence of the ethics teacher enables the following:

1. To identify individual psychosocial and moral characteristics of the student

The precondition is to:

- be aware of the patterns of psychosocial and moral development and personality of the pupil in given age period
- have the ability to identify individual psychosocial and moral characteristics of the pupil
- accept the individuality of each student

2. Identify psychological and social factors of students learning

The precondition is to:

- know the learning styles of students
- have the ability to identify individual learning style and educational needs of students (intact pupils, pupils with special needs)
- accept different styles of pupils learning depending on the mental, physical and social conditions

3. Identify socio-cultural context of pupils' development

The precondition is to:

- be aware of the differences between cultures in a multicultural environment and their impact on the learner
- have the ability to identify the individual characteristics of the learner, based on the socio-cultural environment
- accept student's differences without prejudice and stereotypes

4. Control the content and didactics of teaching ethics

The precondition is to:

- have acquired knowledge of their field, including inter-disciplinary linkers and reflection on the development of relevant disciplines
- navigate the educational documents (national educational program, school educational program, curricula, educational standards, ...) and compulsory pedagogical documentation
- have some knowledge of the methodology of the school curriculum
- have the ability to choose the content of ethics in accordance with the required and expected educational goals and enrich by schooling and regional specificities

- have the ability to identify and explore links within and between teaching subjects or areas of the curriculum
- have the ability to form a school educational program
- have the ability to make didactic content analysis of the ethics education

#### 5. Planning and designing teaching ethics

The precondition is to:

- be familiar with theoretical planning and design of educational process
- have the ability to plan and design educational process of ethics in accordance with the school educational program and individual needs of students
- have the ability to define learning goals which are student-oriented in order to develop their skills and formulate them in the form of educational requirements
- have the ability to provide a didactic analysis of the curriculum - use the content of the curriculum for basic elements (facts, concepts, relationships, procedures), be able to choose basic and developing curriculum in the context of the educational objectives of ethics and individual needs of students, choose tasks and activities for students
- have the ability to provide curriculum design of ethics teaching, tasks for pupils and pupil success criteria in order to meet the challenges
- have the ability to reflect on the actual process of learning and compare it with a process that is designed to make corrections
- have the ability to develop an individual educational plan for students with special educational needs in collaboration with colleagues
- have the ability to use, develop and provide material and technical base of educational process in teaching ethics
- have the ability to use the activity and creativity of students in planning of educational process in ethics education

#### 6. Implement the teaching of ethics

The precondition is to:

- know the methods and forms which support active learning of students
- know the methods and strategies of a personal student development (self-knowledge, self-awareness, self-esteem, self-confidence, self-regulation and self-actualization)
- know the methods and strategies of pro-social development of students (communication, empathy, assertiveness, mutual help, donations, sharing, and cooperation) and their application to application issues of ethics
- have the ability to select and utilize methods and forms when it comes to learning objectives with regard to ethics and individual educational needs of students
- have the ability to manage learning groups and classes
- have the ability to design effective strategies for teaching pupils with behavioural problems
- have the ability to communicate effectively with pupils, to influence positive atmosphere in the classroom environment and encourage the development of pupil's personality
- have the ability to change the planned action flexibly in regard to the current situation in the classroom
- have the ability to recognize the socio-pathological behaviour of students
- have the ability to use the activity and creativity of students for effective lesson implementation
- to appreciate the personal and socio-moral character of students

#### 7. Evaluate progress and results of teaching and student learning

The precondition is to:

- be familiar with theoretical evaluation of psychosocial and moral status and development of the pupil

- have the ability to establish criteria for evaluation of the progress and results of student learning, the ability to develop self-esteem of students

Self-developing competence of the ethics teacher is reflected in his motivation and capability to design his own professional development, gradually identify the professional role of the teacher and the school culture. These competences are stimulated by reflection and a systematic teacher's self-reflection. We understand it as a part of all teachers' professional activities related to the planning, implementation and evaluation of their own teaching activities as well as position of yourself in your professional development. It's involved in shaping their own didactic teaching as well as concept of a teacher in a professional, personal and ethical component of their competence.

Self-developing competences of the ethics teacher enable the following:

1. Plan and implement professional growth and self-development

The precondition is to:

- know their personal dispositions, values, strengths and weaknesses and demonstrate their use in teaching activities
- know the trends of the development and trends in the field of education
- know the system of career development of teaching staff and career opportunities
- have the ability to set goals of self-development of professional competencies

2. Identify with a professional role and school

The precondition is to:

- be familiar with the mission and goals of the school
- have the ability to identify the mission, vision and school values
- have the ability to act as a representative of the profession and schools
- have the ability to identify the role of facilitator, to communicate effectively with social partners, schools
- maintain professional ethics at a high level

Self-development competencies form the basis for the teacher while identifying their learning needs, comparing their real professional competencies expected by the competence profile of the ethics teacher.

### 3. Continual education of ethics teachers

The teacher of ethics is in the role of a reflexive professional who evaluates curriculum and teaching, their teaching experience determining his own teaching activities and new solutions to educational situations and problems. It also reflects the assessment of his teaching by getting students, colleagues, school management and parent's feedback. It reflects himself in the role of a teacher and also the transformation of the educational context of the school in relation to their own teaching. Based on a comprehensive reflection, an autonomous teacher can take a full responsibility for making decisions regarding objectives and content of the school curriculum, plan, implement and evaluate teaching. The teacher, who is able to reflexively "process" his practical experience in confrontation with pedagogical theory, can create a professional autonomy, allowing him to apply its own individual concept of didactic teaching ethics.

Generally speaking, the teachers of ethics reflect on their teaching. Their teaching is adapted to individual particularities of their students, their learning needs and interests, create favourable condition for their learning, monitor the progress continuously as well as give results of teaching. Based on this feedback they draw conclusions for themselves, reflect the educational context of the school and adapt their teaching approaches to new conditions and requirements for education accordingly. It is a reflexive teacher who takes into account the choice of instructional strategies and learning objectives as well as the need for structuring curriculum, teaching

activities and tasks of student's motivation to learn and create conditions for effective learning of students and mode of interaction and communication in the classroom (Vašutová, 2004).

However, according to Š. Porubský (2007 p. 131) the current Slovak teacher:

- doesn't have a comprehensive, paradigmatically clear and specifically applicable individual pedagogies in practice
- perceives educative reality as "given" (curricula) and his own position only as an interpreter and not the creator
- fails to perceive the relation between educational theory and its potential impact on increasing the efficiency of their own educational efforts

The teacher should enter into educational situations with own didactic concept, which is based on knowledge of educational theory. Its practical application in educational practice should be validated by action research of specific educational phenomena binding in its imagination "as it should work". If a teacher doesn't have a clear teaching paradigm he is resorting only towards elimination of unforeseen circumstances in the learning process. He either reduces the tuition to the level of only transmitting the information, where the pupil becomes only the recipient, or resigns to his educational and formative position according to slogan "humanization" and leaves everything up to pupils (Porubský, 2007).

Designing own career move as an ethics teacher is associated with its own self-education and continual training of teachers. In the ethics, the teacher's continual education is necessary to create a learning environment where a mechanical application of theory to practice is rather regarded as "wishful thinking" then a pedagogically viable role. The current trend in teachers continual education is a preference of those educational strategies that place emphasizes on theoretical reflection and practical experience of teachers in the way where a constant interaction in the world of theory and practice takes place. Therefore, it is necessary to promote a culture of reflective practice and active educational research in order to help teachers raise ethical education distance from their own practice and experience, which leads to improving the quality of authentic "practical" teaching theory, forming the base for deepening professional identity.

In the continual education of the ethics teachers executed by universities and institutions of continual education we propose the following principles to be applied based on paradigm of humanistic and constructivist pedagogy:

- Reflect on new approaches in adult education (transition from transmissible to proactive education ) so called transmission of knowledge in completed form without relation to the specific context of school reality and own experiences of teachers to change it to the approaches which is prioritizing exploration, discovery and designing of new knowledge based on its own activities and the acquisition of new experience for teaches in modelling and actual teaching situations,
- apply constructivist and reflexive approaches in the development of professional identity as an active designing and creative development of teachers professionalism based on reflection of own activities, experience, own search for self-discovery and the role of the teacher based of collaboration with colleagues,
- integrate theoretical and practical knowledge component of the ethics teacher by precise practical work and life experiences of teachers that need to be analyzed, interpreted, moreover, to broaden, to link with the theory, generalize and create or broaden their own didactic teaching concept of ethics in the educational school context, in other words to apply the approach from the practice to theory and from the theory to practice,

- prioritize strategies and methods of active teaching and learning of the ethics teachers(dialogic ahead of monologue methods, methods of problem, experiential, reflective and cooperative learning), organizational forms preferring individual and group lessons ahead of class teaching, self-education
- apply the block or modular approach along with a designing content of continual teachers education by using cross-curricular and interdisciplinary integration in the educational process and evaluation of learning outcomes, which means creating a coherent part of the program, which are arranged in the way so it would enable the compilation of consistent training units,
- link teaching and research in a conduct of the ethics teachers, which means to create a research culture associated with the creative teaching work - learning the role of a "researcher" knowing how to systematically analyze their own practice - particular teaching situation by an active research and based on that modify their teaching strategies, propose alternative solutions and measures in order to improve the quality of teaching,
- apply new approaches in assessing professional competencies of the ethics teachers projected in the presentation of competency teacher profile of the given teacher, focusing on their ability to examine own teaching activities critically, analyze it, interpret it, evaluate it, be capable of theoretical reflection of practical experience (place them in the context of theory),
- apply methods of distance education leading to active self-studying and in a contact study, strategy and methods of active teaching and learning of teachers should be preferred (more seminars and trainings).

#### 4. Conclusion

In the context of transition state curriculum in primary and secondary schools, an innovative model for teaching ethics was created by the research team as a tool and a theoretical framework for teachers of ethics for the purpose of improvement and innovation in ethical education. The presented model of the ethics teacher competence profile is the base for the meaningful and targeted continual education and professionalism heading towards achieving individual didactic concept of teaching ethics.

In continual learning, there is a necessity to form learning situations leading towards enhancement of professional set of values, beliefs, opinions and skills of the ethics teachers, which are sufficiently theoretically founded. It is a creation of academic space aimed at the role acquisition, strategies and methods that allow them to "self-construct 'own professional identity of the ethics teachers defined by competency profile. The point is that teachers of ethics would constantly be aware of the self-reflection and routinely clarify their "teaching philosophy", professional attitudes and personal beliefs leading to their own conception of didactic teaching ethics generating conditions for innovation of ethical education.

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# Digital and interactive learning and teaching methods in descriptive geometry

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## Abstract

During the course of “Fundamentals and applications of Science of Representation - Geometric drawing” (held at the Faculty of Engineering at the University of Palermo) we successfully tested the adoption of informatics tools to enhance the comprehension and the critical analysis of complex figures in the geometrical space. The peculiarity in the teaching methodology was the adoption of interactive software products (*Cabri Géomètre* and *GeoGebra* concerning dynamic and geometrical constructions; the well-known *Rhinoceros* plug-in, *Grasshopper*, about generating algorithms; *Linceo* regarding implementing the graphic display of complex solids in augmented reality). According to our experience within didactic laboratories, the adoption of ICT allowed us to stimulate and interest students towards subjects of descriptive and projective Geometry and the expected results are very satisfactory. In this paper we show some of the most interesting examples of geometric constructions created by students.

*Keywords:* digital and interactive learning tools, dynamic geometry, generative algorithms, augmented reality.

## 1. INTRODUCTION

The integration of Information and Communication Technologies (ICT) in the field of teaching offers the opportunity to enrich and widen the learning environments, spaces where the structures of knowledge can be articulated.

In literature several experiences can be found, which describe the results and the possible developments of the couple education/technology in the learning/teaching processes.

At national level, over the last few years, the Ministry of Education, University and Research (MIUR) has promoted, financed and implemented, in partnership with the National Agency for the Development of School Autonomy (A.N.S.A.S.) and a network of associated universities, a teaching project of digital School called “Cl@ssi 2.0”, aimed particularly to the development of the ICT applied in the educational field.

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The national project involved several schools in the area, connected with each other and provided with multimedia devices and technological equipment, with the aim of experimenting possible changes and innovations of the learning environment through the use of technologies in support of traditional teaching (Falcinelli & Laici, 2013).

At European level, the process of renewal of the teaching methodologies has developed a series of similar projects, for example “Escuela 2.0” in Spain and the Project “Capital” in England.

In our university context, the educational path started five years ago in the *Drawing* courses (in the degree programme of *Building Engineering – Architecture* and that of *Environmental and Territory Engineering* of the Faculty of Engineering at the University of Palermo) allowed us to experiment teaching strategies which employ new hardware/software technologies. During the development of the lessons it was found that the exclusive use of analogical – traditional procedures slows down the students’ learning processes and limits the understanding of the objects of geometric space and, consequently, their encoding in a plane of reference.

On the basis of these critical issues observed during the development of the teaching laboratory exercises, it was decided to structure teaching/learning strategies allowing the synergic integration of traditional methods with new interactive procedures. The use of hardware (PC, tablets, IWB, graphics tablets, virtual and augmented reality devices) and software digital tools (dynamic geometry, modelling and programming programs) has significantly shortened the times of reception of educational contents, contributing to an active and conscious participation of the students.

The purpose of this paper is to describe a possible renewal path for the teaching/learning processes of the subject, moving on three levels of investigation:

- Organizing and structuring of the didactic educational environment;
- Identification of the most effective methodological – digital tools for the acquisition of the subject contents, aimed at the achievement of certain skills;
- Verification of the cognitive and practical abilities to apply the acquired knowledge, through the creation of digital models and their virtual display.

The main aim is to investigate the innovation and enhancement dynamics, which can be triggered in the learners, without focusing on the technologies in the strict sense (Fig. 1).

## **2. A DIGITAL CLASSROOM/LABORATORY FOR THE TEACHING OF DESCRIPTIVE GEOMETRY**

Before reporting some significant applications elaborated by our students, which summarize the teaching innovation process, we propose an ideal and desirable configuration of a university classroom adopting and promoting the integration of the digital and traditional teaching methods.

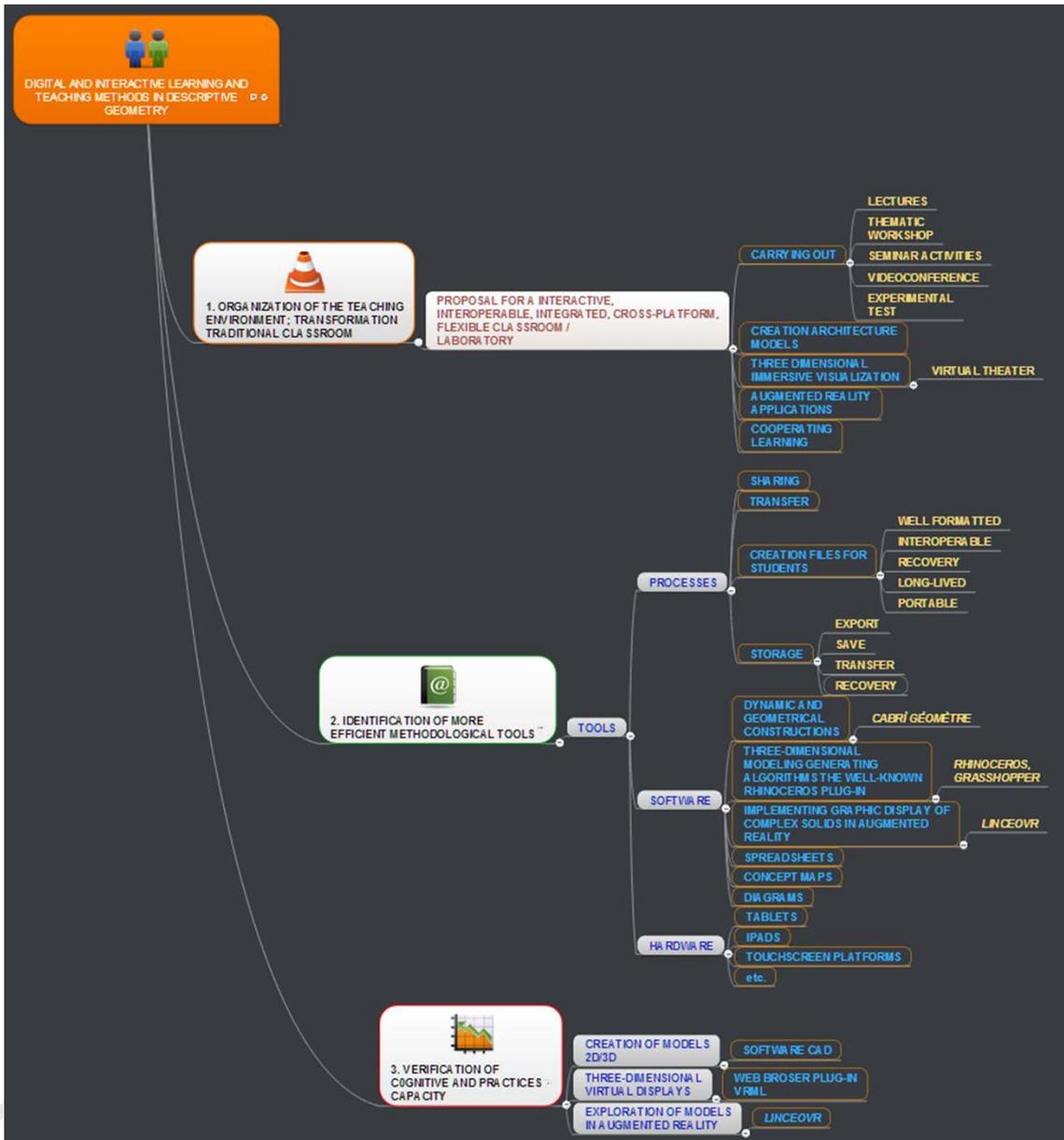


Fig. 1. Conceptual Map about digital and interactive Learning and Teaching methods in descriptive Geometry.

The classroom/laboratory, not yet existing at the University of Palermo, would create a structurally flexible environment, which facilitates the teaching/learning of interdisciplinary contents, and which is provided with hardware/software digital and interactive devices and equipment (Fig. 2 a,b).

In order to start and strengthen the teaching innovation process, it is necessary to change the traditional learning environments and to design new suitable educative spaces. The current spatial configuration of a traditional style classroom, structured in a random and undifferentiated way, should be more functionally redesigned for the logistical needs required by the technological – digital equipments.

In our investigation path, the multimedia digital classroom we propose is conceived as a laboratory becoming classroom, an original and versatile learning place where to develop interactive way of teaching, which allows the involvement of an even high number of students.

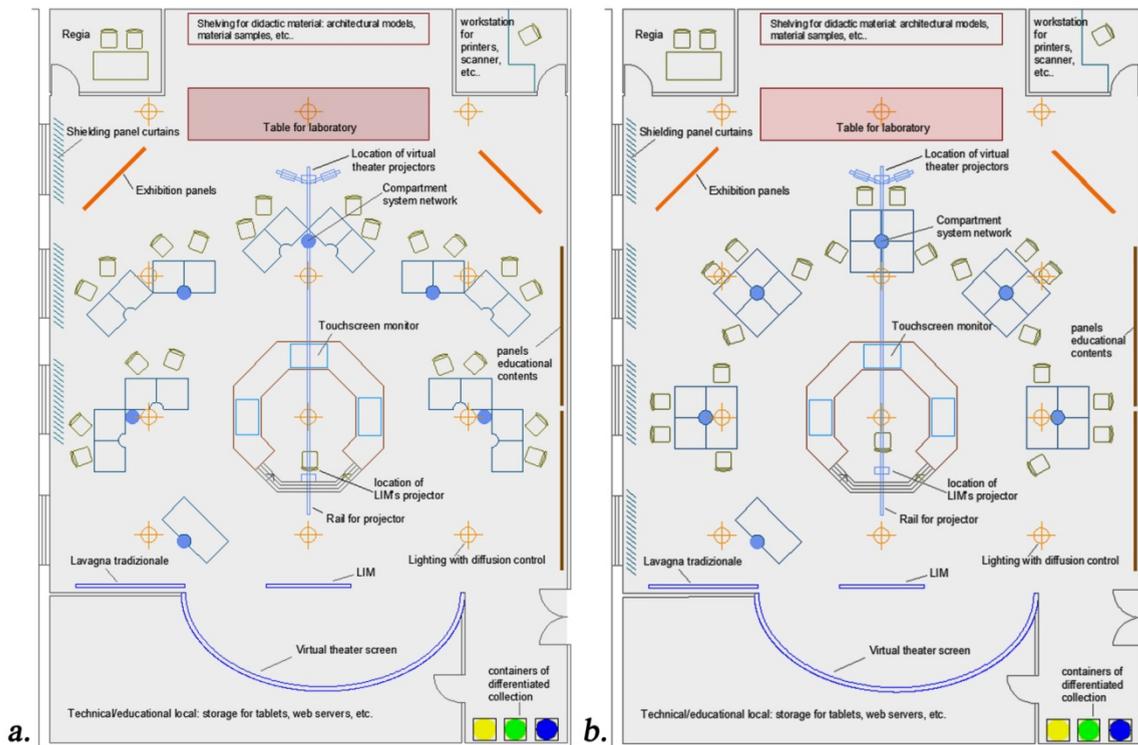


Fig. 2. A proposal of modular configuration for a university classroom/laboratory facilitating the integration of the digital and traditional teaching methods of descriptive Geometry.. a Configuration for laboratorial activities, videoconferences, thematic workshops, experimental tests; b. Configuration for interactive lessons, cooperative learning, seminars.

A classroom/laboratory with instrumental interoperable equipment, that can be integrated with already existing multiplatform devices, in which architectural models are created, virtual scenarios are opened, project experiences are shared with other universities. The proposed technological platform aims to create an environment in which technologies and services, useful for education and computer science culture and technological innovation diffusion, are integrated and available.

The teaching space is designed as an interactive environment, in which it is possible to experience also the immersive three-dimensional displaying techniques for the exploration of geometric models, through the installation of a “virtual theatre” properly set up (an virtual reality environment where, wearing special glasses, viewers can experience immersive environments, thanks to stereoscopic vision). In order to raise the quality of

learning/teaching, particular attention has been paid to the arrangement of the classroom layout, conceived as a highly flexible space, capable to rapidly adapt according to the purposes of the educational moment, to the different activities to be carried out (interactive lessons, cooperative learning, seminars, laboratorial activities, videoconferences, thematic workshops, experimental tests). The interactive lessons, created with open source applications, can be shared using tablets, iPads, touchscreen platforms related to 3D models and to the graphic constructions within the classroom.

### 3. INTERACTIVE DYNAMIC GEOMETRY APPLICATIONS AND GENERATIVE ALGORITHMS PROGRAMMING

The subject contents of the educational programme are presented to the class with the support of two well-known *dynamic geometry* software: *Cabri Géomètre* and *GeoGebra*. Particularly, the latter, developed in *JAVA* script (Hohenwarter et al., 2009), over the last few years has widely spread among the academic institutions, because it has some peculiarities which guarantee multiplatform operability and consultation through the most widespread browsers. In order to allow the students to consult and browse the geometric constructions made, an e-learning link with private access has been created on the web page of the Library of our Faculty of Engineering. On the course web page, in a dedicated section the html files of the graphic constructions are stored together with the synoptic tables about the handled themes, in order to facilitate the student to highlight and examine in depth some fundamental properties (Fig. 3).

In the explorative study of the geometric figures, the use of the above mentioned software proves to be a very useful exploratory investigation tool. The controls made available to the user allow to deepen the intrinsic relations among the geometric entities through the manipulation (repositioning, rotation, expansion) of control points in the created constructions (Fig. 4, 5, 6).

During the construction process, it is possible to validate the initial hypothesis, speculate and verify the properties and the relations which remain unchanged or vary during the geometric transformations.

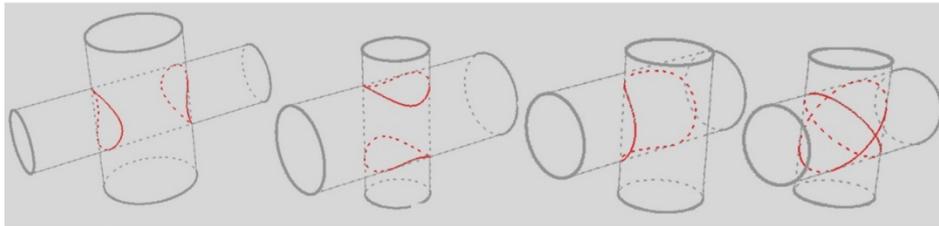
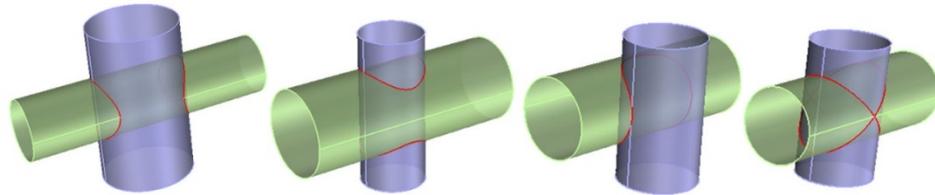
Compared with the traditional paper and CAD digital drawing, the students are allowed to change the position of the starting geometric entities, configuring, in this way, dynamic displays. For the understanding of the sequence of the graphic operations generating the geometric figure, important and effective interactive modalities are highlighted: the “step by step” reproduction of the graphic process; the display of the construction protocol with the list of the executed controls; the construction of “geometric places” of points, which satisfy certain conditions.

The use of these tools has allowed us to enhance the interaction between the theoretic – conceptual and the figurative component in the reasoning of descriptive Geometry, offering reflection occasions to sharpen the cultural and educational knowledge of the Science of Representation.

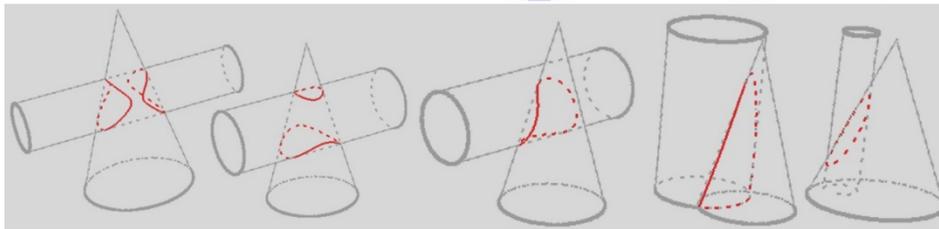
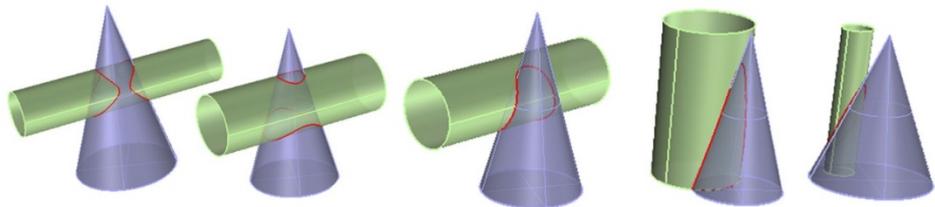
For example, a structured table is reported, which introduces the perspective reference system and the representation of the fundamental entities. The analysed figure shows the geometric layout of the perspective reference system simultaneously in 3D, according to a scheme in oblique axonometry at  $45^\circ$  (to the left) and, in 2D according to a two-dimensional scheme directly on the squared plane  to the right  Whilst remaining unchanged the construction process (executable “step by step”, operating with the buttons of the control bar at the bottom), the geometric entities can be manipulated modifying the visual perception of the entities image, on the squared plane and simultaneously in space (Fig. 7).

In the subject teaching planning, particular attention is paid to the study of surfaces (ruled quadric, developable quadric, of revolution, interpolation, helical, free forms) and of curves, generatrix and directrix, which compose them.

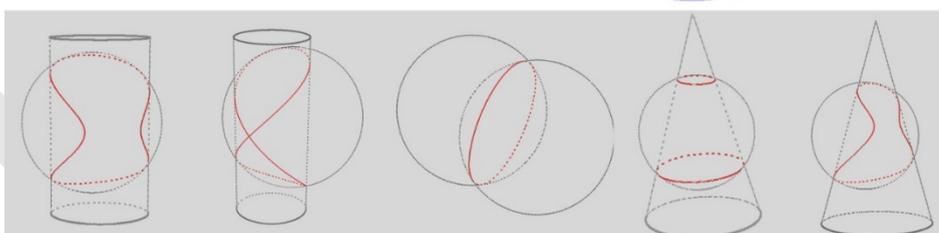
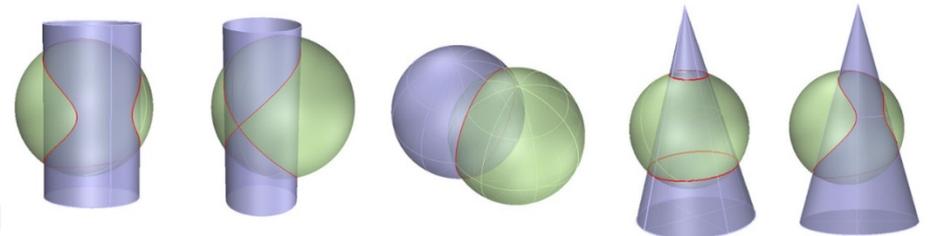
them and within a plug-



The shape (2011)



allow initial of of (8, 9).



The procedures adopted to construct them are structured parametrically controlled *Grasshopper*, generative architectonic modelling in of the well-known modelling software CAD *Rhinoceros*. use of generative algorithms for modelling of a geometric is an approach (Tedeschi, which has enabled us to: automate the procedures; generate parametric models that changes to the geometries; investigate on several spatial configurations intersection between different kind shapes (Fig.

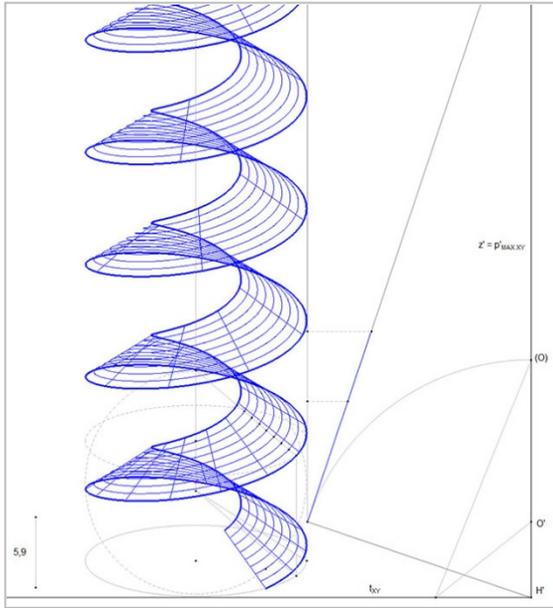


Fig. 3. Synoptic tables about the intersection of quadrics, in order to facilitate the student to highlight and examine in depth some fundamental properties.

Fig. 4. Direct orthogonal axonometry representation of a right helicoid ruled surface. The interactive dynamic construction was made with Cabri Géomètre. *Géomètre*.

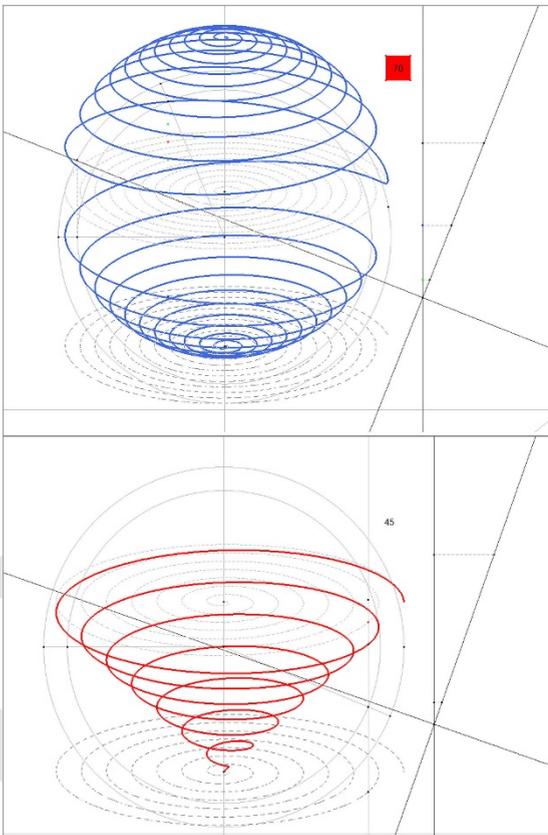


Fig. 5. Direct orthogonal axonometry representation of crooked spiral curves: at the top, a spherical spiral and, at the bottom, a conic spiral. The interactive dynamic constructions, made with *Cabri Géomètre*, allow to set the helixes pitch, coil changing the visual perception of their image.

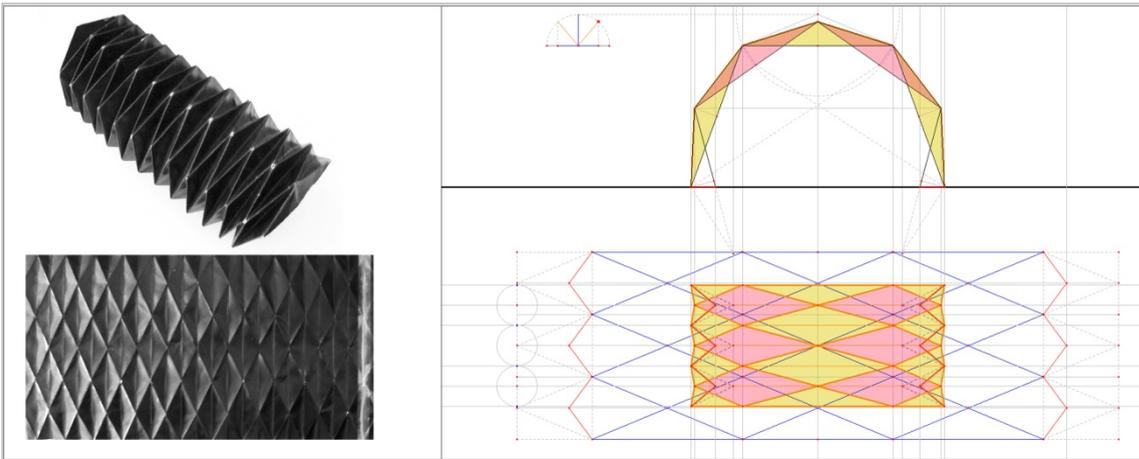
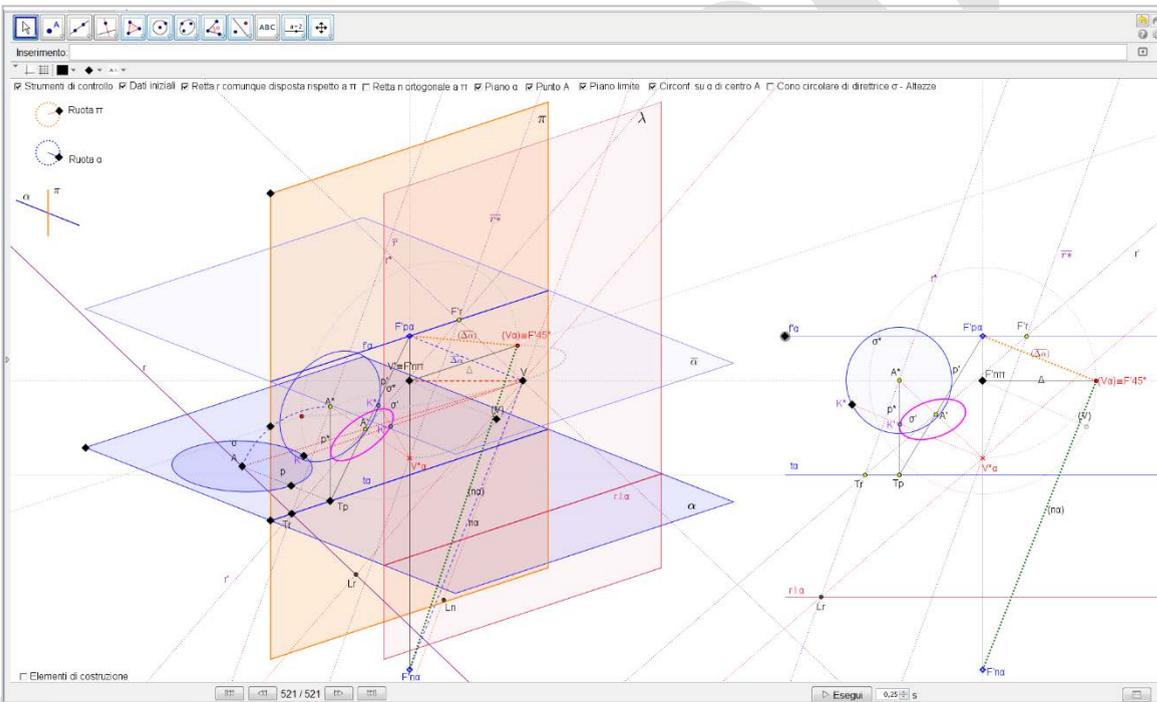


Fig. 6. Pleated prismatic surface resistant in form and its development on a reference plane; to the left, cardboard scale model and, to the right, interactive dynamic construction made with Cabri Géomètre.



#### 4. INTERACTIVE DYNAMIC GEOMETRY APPLICATIONS AND GENERATIVE ALGORITHMS PROGRAMMING

During the exercises in class, the students study and represent significant examples of existent architectures, which present geometric-spatial complexities handled during the course.

Geometric and architectural models created in class are exported into VRML format (Virtual Reality Modeling Language) for the display in a common Web browser and made available for the whole class in a single multimedia storage.

To better understand form, geometry and structure of the realized architectural models, our course employs also the Augmented Reality (or AR) technology. The AR, the set of technologies which allow to “augment” a real scene (Primavera, 2010), is a young computer science discipline at experimental stage, pertaining to “computer graphics”, that deals with the overlay of digital contents to the observed real world. It integrates new ICT and communication forms, showing a representation of an augmented reality in which, to the normal display perceived through our senses, artificial/virtual sensorial information is added.

In our context the AR is an excellent teaching aid, as it allows the students, through marker identification tracking procedures, to display in real time the constructed three-dimensional models.

With the simple movement of the selected marker it is possible to explore in all directions three-dimensional objects not actually existing (Fig. 10).

The technology using dedicated software (the one we used during the course is *LinceoVR*) is structured into three simple steps:

1. Object *identification* (the object usually consists of a printable marker, as link between the real and the virtual world) observable by means of a fixed or mobile viewer (video-camera, smartphone, tablet), with data processed by a computer.
2. Real time *tracking* in the space of the observed object.
3. *Mix* of the support (i.e. the 3D model) with the marker.

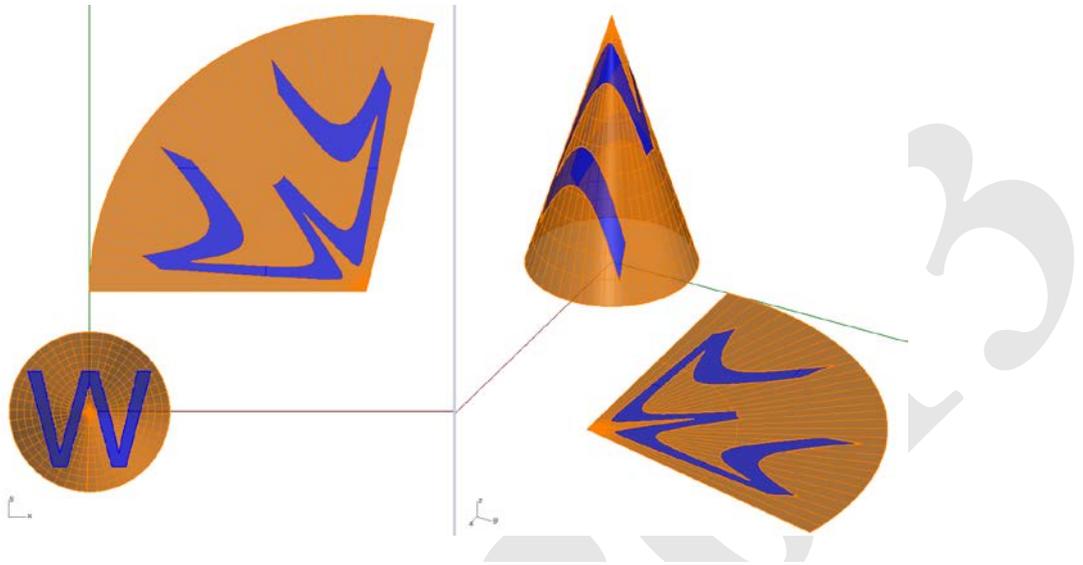


Fig. 8. Example of anamorphic projection of a plane figure (letter “W”) on a conic ruled surface and development of the system on a reference plane.

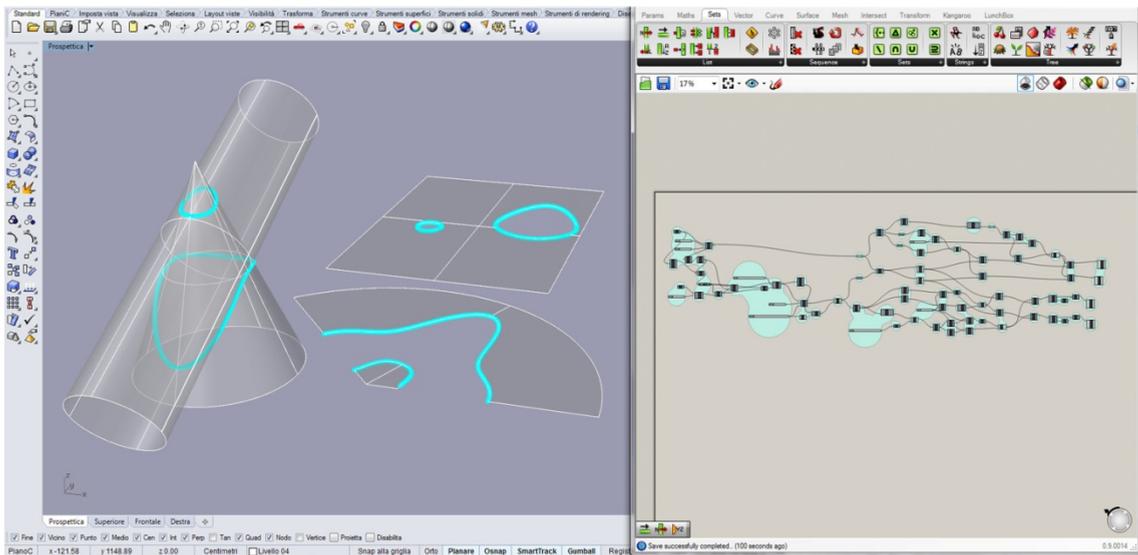
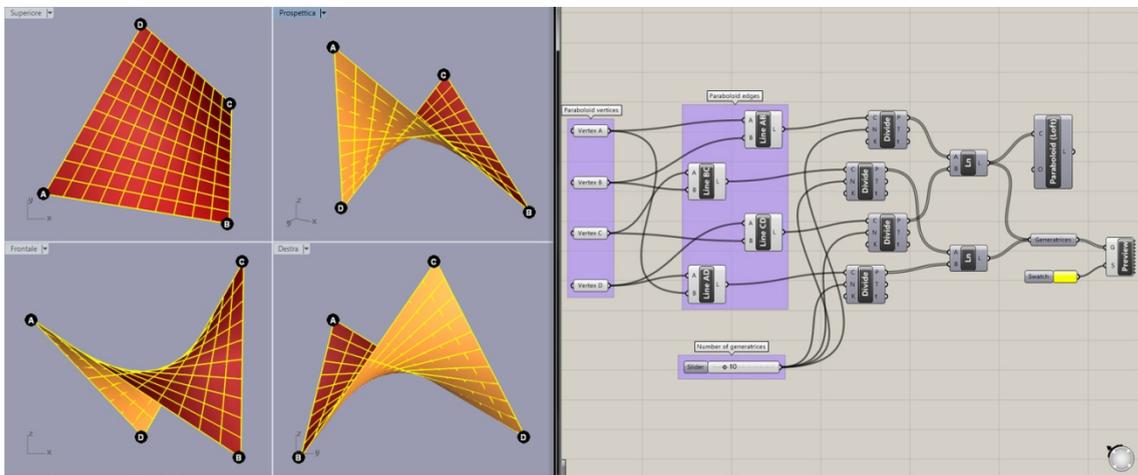


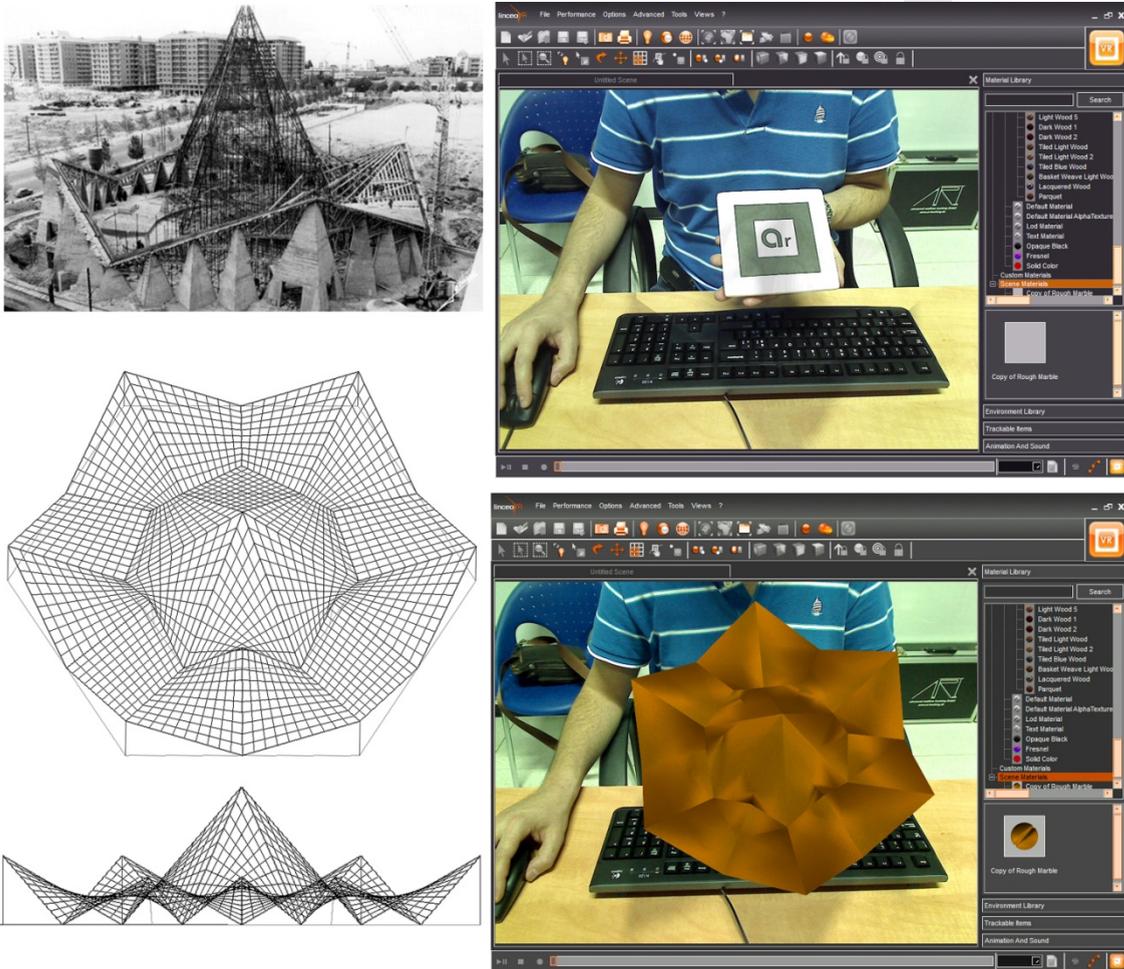
Fig. 9. Two examples of generative algorithms for the modelling of structured surfaces parametrically controlled within *Grasshopper*, a plug-in of the well-known CAD software *Rhinoceros*. At the top, a crooked rectangle with a portion of hyperbolic paraboloid subtended to it; at the bottom, intersection of a cone and a cylinder anyhow organized between them, and development of the surfaces.

## 5. CONCLUSIONS

On the basis of our teaching experience, structured and shared with the students through the introduction of technological solutions for communication, management and access to the discipline contents, we strongly believe that teaching cannot overlook the smart integration between ICT and knowledge anymore.

Innovation implies the acquisition of digital skills by the professors and their training to be in step with the new media languages, in order to effectively and consciously integrate them in the teaching of their discipline.

Pier Cesare Rivoltella, professor of Teaching and Learning Technologies at the Università Cattolica of Milan, well summarizes the necessary change of the teaching approach. In a recent speech given at the Pontificia



Università Lateranense, he says: *We live in a circumstance in which didactics seems not to be a professional skill for the professors anymore. This is proved by the fact that the new recruiting procedures will evaluate only their research activity. At the same time, didactics is nevertheless one of the main requirements to work in a context in which practices and behaviours of young people are increasingly marked by the presence of the new languages and meaning construction forms and more and more distant from the traditional lecture model.*

Fig. 10. To the left, orthogonal projections drawings of a composition of hyperbolic paraboloid surfaces (Iglesia Nuestra Señora de Guadalupe, Madrid, architect Felix Candela). To the right, two freeze-frames of a real time display of the three-dimensional model in augmented reality within the software LinceoVR, which show the three steps of the procedure: identification, tracking and mix.

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## Appendix

Some references of sitography are reported, which are significant but not exhaustive, regarding the couple education/technology in learning/teaching processes.

<http://www.cremit.it/>

(Centro di Ricerca sull'Educazione ai Media all'Informazione e alla Tecnologia. Il CREMIT nasce nel novembre del 2006 come centro di ricerca che affianca le scuole, a livello di formazione degli insegnanti e di intervento nelle classi, sui problemi dell'educazione mediale e dell'ICT).

[http://www.istruzione.it/innovazione\\_scuola/default.htm](http://www.istruzione.it/innovazione_scuola/default.htm)

<http://www.scuola-digitale.it/classi2.0>

(MIUR, progetto Cl@ssi 2.0)

<http://www.sero.co.uk/capital.html>

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<http://www.ite.educacion.es>

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<http://www.scuola-digitale.it/editoria-digitale/il-progetto/editoria-digitale-scolastica>

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<http://www.learningforall.it>

(L4ALL è un progetto triennale di ricerca FIRB (Fondi di Investimento per la Ricerca di Base) 2007 finanziato dal Ministero dell'Istruzione, dell'Università e della Ricerca (MIUR). Il progetto mira a indagare come un utilizzo consapevole delle tecnologie possa contribuire ad innalzare la qualità della didattica, in specifico per gli allievi con necessità particolari. Il risultato concreto del progetto sarà un Repository online in cui verrà raccolto un ampio numero di buone esperienze didattiche basate su tecnologie.

<http://www.lacasadegliinsegnanti.it/PORTALE>

<http://ec.europa.eu/digital-agenda>

(The Digital Agenda is the EU's strategy to help digital technologies).

<http://dera.ioe.ac.uk/6347>

(2020 vision: report of the Teaching and Learning in 2020 Review Group)

<http://www.indire.it>

(Sito dell'Istituto Nazionale di Documentazione per l'Innovazione e la Ricerca Educativa)

<http://www.scuolab.it>

(servizio del Politecnico di Milano, nel quale sono raccolti numerosi progetti di didattica multimediale).

<http://www.aace.org/pubs/default.htm>

(Association for the Advancement of Computing in Education).

<http://www.mediamente.rai.it/HOME/bibliote/biografi/m/maraglia.htm>

("La nuova didattica multimediale", intervista a Roberto Maragliano, docente di Tecnologia dell'Istruzione all'Università di Roma 3, presso il Dipartimento di Scienza dell'educazione).

[www.triangle.co.uk/jit/index.htm](http://www.triangle.co.uk/jit/index.htm)

Sito della rivista internazionale Technology, Pedagogy and Education, dedicata agli educatori e tesa a supportarli nell'integrazione dell'Information Technology all'interno dei processi d'insegnamento e d'apprendimento. <http://www.aace.org/pubs/default.htm>

Sito dell' Association for the Advancement of Computing in Education, la quale patrocina diverse pubblicazioni sul rapporto tra tecnologie ed educazione.

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# Distributional assumptions in educational assessments analysis: Normal distributions versus generalized beta distribution in modeling the phenomenon of learning

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## Abstract

This paper introduces the generalized beta (GB) model as a new modeling tool in the educational assessment area, evaluation analysis specifically. Unlike normal model, GB model allows us to capture some real characteristics of the data and it is an important tool to understand the phenomenon of learning.

This paper develops a contrast with the normal model, allowing to observe that there are situations in which, the most common assumption is that the normality of the data is not always the best. The theory of educational assessment should begin to open to new statistical tools offered, adding new models in order to capture one the best features of the data and reject strong assumptions as strong as symmetry.

**Key words:** Normal distribution, symmetry, unimodality, evaluation and learning analysis.

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## 1. INTRODUCTION

The statistical modeling concept is changing nowadays; data were formerly needed to adapt or adjust to a specific or known model. The normal or Gaussian model became a natural assumption of many studies, particularly and strongly in educational evaluation (Fernández, 1997: 51-52). Currently it is intended that each data set has its own model, for example, to asymmetry or bimodality of these. Therefore distributional analysis processes in the field of educational evaluation should adapt to new trends, as these changes will help us understand more precisely the phenomenon of learning, for instance, determine more precisely the skill levels of our students (Cabrera, 2010a: 51-61). A statistical model is a Platonic representation ideal belonging to the universe of the possible rather than the probable. Particularly when we work with the normal model, we are associating a support characterized by the real line to this variable, which is better in many cases; however,

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infinity is not part of the present and of many of the variables that are essential to the evaluation process, usually because their supports are bounded, where a direct example are the evaluations in the metric system of most countries. Such situations are not just a problem of the educational field, but also in multiple areas, such as agriculture (Haskett, 1995: 73-74), health (Gulco, 2009: 929-930), engineering (Oguamanam, 1995: 247-250 and Sulaiman, 1999: 573-575). In short, we have a responsibility, in this perspective, to propose new models, particularly with bounded support, ensuring that the models can accurately represent the characteristics and behavior of the data, ignoring ideal characteristics as symmetry, and proposing models that effectively represent the characteristics of the data (Arellano-Valle, 2005: 93-94).

Our proposal consists in the presentation of generalized beta model that serves as a model of best features of many of our variables in the educational field, presents also various forms and flexibility, which make it an attractive model. Finally we present an application to a concrete data set, corresponding to evaluations of three groups of students in a particular area, allowing visualize the goodness of fit with respect to the standard model.

## **2. LITERATURE REVIEW**

GB distribution proposed in this paper concerning to the generalization of its support, is completely different to other preview GB proposals. Cordeiro (2012), proposes a GB which is the composition of two different distributions, generating chances in distributional form, but not in the support; there is also Exponential GB distribution proposed by Barreto-Sousa (2010), which is a particular case of composition of distributions, as is the Beta-normal distribution by Eugene (2002) and the life model by Nadarajah (2005), however, all this generalizations are related with the form of the distribution, but not with the support, which is our proposal. There is another vision of GB raised by McDonald (1995), which are related to the increase of parameters in the characterizaton of the beta distribution, however, this proposal considered as support the interval of real numbers between 0 and 1, and the estimation process becomes extremely complicated.

## **3. THE RESEARCH PROBLEM and OBJECTIVES presented.**

At present the philosophy of modeling is changing: there is a trend to suggest models with more features for data identification, such as asymmetry, which obviously brings a positive impact on the measurement process and study of behavior, central aspects on the evaluation process (Cabrera, 2010b: 69-84), however it is difficult to incorporate this point of view, because the normality assumption, considering the distributional model, are the main part in a process of data analysis in the field of education. Fernández (1997) indicates that the normal model is "as a rule" the distribution in the assessment of learning. For this reason we want to present and propose the Generalized Beta model as a tool to better respond to the characteristics of our metric system, allowing an authoritative analysis and overcoming some distributional assumptions.

For this reason, the issue of this paper is: "Characterizing Generalized Beta distribution as a model that best fits to the metric characteristics of our evaluation scales and compare the goodness of fit with respect to the normal model based on a set of real data"

### **Objectives**

- Describe formal aspects of GB distribution and Characterize the GB model.
- Promote GB distribution, as an analysis model of educational assessments and Show the goodness of fit of GB compared to the normal model in a set of real educational evaluations.

**Αππενδιξ Α.** Promote a line of research on the implications of considering models with bounded support in the field of education, specifically in the process of evaluation and analysis.

### **4. RESEARCH METHODOLOGY.**

The working methodology is pro-positive type, in the sense that it aims at starting a new line of research in educational assessment analysis; this study considers the real characteristics of these processes, overcoming the problems of under- and overestimation generated with the assumption of normality.

Phases of Research: Preliminary analysis, characterization of generalized beta model, application, a posteriori analysis and evaluation.

### **SOME PRELIMINARY ANALYSIS.**

#### *The statistical modeling*

Statistical models have been widely used in a wide range of situations, for example to solve specific problems in engineering and the different scientific areas, and form the basis of the theoretical formulation of inference and much of the statistical methods (Arellano-Valle, 2005: 93-94). Today statistical modeling has methodological and technological backups that give a great viability as an area of educational development in modeling. A statistical model is a platonic conception of theoretical that, in a very generic way, can be seen as a mental constructor which aims to study and better understand how a phenomenon in which a cause and effect relationship underlies (Ojeda 2003: 71-72). Understanding this section is essential to understand the meaning of this work, since one of the main objectives of education is to understand the phenomenon of learning, this phenomenon has an ideal model that perfectly explains their behavior, however it's hard we can know it, so in the modeling process, i.e. the process of proposing models, it should be increasingly considered characteristic elements corresponding to data we observe. In this sense, it is presented the proposed GB model, as a further step in the understanding of a phenomenon so important, as is learning.

### *Model Selection Criteria.*

The criterion in the model selection will be based on how close they have proposed parametric models respects adjusted nonparametric model, assuming the latter as a reference. Non parametric model or non parametric estimated density will be identified by  $\hat{f}(x)$  now the density or proposed parametric model will be represented by  $f(x)$ . Then the selected model will be the one that minimizes the following relationship  $\|\hat{f}(x) - f(x)\|$ .

### *The Normal Distribution*

The normal distribution or normal model is known for its excellence in educational evaluation, but its use generally violates their assumptions. Its asymptotic properties make it an attractive model; however, these asymptotic results are not obtained in general with 20 observations, theoretical assumptions exist that allow this condition, see for example the central limit theorem and his regularity conditions. There are a number of bibliographic references such as Johnson (1995) and Casella (1990) therefore we will not go into more detail. It is a symmetrical model, characterized by two parameters,  $\mu$  which represents the mean and  $\sigma^2$  which represents variance. There is a process called standardization, which is a linear transformation, which generates a new random variable normally distributed; only now the mean is zero and variance is 1, as shown in Figure 1. The standard normal model is fully tabulated, so their probabilities are known.

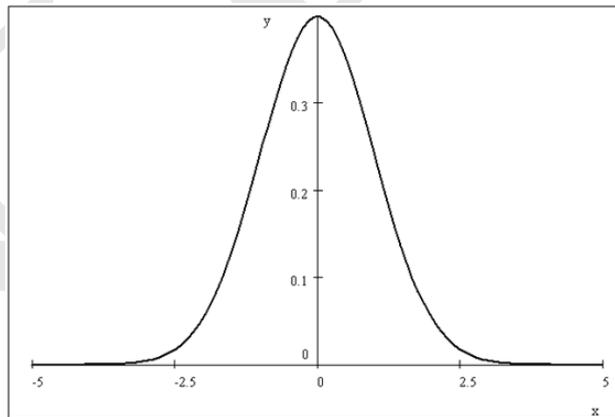


Figure 1: Normal Distribution

### **CHARACTERIZATION OF GB MODEL.**

The generalized beta distribution which is presented in this paper is related to the generalization of its support, a different concept of generalization shown by Cordeiro (2012). In probability theory and statistics, the beta distribution is a family of continuous probability distributions with support in the interval (0,1). The beta density is characterized by two positive parameters, generally indicated by  $\alpha$  and  $\beta$  or  $u$  and  $v$ , which are parameters of location and scale. The beta distribution has been applied to model the behavior of random variables limited to

finite amplitude intervals in a variety of areas. His density is  $f(x) = \frac{\Gamma(u+v)}{\Gamma(u)\Gamma(v)}(x)^{u-1}(1-x)^{v-1}; x \in (0,1)$

which can have various behaviors depending on the values of the parameters, from symmetric to fully asymmetric behavior, as presented in the graph in Figure 2.

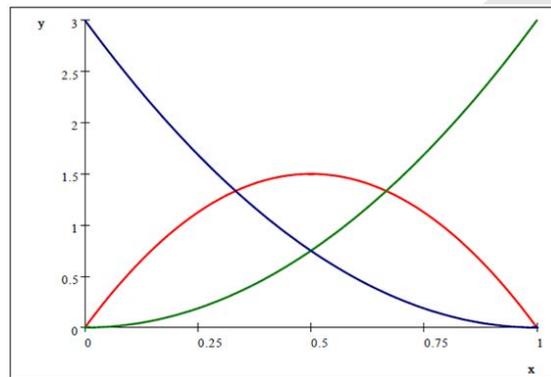


Figure 2: symmetric or asymmetric

We naturally want to extend these properties to different supports; for this reason, in the following sections we will present generalized beta distribution, to make later the contrast with the normal model.

### Generalized Beta Distribution

The generalized beta distribution naturally born to give greater flexibility to support bounded, where its

density function is defined as:  $f(x) = \frac{\Gamma(u+v)}{(b-a)^{u+v-1} \Gamma(u)\Gamma(v)}(x-a)^{u-1}(b-x)^{v-1}; x \in (a,b)$ , where, in

the same way as in the standard model, the parameters  $u$  and  $v$  are positive. The standard Beta distribution is now a situation of generalized Beta distribution, when  $(a, b) = (0,1)$ . If  $X$  is a random variable with Generalized Beta

distribution, then the notation is  $X \square BG_{(a,b)}(u, v)$  or equivalently  $X \square BG(u, v, a, b)$ .

### Model features

To facilitate operability of the model, consider the parameter  $b$  is written by  $b = a + h$ , thus the density is

$$\text{represented by: } f(x) = \frac{\Gamma(u+v)}{h^{u+v-1}\Gamma(u)\Gamma(v)}(x-a)^{u-1}(h-x)^{v-1}; x \in (a, a+h)$$

The following items are those that are usually presented to analyze and compare evaluations.

$$\text{Mean: } E(X) = \frac{u}{u+v}h + a$$

$$\text{Second Moment: } E(X^2) = \frac{(u+1)u}{(u+v+1)(v+u)}h^2 + \frac{u}{u+v}2ah + a^2$$

$$\text{Variance: } \text{Var}(X) = \frac{(u+1)u}{(u+v+1)(v+u)}h^2 + \frac{u^2}{(u+v)^2}h^2$$

In the estimation process we present two of the most relevant: the first is the maximum likelihood and the second is the moments method. In this process, assume that the parameter  $h$  or amplitude range of possible values of  $X$  is known. In the case of the maximum likelihood estimator, simply solve the following system:

$$\psi(u) - \psi(u+v) = \sum_{i=1}^n \frac{\ln x_i}{n} - \ln h$$

$$\psi(v) - \psi(u+v) = \sum_{i=1}^n \frac{\ln(h-x_i)}{n} - \ln h$$

Estimations by moments method, represented by  $\tilde{u}$  and  $\tilde{v}$  are, respectively  $\tilde{u} = \frac{\overline{X^2}h - \overline{X}k}{h(k - \overline{X^2})}$

$$\text{where } k = \frac{\sum_{i=1}^n X_i^2}{n}, \text{ then } \tilde{v} = \frac{\tilde{u}}{X}h - \tilde{u}.$$

## 5. APPLICATION

Knowing distributional behavior of educational assessments is critical to the educational field, because it allows the rethinking and evaluate the introduction of new methodologies or criteria, for example (See Figure 4, Course A), therefore, the statistical modeling applied to education, particularly to the evaluation analysis, is essential for understanding and walking toward understanding the phenomenon of learning.

The graph of Figure 3, allows for example to observe the result of the launch of the registration without prerequisite disciplines, which obviously does not have a normal behavior.

The next application is based on a sample of three courses at a Chilean State University, where evaluative scale from 1 to 7 is used, with 1 being very low and 7 very high. The application seeks to show a contrast between the normal and beta generalized modeling for evaluation analysis. The courses discussed were selected randomly and some information will be kept confidential.

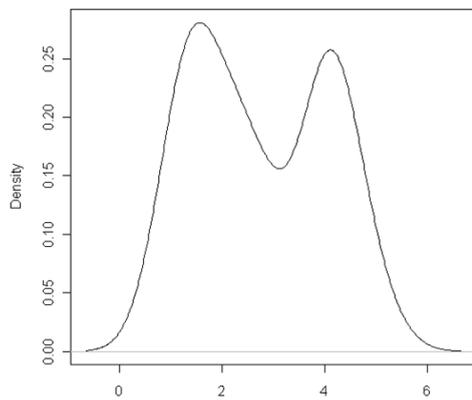


Figure 3: Sample means of evaluations

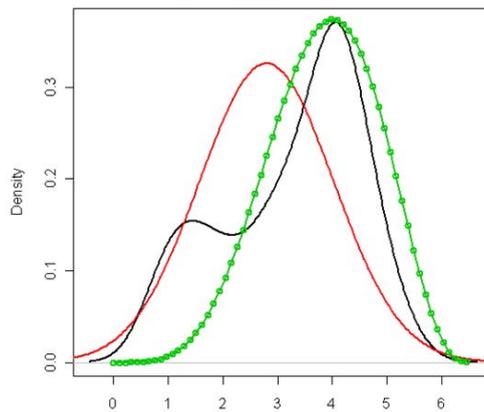


Figure 4: Model Comparison

The process of contrast between the two models is used as a reference or ideal model; an estimate nonparametric density, generally black in color represented unless otherwise specified. The selection criteria will be based on the smallest difference between the nonparametric model and the proposed one.

The estimates obtained by the maximum likelihood method, are presented in Table 1.

Table 1

Proposed model	Normal Model: red curve	Generalized Beta Model: green curve
Estimates of parameters	$\hat{\mu} = 2.8$ and $\hat{\sigma}^2 = 1.5$	$\hat{u} = 5.5$ and $\hat{v} = 3.8$

Figure 4 shows the comparison between the two fixes, where the green curve represents the Generalized Beta model, red curve to the normal distribution and the black color curve adjustment nonparametric. In Figure 5, we can see that the nonparametric asset gives evidence of the existence of two groups due to the bimodal behavior, complicating a contrast, as both models have uni-modal features; however the quality of the Generalized Beta model is higher than normal model, due to the degree of proximity to the non-parametric curve. Furthermore it is possible to show the limitations of the standard model at asymmetric behavior, causing over and underestimations, specifically in this case produces an underestimation of the peaks and an overestimation of the probabilities in the tails of the distribution.

A fit that will surely surpasses in quality to these two models, is to use mixture models, given the bi-modality of the real curve (McLachlan, 2000: 24-26), however, to get that, we need the expertise of a wide variety of models, and it is a good beginning for this. A similar situation is presented in the graph in Figure 5, except that now the notes correspond to a teacher and discipline completely different. The estimates obtained by the maximum likelihood method are presented in Table 2.

Table 2

Proposed model	Normal Model: red curve	Generalized Beta Model: green curve
Estimates of parameters	$\hat{\mu} = 3,5$ and $\hat{\sigma}^2 = 1,3$	$\hat{u} = 13,3$ and $\hat{v} = 9,9$

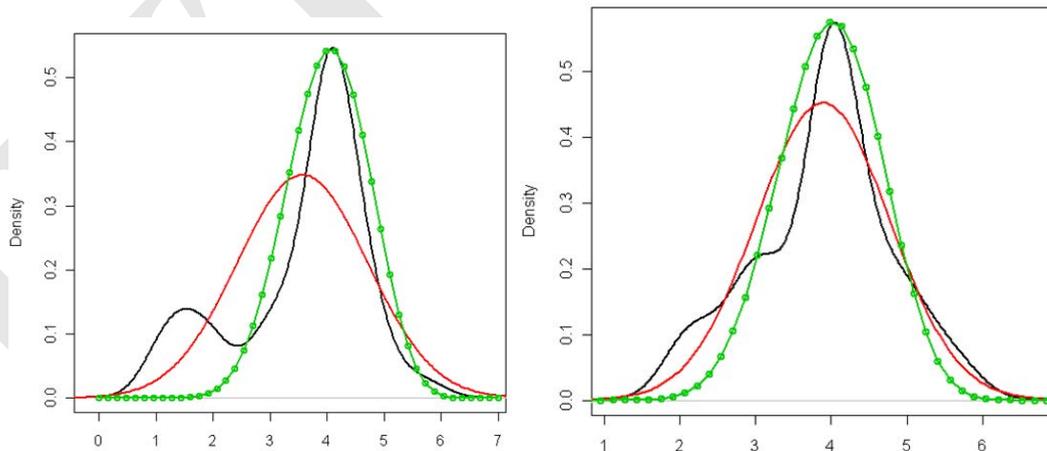


Figure 5: Model Comparison

Figure 6: Model Comparison

Again, the graph in Figure 6 shows the superiority in modeling for the case of the GB distribution.

The graph in Figure 6 shows another course, where it is difficult perceive differences is complex, although both have pros and cons, we need a quantum process to decide on the quality.

Using the criterion of selection of models defined, we have:  $\|f(x) - f_R(x)\| > \|f(x) - f_V(x)\|$ , where  $f_R(x)$  and  $f_V(x)$  are the normal and beta generalized models proposed, respectively, thus the generalized beta model is the best fit. The estimates obtained by the maximum likelihood method, are presented in Table 3.

Table 3

Proposed model	Normal Model: red curve	Generalized Beta Model: green curve
Estimates of parameters	$\hat{\mu} = 3,8$ and $\hat{\sigma}^2 = 0,77$	$\hat{u} = 14,5$ and $\hat{v} = 11$

#### A POSTERIORI ANALYSIS AND EVALUATION.

The presentation of the three situations will display an immediate necessity, which is adding more models to the educational field evaluation, allowing each day represent more accurately the actual behavior of the assessments. In the graph in Figure 6, the decision is complex visually, that is why we used numerical objective criterion for selection, and this criterion is not final, it is subject to improvements, as the field of nonparametric analysis is a young research line.

#### 6. CONCLUSIONS.

The proposed model provides a significant improvement in fit and modeling of learning assessments. This model considers information on the characteristics of the data, such as belonging to a bounded support, and it does not fall into the over estimation problems, which are really unlikely elements. The great advantage of the GB model in modeling assessments is its flexibility and adaptation to the asymmetries of the distributions, which again becomes an important aspect on how to better understand the phenomenon of learning.

The selection of a reliable model at this stage is critical to begin studying the impact of covariates in this model; for example, in the case of GB model, there are various tools for this type of analysis, such as Beta regression (Ferrari, 2004: 799-785). Ultimately, GB model presents interesting properties as an assessments analysis model and it could become a potential tool for good learning study. The signification of this paper is to

introduce a new model in the analysis of evaluations that considers real and current characteristics of the data, for example, a bounded support.

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# Doctoral students' competences of using online resources for research purposes in network society

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## Abstract

Usage of online resources has become a necessity in the daily lives of students, academics, researchers, teachers and all others who have grasped the potential of the virtual environment. The present study aims to appraise doctoral students' competences, knowledge and skills of using contemporary information technologies and online resources for research purposes. Findings from a survey of 93 doctoral students and degree candidates suggest that procurement of quantitative information for research purposes from online resources tends to be viewed as a theoretical possibility rather than an established practice. Doctoral students appear to lack essential knowledge, skills, awareness and competence to make use of online facilities for dissemination of their research results or for active participation in professional online communities.

Key words: doctoral students; competences; research; online environment; network society

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## 1. Network society as an element of research environment

Network society, inevitably, is also a knowledge society whose beginnings coincide with the inception of the Internet in 1971 (Kāpenieks, 2011). As knowledge society displaced the industrial one, the philosophical underpinnings of technology application underwent a fundamental shift. The technologies that had grown out of the harsh industrial experience became counterproductive in the newly emerging context.

Network society is an element of research environment, a particular kind of noosphere (from Greek *noos* – mind) or an intricate system of thoughts and ideas whose purpose is to facilitate information exchange. To create new knowledge from the existing stock, each researcher must become involved in this system or noosphere.

This approach resonates throughout international strategic documents germane to the area of higher education. The provisions of the Lisbon Strategy about the integrated approach to the application of information technologies for research purposes boosted technological productivity. Doctoral students are prospective researchers whose competence set should definitely include ability to use information technologies and media literacy, which is a multilayered and interdisciplinary concept (Stakle, 2011). Technological progress infuses the

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concept of *networks* with new meanings that carry technological, communicative, cooperative and social connotations.

Ever since its establishment in 2000, the European Research Area continues to pursue its key priority – to eliminate the fragmentation and isolation of discrete research endeavours in the EU member states which obstructs free circulation of ideas and undermines synergy. Writings on Bologna Process and the upper level of the three-cycle model of tertiary education (bachelor-master-doctor) emphasise mobility, internationalisation, openness and cooperation.

The “EU 2020” strategy pinpoints the directions to be pursued for building an economy based on knowledge and innovation (Commission working document consultation on the future “EU 2020” Strategy, 2009) The strategy sets a number of quantitative aims. Particularly relevant to tertiary education is the target of providing adequate conditions for research and development and reaching an increase in public and private investments that amounts to 3% of GDP.

Network society warrants transparency, which is a fundamental precondition for successful research and innovation. In knowledge society, economic processes are directed by information and knowledge, their accessibility as well as people’s ability to manage information and transform it into economic and social benefits. A key implication for education is substitution of memorisation with ability to locate, analyse and apply knowledge (Eurydice, 2002), which makes development of research competences a top-list priority.

Competences are infused with the spirit of their time. In Bologna Handbook, Scott discusses the scale of environmental impact on doctoral studies and distinguishes between external and internal factors (Scott, 2006). These factors cast network society as an environment for ongoing development of doctoral students’ research competences with due consideration to their complex structural properties as discussed in EURODOC investigations.

## **2. External and internal environmental factors and doctoral students’ research competences**

Here In his analysis of external environmental factors, Scott brings up three key points (Scott, 2006):

- innovation as a fundamental precondition in knowledge society;

Innovation is impossible without free flow of ideas and knowledge, without cooperation or building a stock of commonly accessible resources. Leonardo da Vinci framework endorses an innovation network ‘*innoSupport*’ whose task is to reinforce the competitiveness and effectiveness of businesses. Research is an essential element of this innovation network.

What researcher’s competences are required in this context? Barring a thorough analysis of the concept of innovation, which would go well beyond the scope of the present paper, it is incumbent to quote such fundamental competences as breadth and width of knowledge; IT skills for data processing and interpretation; imagination; creativity; appreciation of other experiences as well as the doctoral student’s personality traits such as courage, risk taking, tolerance and ability to substantiate one’s arguments. Development of these competences is a task for third-cycle programmes.

- globalisation;

Globalisation processes are accompanied by ideological shifts – as the virtual environment continues to expand, various elements of the academic environment come to be recast in a new light. Globalisation requires mobility not only in the geographical sense but also within the realm of one’s study and related areas. It is impossible to innovate effectively without embracing such forms of mobility as cooperation among research institutes and centres, doctoral programmes and the research practice. In the context of globalisation, the success of doctoral research is essentially hinged on the accessibility of resources and the doctoral student’s participation

in scientific activities, which contributes to the novice researcher's communicative, cognitive and behavioural competences.

A network society with its joint information environment is a rich research resource in its own right. However, it is fraught with challenges such as intellectual property protection acts, which set barriers to rapid and comprehensive knowledge flow by blocking access to scientific literature (Kļaviņš, 2011). Paucity of financial resources is another major access blocker to digitalised scientific information.

- changing academic culture

In network society the hitherto unquestioned status of external expertise and authority diminishes and is gradually replaced by the researcher's own qualities such as aspiration, quick decision making and assiduousness. Countries where this approach has not yet managed to gain a strong foothold are grappling with a lamentable scarcity of academic talent. Regrettably, Latvia also counts among such countries. For doctoral students, self-initiative, aspiration, self-esteem and self-control are fundamental personality traits that underpin their research competences and, at the same time, a major thrust towards change in the academic environment.

Scott also distinguishes some internal environmental factors that are deeply rooted in local higher education traditions of different countries:

- successiveness and complementarity of three study cycles: bachelor-master-doctor;
- organisation of research practice or cooperation of educational and research institutions.

Thus, the context of the globalised environment and network society has reshaped the structure of competences expected from a researcher. Media literacy, in its broader sense, runs as a constant thread throughout any research. Well-developed media literacy promotes awareness of targets, conscious choice making and critical selection of information (Potter, 2004). These qualities are fundamental at any research stage. Yet how well are doctoral students aware of it?

### 3. Analysis of doctoral students' competences of using online resources for research purposes

In order to appraise doctoral students' competences, knowledge and skills of using contemporary information technologies and online resources for research purposes, a survey of 93 doctoral students and degree candidates was performed at the end of 2012. The respondents were asked to evaluate the present level of their knowledge and skills and the optimum level required for doing research. The questions focused on scientific communication via the Internet, procurement of quantitative information germane to the topic of one's study from online resources, online dissemination of one's findings and effective participation in professional online communities. The respondents were given the following five-point scale to evaluate their knowledge: (1) don't have a clear idea of what is meant here; (2) understand but don't know; (3) know to some extent; (5) am able to apply my knowledge. To evaluate their skills, the following five-point scale was proposed: (1) don't know this instrument; (2) am able to give an approximate formulation of what should be done; (3) am able to clearly state what should be done and interpret the result; (4) am able to perform to some extent; (5) am able to perform to full extent.

As regards using the Internet as a means of scientific communication, 25.2% of the respondents maintain that they know how this medium might be used for the purpose but as many as 72.3% admit to actually doing it but rarely. As concerns optimum level of knowledge, 92.3% believe they ought to be able to use the Internet for scientific communication. When appraising their current level of skills 31.3% report that they are only partially able to use the Internet for scientific communication whereas up to 64.4% claim to have a complete skill-set.

Non-parametrical Wilcoxon test was administered to ascertain statistically significant differences between (1) optimum and current levels of knowledge; (2) optimum and current levels of skills; (3) current levels of skills and knowledge; (4) optimum levels of skills and knowledge.

The findings reveal no statistically significant difference between current levels of skills and knowledge of using the Internet as a means of scientific communication. 79 respondents believe that the levels of skills and

knowledge should be identical whereas 14 respondents admit that the latter may exceed the former. Likewise, no statistically significant difference was identified between optimum levels of skills and knowledge. Meanwhile, statistically significant difference ( $p < 0.0001$ ) was discovered between optimum levels of knowledge and skills and their respective current levels. That is, doctoral students evaluate the optimum levels of knowledge and skills as well beyond the one's they currently possess. Nevertheless, for the most part, the respondents appear to have appropriate knowledge and skills to successfully use the Internet for scientific communication.

As regards using the Internet to procure quantitative information, 42.8% of the respondents claim knowing that such a possibility exists but only 38.9% appear to be actually making use of it. When evaluating the optimum level of knowledge, as many as 88.5% allow that they ought to know how to procure quantitative information online as the latter should be useful in their research. As concerns their current level of skills, 41.2% of the respondents report partial ability to apply the Internet for procurement of quantitative information and nearly as many (40.1%) claim complete ability. At the same time, only 84.2% believe that their present research requires it. These findings suggest that procurement of quantitative information for research purposes from online resources tends to be considered a theoretical possibility rather than an established practice.

As concerns online dissemination of one's research findings, 26% of the respondents admit to knowing of such an option, 30.1% cast their knowledge as incomplete and only 19.2% report actually acting upon their awareness. Interestingly, as many as 69.7% of the respondents allow they ought to know how to use the Internet to present the results of their studies to academic circles. As regards the current skill set, 36.4% maintain that they are unable to disseminate their research findings online; only 27% claim partial ability and as little as 19.2% consider themselves fully capable. Thus, doctoral students appear to lack essential knowledge, awareness and practical ability to present and disseminate their research findings online.

With respect to the respondents' current knowledge about effective participation in professional online communities, only 8.2% claim knowing what it is; 24.2% report partial knowledge whereas 27% admit to not fully understanding the question. In total, 58.2% of the respondents believe that they ought to be able to participate in professional online communities while a minor fraction of 14.1% appears not to give it full credit. 29.2% of the respondents realise their own deficiency and acknowledge that they lack essential professional capacities required for participation in online communities; 22.1% cast their ability as partial and as little as 10.1% claim possessing it to full extent. Only 56.6% of the surveyed doctoral students view participation in online communities as an essential aspect of doing research whereas 24% believe it is only needed to some extent.

In general, statistically significant difference ( $p < 0.0001$ ) was identified between doctoral students' optimum and current levels of knowledge and skills of using online resources for research purposes in network society.

#### **4. Conclusion**

Network society as a joint research area is underpinned by the very same principles that are fundamental to sustainable social development: cooperation, creativity, participation and tolerance. Globalisation has boosted the significance of virtual environment which, in turn, has essentially reshaped the structure of researcher's competences.

Media literacy, cast as ability to locate, select, critically analyse and apply information for research purposes, has become a fundamental resource for academic inquiry. Knowledge circulation is shaped by a number of external and internal environmental factors, and its effectiveness is heavily hinged on doctoral students' using the Internet both in doing research and in maintaining scientific communication on its outcomes.

The findings of the present study suggest that procurement of quantitative information for research purposes from online resources tends to be viewed by doctoral students as a theoretical possibility rather than an established practice. They appear to lack essential knowledge, skills, awareness and competence to make use of online facilities for dissemination of their research results or for effective participation in professional online communities.

Evaluation of doctoral students' competences to successfully make use of online research resources exposes a glaring discrepancy between current and optimum levels of knowledge and skills, which may significantly undermine doctoral students' integration in academic circles in a full capacity of professional researchers.

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# Drawing children into reading: studies of art lessons' effects on literacy

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## Abstract

This paper summarizes three mixed-methods studies of *Drawing Children into Reading*, (curricula for ages 4-8), four instructional projects evolving from the vision of Wendy Anderson Halperin, a children's book illustrator. Researchers conducted the inquiries in rural Michigan from 2008-2013. Participants with two years of instruction exhibited literacy levels characterized by:

- Proper pencil grips -- which partly account for better penmanship than control groups' printing
- Written word generation that exceeds control groups' stories by 50%
- Reading abilities measured at the top-proficiency level of state assessments (correlating three times more frequently)
- Increased powers of observation which may lead to more expansive composition/narratives.

Keywords: *drawing; literacy; instruction; handwriting; art; reading; writing*

## 1. Introduction

Everyone agrees that children deserve excellent literacy instruction, but what about drawing lessons? Do most children also benefit from explicit and ongoing instruction in representing their ideas pictorially? According to Brookes (1996, p. 47), "Only the rare child learns how to draw representationally or realistically on his own. It is just like learning to play piano, learning ballet, or learning to write stories. Children need information about the subject and guided instruction." Learning to draw well may be much more important than it appears. Among others who strongly agree, Horn and Giacobbe (2009, p. 52) make a case that "For young children, drawing is writing: it gives them opportunities to do what writers do: to think, to remember, to get ideas, to observe, and to record."

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Figure 1: Project creator Wendy Anderson Halperin



Figure 2: Halperin sometimes illustrates her books with crayons

This paper summarizes three mixed methods studies (Cresswell, 2009) of an approach to a curriculum known as *Drawing Children into Reading* (DCIR), intended for ages 4 through 8. The series of four instructional projects has evolved from the vision of Wendy Anderson Halperin, an author/illustrator who specializes in children's books. The researchers conducted the inquiries in a variety of rural settings in Michigan between 2008 and 2013. Further study is underway, specifically on Project Curiosity and the capacity of drawing to increase learning. More information is available at <http://www.drawingchildrenintoreading.com>.



Figure 3: Project instruction in a kindergarten room: A teacher uses a document camera to project the images she is drawing so the students have a clear view for replicating her techniques on their lap boards.



Figure 4: Typical DCIR Connection Project classroom

## 2. Drawing Children into Reading: Four projects and their conceptual frameworks

Many educational theorists have concluded that guiding preliterate drawing can improve printing, reading, writing and thinking -- if skillfully done (Arnheim, 1969; Catallo, 1969; Vygotsky, 1978; Williams, 1983; Calkins, 1986; Dyson, 1986; Sinatra, 1986; Sheridan, 1991,1997, 2001; Olson, 1992; Routman, 1996, 2005; Kress, 1997; Piazza, 1999; Gallas, 2003; Richards & McKenna, 2003; McBride-Chang, 2004; Horn & Giacobbe, 2007). Because drawing is a substantive cognitive activity that most children wish to do, many good things occur when instruction is provided. The connection between drawing instruction and penmanship was asserted by Gandhi (1993, p. 16) in his autobiography as he laments his own poor handwriting:

I am now of the opinion that children should first be taught the art of drawing before learning to write. Let the child learn his letters by observation as he does different objects such as flowers, birds, etc. and let him learn hand-writing only after he has learned to draw objects. He will then write a beautifully-formed hand.

The projects' goals extend well beyond penmanship, however, and may be stated thusly: Providing preschool and early elementary students with regular, sustained art instruction impacts their abilities to learn literate behaviors.

### 2.1 The projects' questions

*What would happen if a professional artist drew with children, and did so over and over for two to three years? How far can an illustrator take the very young with their drawing, fine motor and literacy skills? Can the advances children make when drawing with an illustrator be replicated by average teachers who receive training and materials?*

### 2.2 The project concept

When adults teach children to draw things they want to draw -- like ballerinas, bugs, and bulldozers, then forming the alphabet is not difficult: they become very familiar with making straight lines and careful curves. Next, they learn to read their own letters, words and books and become drawn into literacy through their own successes.

It is a belief that printing *is* drawing, which led Halperin to *Drawing Children into Reading* (Halperin, 2011a, 2011b, 2011c). This program consists of four projects in preschool, kindergarten, first and second grades: originally known as Project 50, Project 64, Project 120 and finally Project Curiosity, the names are evolving with



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|--|--|--|
| <ul style="list-style-type: none"> <li>- Hand - eye Coordination</li> <li>- Acute observational Skills</li> <li>- Organized workspace</li> <li>- Quiet learning environment</li> </ul> | <ul style="list-style-type: none"> <li>- Furthering fine motor development</li> <li>- Coloring large &amp; small areas.</li> <li>- A QUIET Classroom as students write</li> <li>- 70 minute attention span</li> <li>- Near/far perceptual skills</li> <li>- Organized workspace</li> </ul> | <ul style="list-style-type: none"> <li>- Geometry drawing and seeing geometry in nature</li> </ul> |
|--|--|--|

Source: <http://www.drawingchildrenintoreading.com>, June 4, 2013

**Project Pencil Grip (Project 50):** This is a year-long, innovative series of drawing classes for preschoolers. Each student uses 50 implements: one pencil, one sharpener, 24 crayons and 24 twistables, a hard-covered crayon suitable for young artists. A pilot was conducted during 2009-10 in a South Haven, Michigan classroom.

**The Connection Project (Project 64):** Kindergartners receive 64 crayons and learn the following in weekly 70-minute lessons: (a) drawing a straight line and a circle, (b) coloring with the finger muscles, not wrists or arms, (c) following step-by-step directions, and (d) inventing colors and making patterns. Using technology such as a document camera and a projector, teachers lead students in modeled instruction. Project 64 proponents, including participating teachers and others, believe literacy is also enhanced because students write and illustrate books throughout the year. Students draw many characters in heavy-cardstock books to illustrate program-provided narratives which consist of words from a beginning word list. Halperin and her colleagues report that all students read those words aloud fluently and proudly. In the fall of 2013, Project 64 began its seventh year.

The broader goals are to improve (1) hand-eye coordination, (2) following directions, (3) fine motor skills, (4) handwriting, (5) directionality, (6) drawing, (7) organization, (8) attention span, (9) self-esteem and (10) literacy skills. Students hear stories, learn interesting content (e.g., about Einstein, Lincoln, dinosaurs, rockets, dancing, as well as many other subjects), and connect drawing to books via a culminating illustrating project.



Figure 7: Proper Pencil Grip (Project 50) sample work

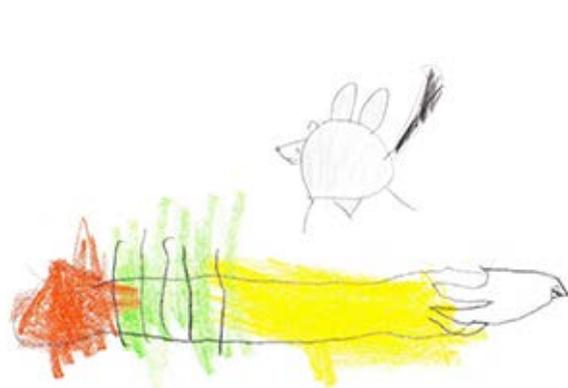


Figure 8: Preschool (Project 50) sample work

**The Genre Project (Project 120):** In the third phase of DCIR (begun in 2008), first graders gradually receive 120 colors which they learn to organize as artists do. Partly, the project goals are to continue improving the outcomes listed above for Project 64. The project also advances to new horizons though. To increase the connection with literature, students experience various genres in depth and are eventually exposed to 19 different genres. The first graders further connect drawing to books by drawing/writing in each of the 19 types. Thus, their new artistic skills are intended to link with and lead to excellent handwriting, composition and reading skills.

**Project Curiosity:** This second-grade project was inspired by and is designed in the style of Leonardo da Vinci's notebooks. Drawing is used as a way to explore our surroundings, gather and process information students want to understand. This includes planting gardens, for example, and then drawing the plants' intricacies. Study of Project Curiosity is underway as implemented by Illinois teachers who received DCIR professional development.

### 3. Study1

Study 1 measured how well teachers could be trained by the illustrator/author to lead Project 64 for kindergartners (ages 5 – 6). Teachers receive one week of intensive training and a well-developed curricular package including CDs which allow the students to draw with the illustrator as well as their own teacher.

#### 3.1 Research methodology for study 1

In 2009-10 we observed the learners responding to the Project 64 and Project 120 instruction on multiple occasions and collected samples of children's artwork and writing. We interviewed and interacted with stakeholders: teachers, children, parents and the project's director/originator using qualitative methodology.

We briefly oriented 24 primary-level educators from outside the district on the program's intents and techniques. For each of the three tests described in Table 2 below, the educators then individually sorted 40 randomly-selected papers into two piles: those they believed had participated in the program's instruction and



Figure 9: Project 120 sample work

those they believed had not participated. Tallies of the educator's correct selections (that is, a participating student's paper identified as such or a control group member's paper identified as being drawn without benefit of instruction) and incorrect selections were recorded. After completion of the tasks, the reviewers' comments were recorded for study.

### 3.2 Study 1 settings

This study was limited to the elementary school in South Haven, Michigan where Halperin's program originated and where the kindergarten teachers were fully committed to the curriculum. The school had two years of experience to critique at the kindergarten level and one year at first grade when we began our inquiry. 155 students were involved during the school year via weekly lessons. The school's ethnic make-up was as follows in 2008: 79.7% White, 12.6% Hispanic, 3.3% African American, and 4.4% Other. The school was 62 percent "economically disadvantaged" according to the Council of Chief State School Officers. The control group was from a second school with similar demographics within the same public school system.

### 3.3 Study 1 findings

The following results (Table 2) indicate the percentage of time the outside evaluators were able to correctly identify those who participated in the drawing instruction.

Table 2: Outside evaluators' ability to distinguish project participants' work from the control group's

<u><i>T</i></u> <u><i>est</i></u>	<u><i>Project 64 and 120 Evaluation Description</i></u>	<u><i>Percent of time project papers were correctly identified</i></u>
1	Can educators distinguish random samples of 20 participating kindergartners' <i>drawings/writing</i> from 20 nonparticipating kindergartners' <i>drawings/writings</i> ?	79.1%
2	Can educators distinguish random samples of 20 participating first graders' <i>drawings</i> from 20 nonparticipating first graders' <i>drawings</i> ?	76.9%
3	Can educators distinguish random samples of 20 participating first graders' <i>writing</i> from 20 nonparticipating first graders' <i>writing</i> ?	61.2%

The interviews of stakeholders included teachers, parents and students. The main theme emerging from the interviews of teachers was that the participating children developed greater focus and ability to "notice" things. For example, they noticed punctuation and letters within words. The teachers in kindergarten asserted that the drawing lessons contributed to 100% achievement of district reading expectations this year. The teacher thought the "noticing things" carried over into other aspects of the children's learning, for example paying attention to punctuation when reading. They also felt that the children paid more attention to details that children of previous years failed to notice. Organization of materials is a strong focus of DCIR, so teachers felt that the children were more organized than those of previous years. Fine motor skills are also more highly developed than without Project 64. The teachers all reported that the children had more confidence in their ability to try new tasks.

The teachers described the drawing lessons as "calm and peaceful" and "not stressful" for the children, noting that 100% of them achieve success in the lessons. The children's work is kept in portfolios rather than going home weekly and, as an intentional result, the children are unable to compare their drawings with other students' work. At the end of the year, all of their drawings are sent home. While one parent expressed her wish to see children's drawings come home throughout the year, when the procedure's purpose was explained, she understood the usefulness of letting children progress without developing feelings of inferiority -- which often results from comparing their drawings with others' more gifted work.

To consider the view from guardians, we interviewed six parents whose children were participants. All of the parents commented on their child's level of confidence. Several felt that the success their child had with drawing extended into other areas of life as shown by the child's willingness to try new tasks. They felt that this success also gave the children confidence and, as a result, success in other areas of their lives. The parents all felt that their children's handwriting and ability to draw was impressive. Some commented on their child's love of color and art. All of the parents commented on their child's powers of observation. Several said that the Project 64 participants saw details that even they, as adults, missed.

The third type of interview involved meeting individually with 35 first graders who were participating in Project 120 at the time. Halperin has created a curriculum with many types of drawings in order to appeal to a broad spectrum of children's interests. Out of 35 children, there were 25 different responses about what was their favorite thing to draw. Dinosaurs and the human skeleton ranked at the top. All of the children thought the drawing lessons were fun and one child commented on how quiet and "creatiful" the room was during their drawing lessons. One forward-looking child commented that he was learning things to pass on to *his* children. The children also enjoyed making the "little books" that they could read.

#### 4. Study 2

The second study focused on Project Pencil Grip (Project 50) which is intended for children aged 4-5 who are enrolled in preschool. The Project Benchmarks evolved into the following:

- All involved preschoolers will learn to draw common objects such as pencils, numbers, flowers and people along with many other things that can be made with circles, squares and triangles.
- 15-minute interviews of the teachers will reflect satisfaction (defined as willingness to continue using the approach the following school year) with the Project 50 curriculum and outcomes.
- 75% or more of participating preschool students will make adequate progress with their pencil grip skills as measured by informal assessments.

Lessons lasted between 45 and 70 minutes (usually at least 60) no more than once per week. Approximately 32 lessons were administered across an eight-month period. An example of an instructional technique was the use of a systematic way of picking up the writing instruments. The children were taught to lay their pencil on the table in front of them with the pointed lead toward them. Then they "pinched" the pencil with their thumb and index finger just above the sharpened part of the pencil. They picked up the pencil, used their other hand to push the pencil to rest against their hand, and then used the middle finger to make it "comfortable". All children were taught this routine whenever they wrote or drew to ensure that pencils were gripped in an effective manner. Eventually this routine became habit for the participants.

Another instructional technique was established and followed in order to develop flexibility of the index and middle fingers. Halperin taught the children a song named “Little Bunny FooFoo.” While singing this song the children moved the index and middle fingers, on their writing hand, at the middle joint. This routine was repeated at some point during each lesson.

#### 4.1 Research methodology for study 2

In November of 2009, we observed the children, taped the instruction and took field notes on what occurred. Returning in the spring, we again examined the children’s papers, observed their performances in the curricular activities and photographed their pencil grips. Samples of the photos are shown below in Figures 10 and 11.



Figure 10: Correct pencil grip example



Figure 11: Incorrect pencil grip example

A second trial of the children’s pencil grips was conducted by another educator in the same week that we captured our photos. This produced two sets of photos of the children’s pencil grips for comparison and contrast. The researchers also conducted brief interviews of the classroom teacher and of Wendy Anderson Halperin and examined the children’s grips and artistic products during instruction.

#### 4.2 Study 2 setting

The study was conducted in the same school as the first study. Because these preschoolers were considered “at-risk” student, they had qualified for a state-funded preschool experience. They attended all day and received instruction from a teacher and an aide.

### 4.3 Study 2 findings

In the pilot test of Project 50, preschoolers (100% of whom are “at risk”) did learn to draw recognizable objects, and the classroom teacher was eager to continue Project 50 in the subsequent school year. Table 3 presents the data.

Table 3: Measures of pencil grip performance

<u><i>Trial</i></u>	<u><i>Sample size</i></u>	<u><i>Percentage achieving both pencil grip objectives</i></u>
<i>1<sup>st</sup> set of photos</i>	<i>n=15 ( 1 absence)</i>	<i>73</i>
<i>2<sup>nd</sup> set of photos</i>	<i>n= 13 (3 absences)</i>	<i>92</i>

Using the Project 50 approach to holding the pencil increases students’ ability to move their twistables, crayons or pencils with their fingers rather than with their entire arm. Photographic data from two trials suggest that the preschoolers’ pencil grips meet our two objectives of (1) helping students consistently adopt a pincer grip in which the pencil rests on the middle finger and (2) encouraging students to rely on the thumb and two fingers (rather than upon more digits, the fist or other grips commonly seen in young individuals).

Based on our classroom observations and the two sets of photos of individuals’ pencil grips, we conclude that Project 50 positively impacts children’s pencil grips: at least 73 percent of preschoolers who receive regular instruction in the manner piloted did display grips which satisfied both of the two objectives we had defined.

Given one of the researcher’s 30+ years of observing kindergarteners’ pencil grips, we assert that these Project 50 outcomes soundly surpass the commonly-seen grips that typical five-year-olds bring to school. Also, instruction does appear to lead to pencil habits that persist outside of instruction time, teachers report; students do independently emulate Project 50 routines for picking up and holding implements for drawing and printing.

### 4.4 Study 2 limitations

Despite their reputation for supplying hundreds of words, photos are not infallible. Depending on the angle of the camera, it can be difficult to gauge whether the two objectives are being met. Using two sets of photos may not alleviate such problems. Using a digital camera and checking the image before moving on to the next student can help avoid unusable images. Other types of writing/coloring instruction may have been occurring in school or in other settings (along with the Project 50 instruction) which could have influenced students’ grips. Student absences were typical problems, and the test case remains only one classroom in one community.

Finally, these results were obtained using the project's originator who is a professional artist and a skillful teacher. Whether the results generalize to other educators is untested by this action research.

### 5. Study 3

There were two broad purposes for the inquiry. First, we wanted to know to what extent children retained their pencil grips and ability to form letters well during a four-year period of time. Second, because the DCIR lessons are designed around quality books and orally-presented information, we wanted to know how Project 64 and Project 120 impact the general academic performance of the students who have participated in both.

#### 5.1 Research methodology of study 3

From September 2007 to June 2008, illustrator Halperin sustained a weekly drawing session with 44 kindergartners. She spent 70 minutes, once a week drawing with two classes. The following year Halperin worked with the 44 children plus an additional 67 first graders once a week for 70 minutes. The children having received two years of DCIR instruction had completed 3<sup>rd</sup> grade by June 2011 when this study measured longitudinal outcomes, which were contrasted with a control group's abilities. The research question had evolved to become: Does Project 64 participation in kindergarten and Project 120 instruction in 1<sup>st</sup> grade continue to impact the academic performance of the children after a period of four years?

In May of the school year 2010-2011 we collected drawing/writing samples of the students in the research school and the students in a control school. We gave both groups the same prompt which was to "*Draw a picture and write a story about a good time you had with your family.*" Both groups of students wrote in their classrooms. The research group was given the directions from their classroom teachers, and the control group was given the directions from the researcher with the classroom teacher present during the entire writing time. To look at academic progress with writing, it was necessary for us to gather information about the students' writing and not just their handwriting and drawing abilities. Marlene Smith designed two rubrics to measure multiple aspects of the *craft* of writing.

#### 5.2 Study 3 settings

Maple Grove Elementary School in South Haven and a control school also from southwest Michigan were the research settings. The schools share similar demographics with an almost equal number of Caucasian, African American, Hispanic and Asian students. Maple Grove School consisted of 62% at risk students, while the control school had a 60% at risk population, according to the State of Michigan.

### 5.3 Study 3 findings

Table 4 shows data produced by applying the first of two rubrics to papers of the 22 children randomly chosen from each school (i.e., subsets of the research group and control group). Proportions represent the number of on-target responses in relation to the entire group.

Table 4: Quantitative findings from study 3

<b>Item</b>	<b>Research School</b>	<b>Control School</b>
Total # of Correct letter formation out of the first 20 letters	18 /22	8/22
Spacing between words	20/22	19/22
Punctuation used	19/22	18/22
Attempted 'Invented' Spelling	22/22	22/22
Total # of sentences in all of the responses	135	95
Total # of details connected in drawing and writing	106	41
Correct pencil grip	20/22	12/22
Total # of colors in illustrations	111	105
Illustrations anchored	19/22	9/22
Total # of details in illustrations	262	126
Total # of students who used Cursive	0/22	4/22
Total # of descriptive words used	110	73
Total # of descriptive phrases (appositives) in sentences	38	12
Total # of words in essay	1,546	1,151
Total # of inaccurate verbs and/or pronouns used	2	27
Total # of incomplete sentences	0	22
Total # of incorrect capitalizations	13	43
Total # of incorrect use of punctuations	13	29

A second rubric was constructed and each of the 22 children's work was scored with it. The rubric below (Table 5) shows the totals for each group of students (research and control). The totals are raw scores to show the total number of students who scored in each of the four performance levels on the rubric.

Table 5: DCIR grade three scoring rubric  
School

C= Control School---R= Research

Attributes	1 Point in Value	2 Points in Value	3 Points in Value	4 Points in Value
Letter Formation	Letters are not well formed and difficult to read. <b>C=4 R=0</b>	Letters are mostly legible. <b>C=5 R=3</b>	Letters are well formed. <b>C=4 R=1</b>	Letters are well formed and easy to read. <b>C=9 R=18</b>
Sentences	0-1 sentence <b>C=1 R=2</b>	2-3 sentences <b>C=7 R=2</b>	4-5 sentences <b>C=7 R=5</b>	6+ sentences <b>C=7 R=13</b>
Words	0-19 words <b>C=3 R=1</b>	20-39 words <b>C=10 R=3</b>	40-59 words <b>C=2 R=2</b>	60+ words <b>C=7 R=16</b>
Spelling	Few High Frequency Words spelled correctly. <b>C=2 R=1</b>	Some High Frequency Words are spelled correctly. <b>C=3 R=0</b>	Most High Frequency Words are spelled correctly. <b>C=6 R=3</b>	All High Frequency Words are spelled correctly. <b>C=11 R=18</b>
Spacing	Few words are appropriately spaced. <b>C=0 R=0</b>	Some words are appropriately spaced. <b>C=2 R=1</b>	Most words are appropriately spaced. <b>C=4 R=1</b>	All words are appropriately spaced. <b>C=16 R=20</b>
Punctuation	Little punctuation is used. <b>C=1 R=1</b>	Some punctuation is used appropriately. <b>C=5 R=1</b>	Most punctuation is used appropriately. <b>C=6 R=2</b>	Punctuation is used appropriately. <b>C=10 R=18</b>

Capitalization	Little capitalization is used.  <b>C=3 R=3</b>	Some capitalization is used appropriately.  <b>C=4 R=1</b>	Most capitalization is used appropriately.  <b>C=4 R=4</b>	Capitalization is used appropriately.  <b>C=11 R=14</b>
<b>Attributes</b>	<b>1 Point in Value</b>	<b>2 Points in Value</b>	<b>3 Points in Value</b>	<b>4 Points in Value</b>
Descriptive Words	1-2 words <b>C=10 R=0</b>	3-4 words <b>C=4 R=4</b>	5-6 words <b>C=0 R=5</b>	7+ words <b>C=8 R=13</b>
Vocabulary	All grade level words. <b>C=5 R=1</b>	Some grade level words. <b>C=1 R=0</b>	Most grade level words. <b>C=8 R=11</b>	Many words exceed grade level. <b>C=8 R=12</b>
Story Sequencing	Ideas are unclear. <b>C=5 R=1</b>	Some ideas follow a logical order. <b>C=1 R=0</b>	Most ideas follow a logical order. <b>C=6 R=5</b>	Ideas follow a logical order and are clear. <b>C=10 R=16</b>
Illustration Match	Pictures serve as decoration and do not support written ideas. <b>C=6 R=2</b>	Some pictures support written ideas. <b>C=6 R=3</b>	Most pictures support written ideas. <b>C=1 R=2</b>	Pictures support written ideas. <b>C=9 R=15</b>
Illustration Extensions	Few details used extend written ideas. <b>C=12 R=7</b>	Some details extend written ideas. <b>C=6 R=1</b>	Most details extend written ideas. <b>C=1 R=3</b>	Details extend written ideas. <b>C=3 R=11</b>
Illustration Anchored	Pictures float on the page. <b>C=13 R=1</b>	Some pictures are grounded. <b>C=0 R=1</b>	Most pictures are grounded. <b>C=0 R=1</b>	Pictures are grounded. <b>C=9 R=19</b>
Column Totals	Control-65 Research-20	Control-54 Research-20	Control-49 Research-45	Control-118 Research-203

Some areas that are exciting to educators are the total number of words used and the total number of sentences used. Both of those areas are significantly higher in the research school sample, which would agree with studies finding that children who can form letters easily will write more (e.g., Routman, 2005). Another positive attribute is the number of details connecting the drawing and writing. The study confirms other literature asserting that when children draw first, their writing will contain more details and more descriptive writing. The four items concerning accurate use of punctuation, capitalization, nouns and adjectives, and the use of complete sentences are very interesting because the results support the contention that the power of observation can be taught and can permeate literacy performances.

2011 data from the Michigan Educational Assessment Progress (MEAP) reinforces the assertion that Project 64/120 participants become good readers. The state reading tests are scored from 1-4 with a 1 being the highest. The MEAP reading results of the 22 students from the research school shows 19 of them scoring a 1(one) on the assessment. The control school had a total of 6 (six) out of 22 students scoring a 1 (one) on the assessment. These results reveal that the research school students performed more than three times better than a control group with similar demographics. More study would be needed to ascertain whether the South Haven students have made academic achievements beyond a typical 62% at-risk population.

Participants with two years of Drawing Children into Reading instruction also exhibited literacy levels characterized by the following attributes:

- Retained proper pencil grips which in part account for better penmanship than a control group of similar demographics
- Word generation that exceeds the control group's stories by more than 50%
- Increased powers of observation which may have led to more expansive composition/narratives.

In study 1, two veteran teachers each expressed the belief that DCIR groups of children had greater observational powers than children the teachers had taught in previous years. They asserted that this group of children noticed things like punctuation, endings on words, and were able to "sound out" words because they noticed the phonetic parts of words. They claimed that very few kindergartners in previous years had these abilities, but that this group of children had many members who *did*. Independently, a third grade teacher who had 15 of the 33 Study 3 children in her classroom, commented that these DCIR-instructed children were "different." When questioned what she meant by that, she explained that they "thought outside the box." She said, "They are very creative, have a lot of initiative and confidence to try new activities and have good powers of concentration."

## 6. Discussion

All beginning writers struggle with fluency and legibility. To remind yourself of how difficult it is to learn to write, try composing with the hand you don't usually use. Unless you are ambidextrous, you will notice how your resulting lack of speed and the cognitive energy that must be put into mechanics reduces your ability to activate deeper reflective processes that normally would help you compose your thoughts. Beginning writing is even more taxing when spatial judgments are still forming. Once students have mastered fluent, legible handwriting, they can focus more of their attention on their composing -- on generating and organizing ideas (Graham, 2009). However, children who learn handwriting more slowly than the classmates they see around them often develop a negative mindset about writing (Graham, 2009) which may develop into long-term hindrances.

Psychologist Lev Vygotsky, when arguing in 1930 that play and drawing are both preparatory of authentic written discourse, stated that “written language of children develops in this fashion, shifting from drawing of things to drawings of words.... The entire secret of teaching written language is to prepare and organize this natural transition appropriately...” (1978, p.115-116). DCIR presents such a method of teaching children to draw and write that is a natural transition and highly appropriate for ages 4-8.

Our main question about this program has always been in what ways it succeeds in advancing children's literacy. These inquiries suggest that *Drawing Children into Reading* is successful in building students' confidence in both drawing and printing. Parents and teachers report that students are more observant and more organized. Their pencil grip and fine motor skills improve because of the program, and that grip persists across several years. Study 1 showed that the end-of-year drawings participants produce without adult guidance can be distinguished from the work of a control group more than 75 percent of the time. At the end of first grade, participants' writing alone could also be distinguished from the control group's more than 60 percent of the time.

How do stakeholders react to the new instructional program? Participating students, teachers and parents all express strong support for all of these projects. Students were definitely engaged by the tasks. We have observed steadily growing teacher interest in the program. Study 1 and our five years of observation indicate that DCIR is easily attainable by interested educators in urban, suburban or rural settings. Professional development - - conducted in summer workshops and supported by ongoing electronic interactions such as web sites, blogs and social media – enable average elementary teachers (without art majors) to implement the curriculum that Halperin continues to develop and guide.

Based on study 2, we believe these instructional routines, if conscientiously conducted, develop students' control of the images they generate and thereby encourage children (1) to draw and write more frequently, (2) to attempt a wider array of “characters” or subjects, and (3) to experience greater success at communicating with others through their papers. Samples have been small; however, if these outcomes prove typical, then DCIR is a powerful way to lead students toward literate behaviors.

Study 3 investigated the longitudinal effects of DCIR, encompassing Projects 64 and 120. Using the entire curricular package should have cumulative impacts, and triangulated data point to affirmation of the desired outcomes even with only two-fourths of it evaluated. Participants with two years of instruction exhibited literacy levels characterized by continued control of the writing utensil and improved printing, more expressive communication as witnessed by the DCIR students generating 50% more words than their counterparts, higher standardized reading scores, and increased powers of concentration and observation. Most importantly, there is evidence that participants deepen their interest in reading and writing because of the in-depth discussion of literature, history, science and other topics during the artistic engagement of DCIR.

## 7. Conclusion

Three studies of Drawing Children into Reading, employing a mixed-methods approach with both quantitative and qualitative measures, were conducted across a five-year span. The results show that (1) outside educators can distinguish participating students' papers from control groups' papers; (2) students, parents and teachers support the curriculum; (3) pencil grip is improved and persists; (4) project students' literacy products are superior to control group members' drawings and written samples; and (5) high standardized test scores in reading correlate with participation.

In five years, the project has expanded from 44 students to more than 14,000 students drawing, reading, listening, developing fine motor skills, using correct pencil grips and feeling new confidence about drawing and communication. The learning outcomes -- now being witnessed across several states -- include legible handwriting, increased attention span, and improved observational skills that support students in their reading and writing efforts.

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4<sup>th</sup> International Conference on New Horizons in Education

## Editor for creating and applying computerise surveys

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### Abstract

The parallel development of the psychometric assessments and the computer technologies determined a big revolution regarding the construction and the application of psychological and educational tests. This report describes a computerized system that allows researchers to creating, applying, and tabulating surveys and paper instruments in an automatized way. Many studies describe the use of this tool, highlighting its main characteristics. This system can be considered a useful tool, since it permits to input data with higher precision and no need for previous codifications. Further, it allows researchers to know the latency period from the answer to each and every item. The prospects about new versions of the system stress on: extending the number of measured topics; creating automatic corrections systems; managing data via internet; and selecting the most valid items to measure each matter or specific groups of persons.

*Keywords:* Computerise system; digital tests; psychometric measurements

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## 1. Introduction

The psychometric studies and measurements have been growing in the last decades, at the same time as the computer sciences have strongly developed by means of the advances in and technologies. The application of computers in the research field permits to widen the quantity of contents that can be measured; and to generate handy systems for the correction and the administration of assessment tools via Internet; to select the most suitable items for each and every assessed topic (ideal tests) and for specific groups of individuals (computerised adaptive tests). Many benefits can be obtained by using those systems, but still more research is needed to discern the real possibilities of the computerised systems of evaluation (Kyllonen, 1995; López-Pina, Ato, Sánchez, & Velardino, 1990; Olea & Ponsoda, 1999; Olea, Ponsoda, & Prieto, 1999; Renom, 1993).

Prieto, Carro, Orgaz, and Pulido (1993), and Brown (1997), point out that one of the main applications of computers is represented by the construction and the administration of computerised tests, which could eventually substitute the typical paper tests. This could lead to safer, more precise and quicker data storage (with no need for prior codifications) as well as immediate feedback while showing the results. Further, computerised tests permit to measure the latency times for each answer, as well as to create multimedia presentations including text, graphics, pictures, and even videos or simulations.

It is evident that computerised systems of evaluation give more reliable and precise data, at the same time that they increase the efficiency and rapidity of analysis. Moreover, these systems exempt researchers from routine and mechanical tasks, so that they have enough time for the interpretation and the discussion of the outcomes (Moreno, Oña, Martínez, & García, 1998).

This project aims to construct and show a computerised system that makes researchers create, apply and tabulate paper questionnaires and surveys in an automatic way.

## 2. Logical development of the theme

The editor of surveys in its version 3.0 represents a technological development of previous software, which permits researchers to create and apply paper tests using an automatized system. It is constituted by four sections: instrument development; instrument administration; results collection; and configuration.

Within the instrument development section, researchers can create items and define the variables in which results will be stored (figure 1).

**ESCALA, DIRECTOR, GRUPO DE DISEÑO Y REVISORES**

Por favor, escriba el nombre de la encuesta o batería para la cual va diseñar las secciones o escalas.  
Para finalizar oprima la tecla TAB.

Escala:

Prefijo:

Director del proyecto:

Planeación y Diseño:	Revisores:
Jesús Viciana Ramirez	Jesús Viciana Ramirez
Armando Cocca Cocca	Armando Cocca Cocca
Daniel Mayorga Vega	Daniel Mayorga Vega
Jeanette Magnolia López Walle	Jeanette Magnolia López Walle
José Leandro Tristán Rodríguez	José Leandro Tristán Rodríguez
Oswaldo Ceballos Gurrola	Martha Omelas Contreras
Rosa Elena Medina Rodríguez	Humberto Blanco Vega
Francisco Flores Rico	María del Carmen Zueck Enriquez
María del Carmen Zueck Enriquez	
Jesús Enrique Peinado Pérez	
Juan Francisco Aguirre Chávez	
Francisco Muñoz Beltrán	
José René Blanco Omelas	

El título de la figura 1 hay que ponerlo más separado de la imagen. Y figura 4 muy separado (posiblemente a mis cambios). Igualmente, dado que hay poco texto, y que las letras no se ven muy bien, yo pondría las imágenes más grandes (no distorsionar, tira de la esquina).

The instrument administration section represents the user interface for the survey respondents, and stores their answers, the time spent in answering, as well as their doubts and attempts for each item (figure 2).

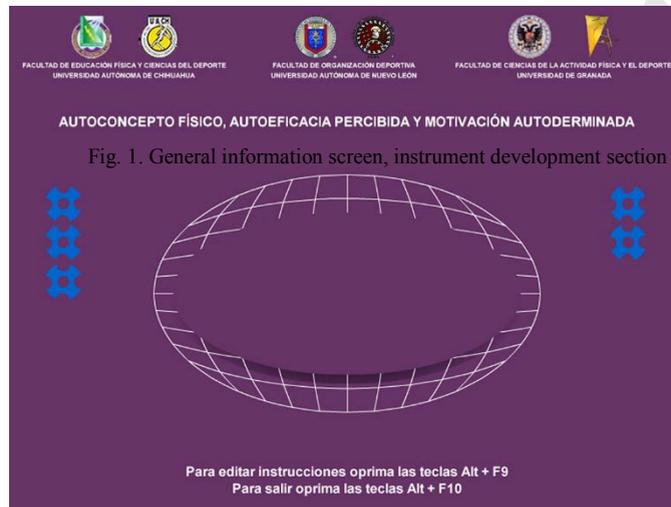


Fig. 2. Main menu, instrument administration section

Using the results collection section, it is possible to save the answers, the times and doubts of each survey respondent in text formats. The conversion of data into text makes to import the outcomes to any statistics software easier and quicker (figure 3).



Fig. 3. Display example for the results collection section

Within the configuration section, researchers will be able to choose the relevant characteristics of the user interface, such as colours, font size, coordinates, etc. (figure 4).

**CONFIGURACIÓN DE LA INTERFAZ DE USUARIO**

Por favor, realice las modificaciones que considere necesarias a la interfaz del usuario.  
Para finalizar seleccione el botón SALIR.

Color Fondo:  Administración Anónima:  NO  SI

Color Botones:  Aplicación en CDs:  NO  SI

Color de la fuente Reactivo:  Path CDs:

Color de la fuente Opciones:

Path Alterno:

Tamaño de la fuente Reactivo:  Grabar resultados:  Solo Local  Solo Web  Ambos

Coordenada X del reactivo:  Administración:  Automática  Manual

Coordenada Y del reactivo:

Ancho Reactivo:

**SALIR**

Fig. 4. User configuration display, configuration section

By means of this editor it is possible to define 15 different types of items, according to the information that researchers want to obtain from the surveys respondents. The types of items are described in table 1.

Table 1. Items type description

Item type	Description
Shift bar	The respondent chooses one out of several options by shifting a bottom.
Numerical count	The respondent can increase or reduce a numeric value, or insert a number directly into the system.
Hierarchy	The respondent organizes a hierarchy by means of dragging and dropping.
Free lap	The respondent writes his/her answer in a one-line space.
Mask lap	The respondent writes his/her answer in a one-line space, according to an established format.
List	The respondent selects one out of several options presented.
Fixed check list	The respondent selects a fixed number of options out of several presented. The number of option that can be selected is previously established.
Free check list	The respondent selects one or more out of several options presented.
Memo	The respondent writes his/her answer in a multi-line space. The answer is recorded into an independent text archive.
Proportionality	The respondent assigns points or percentages to each and every option in the item.
Radio 2 options	The respondent can select his/her answer by means of two bottoms.
Current-wished-change	The respondent tells the current and wished frequency of a certain action. Further, he/she tells how much effort would put in improving this action.
Ability-interest	The respondent says how able he/she perceives himself/herself and how interested he/she would be in improving a certain action.
Double numerical counter	
Double list	

The editor also allows generating "skips" within the survey. It means that when a determined answer entails avoiding asking for more information on the same topic, the system will automatically skip to the items of the next theme (figure 5).

The screenshot shows a window titled "DATOS GENERALES" with a grid of buttons. The buttons are arranged in two columns. The left column contains: Barra desplazamiento, Contador numérico, Jerarquizar, Laguna Libre, Laguna Máscara, Lista, Lista Chequeo Fija, Lista Chequeo Libre, Memo, and Proporcionalidad. The right column contains: Radio 2 opciones, Actual-Deseable-Cambio, Capacidad-Interés, Contador numérico Doble, Lista Doble, Lista salto, Lista Chequeo Fija salto, Lista Chequeo Libre salto, Memo salto, and Proporcionalidad salto. At the bottom of the window, there are two buttons: "Editar Instrucciones" and "Finalizar".

Fig. 5. Types of items, instrument editor

### 3. Implications and conclusions

According to the objectives postulated and to the outcomes determined by using the trial version of this system, we can consider it as an effective tool to create measurements instruments, since it permits the data storage with no previous codification stages, and it assure more precision, rapidity, and reliability when compared to paper instruments.

Our outcomes are confirmed by Moreno et al. (1998), who state that the main contribution of this kind of editors to the social sciences field consists in representing a viable and effective model for using computers while elaborating, creating and grading scales. This statement has an effect on the reliability of data obtained. Furthermore, the phases of collecting and tabulating data can be carried out in an easier and quicker way, saving time for more difficult tasks such as the interpretation of the outcomes.

The expectations towards a new version of the editor are focused on widening the objects to be measured; creating solid correction systems; selecting the best items according to the topic studied (ideal tests) or according to a specific group of individuals (computerised adaptive tests); and enhancing the administration via Internet.

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4<sup>th</sup> International Conference on New Horizons in Education

# Educational and autoeducational value of autobiographical writings

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## Abstract

Recently, the high educational and autoeducational value, functions and meanings of autobiographical writings, as evidenced by the numerous studies and research about (i.e. Demetrio, Alberici, Merrill, West, etc.), has been increasingly discovered and widespread. The autobiographical writings, in fact, allow you to retrace your life, events, people, places, the most important objects, to discover new meanings to the experiences, to be able to orient themselves in decision-making, interpersonal relationships, to plan efficiently your lives, to produce new knowledge and learning, to feel satisfaction and wellbeing too. This paper will present some results of a research based on an original autobiographical format administered to a group of adults attending a yoga class or yoga trainers, in order to analyze the meanings that they have recognized about some events and choices during their lifetime, in a lifelong and lifewide learning and education perspective.

*Keywords:* education, autoeducation, lifelong learning, autobiographical writings.

## 1. Introduction

In current globalized and complexity societies the human right to education, aimed to social and cultural participation, assumes a central role in pedagogical perspective as well as in institutional policies.

Pedagogical sciences, in fact, just as they have as main purpose and aim the education, growth and training of man, intended primarily as a person and as an active and involved citizen, first of all aware of the rules which shall base, imprint and conduct civil living together in society, solidarity, collaboration and cooperation, are closely related with the deep awareness of himself/herself, of his/her experienced realized during his/her life, of the meanings those experiences, facts, people met, events and so on have represented for himself/herself.

So, autobiographical writings allow to recall to memory, to remember and to give sense and meanings, even news, to all lifelong and lifewide experienced.

Through autobiographical writings you can discover the fundamental values and principles have enlightened and guided your choices during your lifelong growing processes. Through autobiographical writings, furthermore, you can argue and understand better which has been your past to plan and build more efficiently your future life, discovering and improving your potentials and interests, in personal, relational as well as vocational perspectives.

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The biographical and autobiographical methods, in fact, are now used recurrently in the human sciences, especially in education and adult education, in the perspective of lifelong and lifewide education and training, and thus pertinent in lifelong learning of professionals.

It is crucial, indeed, to be able to create effective awareness and synergy among many environments and contexts of life, such as family, school, extra-school, working place, etc., to reach and widespread an effective culture of lifelong and lifewide learning and education.

## **2. Values and functions of autobiographical writing in a pedagogical perspective of lifelong and lifewide learning**

Autobiography, biography network, taking especially charge of each people, it is able to take the care of a life plan that could lead to a decent quality of life and wellbeing.

Rethink and rebuild our personal history, through autobiographical writing, also allow, in a certain way, to reconstruct the surrounding environment, framework and context.

Sennett (2008), however warns us from the negative consequences of our present society, as it is built on an economic system based on a type of production that separates the operation from thought, creativity and innovation. It does not allow, that is, to ask questions that will broaden the horizon not only problematic, but also the horizon of meaning and the creation of its own ethical vision.

And, then, in our fragmented and piecemeal, glocal (Bauman, 2005) and distracting, risk, hurried and quickly changing society, how to retrieve the dimensions of meaning, identity, history? Just by doing writing and writing about yourself (Aleandri, 2012, 9-10).

Writing, furthermore, differently from speaking, allow words and concepts to remain sculpted over time and that implies a thinking and rethinking work before writing.

Writing also enable you to improve consciousness and awareness about yourself, due to the distance we can keep while we are writing too.

The writing, requiring time for reflection and the drafting of the text, thus it enables to ponder carefully and thoroughly both what you want to communicate with and the modalities and terms chosen.

Such dynamics of writing are also reflected in their turn in cognitive processes, therefore we can say that writing restructures thought. And the writing allows increasingly detailed and in-depth insights, opening up spaces of discovery consisting not only of the outside world but also of the inward and subjective.

Writing enables, therefore, in pedagogically relevant perspective, to free the man through the fulfillment of the basic need of bringing other partakers into their events (which have become experiences through the provision of sense and meaning permitted by the reflection that writing involves): so, that is an adhered need to the nature of the human being, which Aristotle, more than two millennia ago, had already wisely called "social animal".

Current Italian illustrious and distinguished pedagogists as Demetrio (1999, 2002, 2003, 2008, 2011), Alberici (2000, 2002), Laneve (2009), as well as Anglo-Saxon scholars as Merrill and West (2009), have often studied and agreed that autobiographical writing is very efficient and effective to discover always new meanings about your lifespan experiences and to improve your awareness and knowledge of yourself, useful to orienteering, to your

lifelong and lifewide growing processes towards becoming actual, fulfilled and satisfied adult and to plan coherently and congruently your life project.

In this paper we will present some results of a research we have carried out through some surveys, based on an original autobiographical format administered to a group of adults attending a yoga class or yoga trainers, in order to analyze the meanings that they have recognized about some events and choices during their lifetime, in a lifelong and lifewide learning and education perspective.

A project of autobiographical writing for educational and training purposes, and self-educational and self-training ones, through the administration of a format that guides the writing of yourself, "Writing of a lifetime. Writing for ...".

Through the stimuli presented in the format remember recalling is facilitated through solicitations of memory, not only cognitive, but also perceptive, emotional, affective.

In addition, that format has a very wide range of uses, because it is very flexible and it can be adapted to many aims and objectives: for example, has been recently used also to improve inclusion (Aleandri, Giaconi, 2012).

### 3. Some data analyses

The autobiographical format "Writing of a lifetime. Writing for ..." was administered to 13 adult people attending a yoga course or yoga trainers.

8 are women and 5 men, mostly in their forties, 8 of 13 participants have between the ages of 40 and 50 years, 3 are in their thirties, only two distance themselves more from the mean age of the participants (43.9), one is 28 and the other is 71 years old. The most common degree is baccalaureate higher (8 of 13), then there are 4 graduates and one achieved only a low secondary level. At the group level professions are quite diversified: there is a doctor, a biologist and nutritionist, a banking, two employees, a musician and sound engineer, an herbalist, a sale attendant, a workman and a yoga teacher. Three people are not pursuing any work: a housewife, a retired and an unemployed.

All participants had at their disposal a week of time for completing and returning the format to the group of researchers.

During and after the administering of the format we could have a direct feedback on the perception and satisfaction of the same by surveyed, and they answered they had found that it very interesting and it was really appreciated by the vast majority of the participants.

Data analyses have been realized through the research method based on the grounded theory by Glaser and Strauss (2009).

First of all, subjects had to complete the title of the format "Writing of a lifetime. Writing for ...", by thinking and choosing the word they would have preferred to explain their most relevant significance they have attributed to their writing work through the format guide.

Only one forgot to fill the word. Only one, again, gave a sensitive and fragile expression to make we aware, just from the beginning, about her difficult and negatively perceived life and experiences. 75%, instead, have indicated a dynamic concept, in a process perspective, to open to the hope, to the future, or to look deeper inside themselves.

After filling in the autobiographical format participants were asked to complete a questionnaire on cognitive assessment of the utility of the format and his/her participation in yoga classes, with the aim of detecting the response from participants on the ability of the format to construct meanings for understand the previous life, raise awareness and self-knowledge, stimulate the planning and the ability to project themselves into the future, exploring the use of self-knowledge for professional purposes. A second part of the questionnaire was devoted to the assessment of the effects of yoga practice, the questions included in this case the evaluation by the subject, based on personal experience, the usefulness of yoga as a path of growth of awareness and knowledge self, was asked to assess how self-knowledge is functional to a proper practice of the profession and the construction of meaning of their previous experience and their own lives.

We can report that just from a quick reading revealed a diffusely positive evaluation of all the questions that implied a value judgment on a scale of 4: for nothing, little, pretty, very much. Were in total 10 questions with this type of response, well 8 have received responses on the two highest steps of the scale of values (very much and enough) with percentages around and greater than 90%. Let us analyze more specifically.

Eleven of 13 participants declare that the compilation of the autobiographical format, through the stimulation of memory, memories and past experiences, contributed very much or somewhat increase the level of awareness and self-knowledge in terms of feelings, emotions, reactions. We must highlight that in addition, in a subsequent application, as many as 11 out of 13 state that a greater self-awareness is useful for professional purposes, 1 the subject declares quite useful, only one believes that awareness is not at all useful for professional purposes, but it must be said that this person plays the craft worker.

On the request if the writing was helpful to rebuild and give meanings or better understand their way of life and the experience gained, 5 participants answer that was very useful, enough 4, 4 others believe that it was of little use and no from a completely negative response choosing the answer for nothing. The situation is more or less similar with regard to their evaluation of the format on the ability to stimulate the projection in the future: 6 indeed state that has been quite useful and 2 that it was very.

For the part of the questionnaire dedicated to yoga, what emerges is a high appreciation and evaluation of the utility of the path of the already recognized as good for the format. The number of years of practice in the sample is quite high: 5 participants on total practicing yoga for 15 years, 5 others practice it by a period of time ranging between 5 and 10 years, only 3 practice for only a year . The methods of approach to this discipline is evenly distributed between: curiosity generated by flyers or advertising in their own neighborhood, readings of personal interest in the topic, relatives, friends or acquaintances who have spoken of the thing. It has been asked to provide a concise definition of yoga and its interpretation of all definitions emerge 3 basic concepts: 1) to self-awareness and self-knowledge invoked by as many as 8 people, 2) the union and integration between different aspects of 'being (body, mind, soul), 3) that of being understood as a psycho-physical balance, pursuit of happiness, etc.. All participants, without exception, said they would recommend yoga to their loved ones, a very large majority for reasons related to health and wellbeing.

To the question "through yoga believe that there have been improvements in terms of self-awareness and knowledge of yourself" in 12 respond that it is very or fairly useful, one person described him as not very useful but it should be noted that this is a subject a format that has emerged from the deep self-knowledge since childhood. As to yoga and its impact and usefulness in their work are 9 to state that it is very useful, 3 state that it is not enough and even here only one says that it is not at all but it is the same person who had declared the limited use of self-

knowledge in the professional field as he works as a laborer. He was then asked participants if they felt that a spiritual approach to existence had given back, or could give back, meaning to their life experience, even here 12 people chose the answer "very" and the thirteenth stated that his life is always been rich in meaning.

Another question posed to the participants in the questionnaire was their assessment of yoga as a path of growth in personal, professional and social. It appears that 100% declare very useful yoga as a path of personal growth, the 92.3% considers it very useful or somewhat useful in professional terms and 84.6% considers it very or quite useful in social terms.

A final figure that emerges from the results of the questionnaire is the definition that the participants give their identity according to the professional role, family, according to competences and according to spiritual practice. What we found is that only 3 define themselves primarily according to the profession and are exactly a musician, a doctor and a biologist / nutritionist; 8 put between the first and second place in the familiar role as an element of perception of their identity but insofar as the self-perception based on the skills possessed there was a widespread distribution in the intermediate values (between the 3rd and 4th place in a scale of 5), the particularly significant finding is that as many as 5 out of 13 subjects define themselves primarily in terms of their being yoga practitioners.

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# Educational inequality during primary school

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## Abstract

By using school history, we want to answer the question, how institutional conditions and one's social background have an impact on students receiving different educational tracks at fifth grade. These impacts could be explained by the theories of Boudon (1974) and Bourdieu (1983). Therefore one can assume that structural characteristics of the pupils' social background (e.g. low capital of the family) as well as radical changes during primary school (e.g. relocation) have a negative impact on their school career. This paper presents analyses using data from the National Educational Panel Study (NEPS).

Keywords: social inequality; educational inequality

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## 1. Introduction

A central theme in educational research focuses on social inequality concerning educational success and educational participation as well as educational decisions. It is a known fact that family background has a huge impact on these areas. Nevertheless there is a lack of findings based on longitudinal data with a sufficient large number of participants.

By using data from the National Educational Panel Study (NEPS) we want to answer the following questions: Is it not only the pupils' social background that has an impact on one's school career? Is there more? Do radical changes like moving to another city during primary school lower the chances of receiving a recommendation for higher secondary school (Gymnasium)? And what about repeating or skipping a class? Are students who repeated a class less likely to reach a higher educational track? Does it matter when a student repeated a class?

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The analyses, presented in this paper are based on data from NEPS and will focus on educational careers at fifth grade. As a starting point, retrospective data will be used to explore the students' school history.

## 2. Theoretical Background

Generally accepted is the fact that educational decisions and transitions in particular (such as from primary school to secondary school) are of exceptional importance for educational careers. The research in this area is essentially based on the works of Raymond Boudon and Pierre Bourdieu.

According to Boudon (1974) two effects can cause educational inequality: primary effects on the one hand and secondary effects on the other hand. Primary effects explain differences in educational performances and educational success between students due to differences between social groups (e.g. based on the family background). Secondary effects explain different choices made by different social groups. This means, even if students have similar school performances, the possibility of going to a higher educational school is higher for students with an advantaged family background than for those living under less advantaged circumstances.

Bourdieu (1989) argues similarly. According to him each individual occupies a social status, which links to one's social class. Furthermore one's social class depends on the availability of cultural, economic, social and symbolic capital. Thus social inequality (and therefore educational inequality) is reproduced through the unequal equipment of each individual's capital.

Due to both theories we can assume that students with an advantaged family background are more likely to reach good school performances such as good grades and therefore are less likely to repeat a class (and more likely to skip a class). Furthermore they should receive recommendations for higher secondary education and attend them.

In addition, if a student gets confronted with radical changes during primary school like changing a class because of relocation, there could be a negative effect on his or her school performance. Eventually, we suppose that relocation decreases the probability of achieving such a recommendation for higher secondary school and attending this school type.

## 3. Data and Sample

This paper uses data from the National Educational Panel Study (NEPS), which holds data from students (the target person), their parents, teachers and even the head of school (of the school they are attending) as well as competence tests (Blossfeld, Roßbach, & von Maurice, 2011). The first wave which is used here relies on information of students at fifth grade which include, next to basic information like gender or age, further information such as the school type they are attending. Furthermore, information given by the students' parents is included in the database. With their help we can get useful facts about the school history of the fifth graders (e.g. repeating or skipping a class, change of domicile) or the family background (e.g. monthly household income). Some information is even given by both, parents and students (e.g. repeating a class).

The original database holds 6,112 students (and 4,786 parents) which were recruited, but there are 334 (605) temporary dropouts. Therefore 5,778 students and 4,181 parents participated in wave 1. This was in fall of 2010 when the students were at the beginning of fifth grade. We kept only the cases from those with information from both, students and their parents. For regression analyses students attending special needs schools, primary schools or comprehensive schools had to be excluded. Therefore the final sample is  $N = 3,846$ . Due to this, students going to higher secondary school are slightly overrepresented in this sample (compared to the original database).

## 4. Findings

### 4.1. Descriptive Statistics

At first, some descriptive statistics are shown to get an overview of the data. According to figure 1, one can see that most students (44.2%) go to higher secondary school (Gymnasium) at fifth grade. On the contrary,

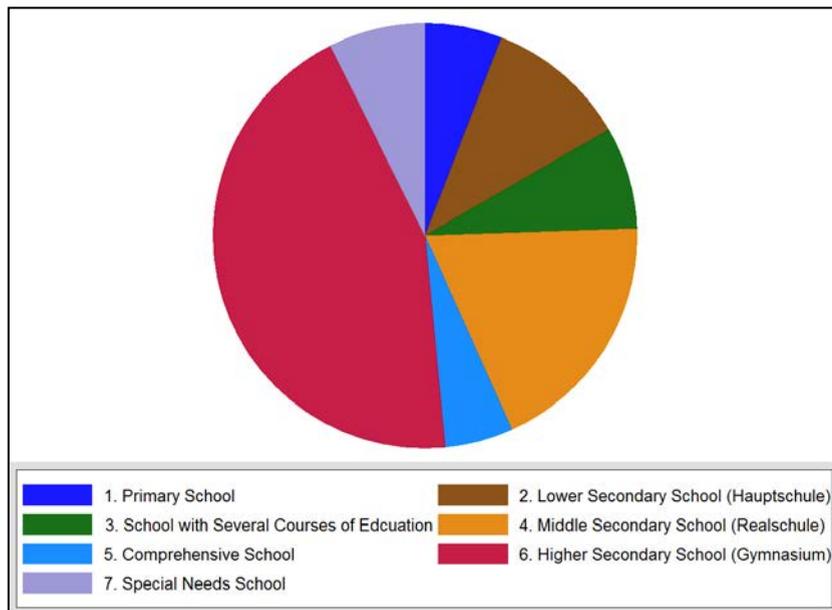


Figure 1. School type at fifth grade

about 10.8% go to lower secondary school (Hauptschule) and another 7.4% attend special need schools. Due to specific federal specifications even 5.9% are still going to primary school. If the original database of  $N = 6,112$  would have been used, the outcomes would change a little. In this case only 39.5% of students are attending a higher secondary school and more students (12.2%) studying at lower secondary school.

Table 1. Repeating a class during primary school

Repeating a class	N	%
1. class	118	30.33
2. class	98	25.19
3. class	87	22.37
4. class	36	9.25
5. class	50	12.86
Total	389	100.00

As stated by students about 12% repeated a class during their school career, and 9% repeated a school year based on parents' answers. There are some gender differences, 11.6% of the boys and 8.2% of the girls repeated a school year. By taking a deeper look at table 1, one can see that students repeat mostly their first school year if they repeated a school year at all. The risk of repeating a class decreases during primary school (from class one to four) and increases up to 13% when entering secondary school. Table 1 includes students attending special needs schools. If we drop them, then only 287 instead of 389 students repeated a school year.

Table 2. Skipping a class during primary school

Skipping a class	N	%
1. class	8	11.94
2. class	29	43.28
3. class	17	25.37
4. class	13	19.41
Total	67	100.00

Based on parents answers 1.5% of all students skipped a class during primary school. Table 2 shows that most students, if skipped a class at all, skipped their second one. Fifth class sippers are of course not included, because they would attend sixth grade right now and are therefore not included in the database.

Table 3. Recommendation and school type

Recommendation for higher secondary school	School type higher secondary school		
	No	Yes	Total
No	989	157	1,146
	86.30	13.70	100.00
Yes	83.81	9.24	39.79
	191	1,543	1,734
Total	11.01	88.99	100.00
	16.19	90.76	60.21
Total	1,180	1,700	2,880
	40.97	59.03	100.00
	100.00	100.00	100.00

Table 3 represents the contingency between a recommendation for higher secondary school (Gymnasium) and the actual attendance of a higher secondary school (students going to primary school, comprehensive school or special needs school are not included). Both variables are strongly correlated and highly significant ( $r = .749$ ,  $p = .00$ ). If one receives a recommendation for higher secondary school 89% follows it. 91% of all students' going to higher secondary obtains such a recommendation. Similar numbers are shown for students not going to higher secondary school. 86% follow the recommendation given by their primary teacher.

#### 4.2. Analyses

To answer what decreases or increases the possibility of the transition from primary school to higher secondary school (Gymnasium) at fifth grade, we used stepwise logistic regression analyses. Due to similar findings this paper only contains higher secondary school as the depending variable (table 4). Findings regarding recommendation for higher secondary school as the depending variable are explained in the text but are not presented separately.

First of all we put two variables as indicators for school success in our model. Table 4 shows that a recommendation for higher secondary school significantly increases the chance of going to such a school type. Moreover, the worse the overall average grades of a student (in mathematics and German, grades from 1 to 6) the least likely that one is going to higher secondary school at fifth grade. Both variables stay highly significant in all three models.

The second model included students' relocation and repeating a class during primary school. A change of domicile doesn't have a significant effect on recommendation or attending higher secondary education, though correlations have shown that these variable highly significant correlate with each other. Repeating a class and receiving a recommendation for higher secondary education are weakly negatively correlated but highly significant ( $r = -.232$ ,  $p = .00$ ). If a student repeated a class during primary school (first to fourth class) it significantly lowers his or her chance of receiving a recommendation for higher secondary school. By taking a deeper look at each class, we can assume that this result is only significant if someone repeated the first class (not shown in the table). Skipping a class (not in the table) and recommendation as well as attending higher secondary school correlate significantly high with each other but don't have a significant impact in the model. This could be explained due to the small sample.

Table 4. Prediction of higher secondary school

	Variable	OR	Pseudo-R <sup>2</sup>	N
Step 1	Recommendation for higher secondary school	23.21***	.48***	2567
	Overall average grade in math and German	.32***		
Step 2	Recommendation for higher secondary school	22.59***	.49***	2528
	Overall average grade in math and German	.32***		
	Relocation	.99		
	Repeating a class during primary school	.54*		
Step 3	Recommendation for higher secondary school	21.95***	.49***	2506
	Overall average grade in math and German	.33***		
	Relocation	.10		
	Repeating a class during primary school	.54*		
	Judgment of economic household situation	1.18**		
	Gender	1.18		

\*\*\*  $p \leq .01$ ; \*\*  $p \leq .05$ ; \*  $p \leq .10$

The master model (step 3) included information about the family background. In comparison with the monthly household income the parents' judgment of their economic household situation is a better predictor for

recommendation as well as going to higher secondary school. Because of that, we used the economic judgment variable instead of the monthly household income. It states that the higher one judges his or her economic household situation the better the chances for students' receiving a recommendation for higher secondary education and attending the recommended school type. The control variable gender doesn't have an impact on the depending variable as well as the recommendation given by a primary teacher.

## 5. Summary

Altogether we can confirm that primary and secondary effects increase educational success and therefore reproduce educational inequality. As anticipated, the recommendation for a higher secondary school and the students' grades are good predictors for attending such kind of school. Contrary to our expectations, a change of domicile during primary school doesn't influence someone's school career.

Besides, we had a closer look at the economical capital of the students' family. Our findings proofed that judging one's economic household situation is a better predictor for higher school recommendations than one's monthly household income. We considered, that a monthly household income doesn't represent one's socioeconomic status as adequate the judgment of one's financial situation. Because how poor or rich somebody feels does not only depend on his income. Furthermore, it depends on additional criteria such as regional conditions. If someone lives in an area with high rental prices he possibly feels not as rich as someone living in an area where there a cheap rental prices even if both have the same monthly income. We should take this in consideration for further analyses.

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4<sup>th</sup> International Conference on New Horizons in Education

# Educational technology and human capital: a model and simulations

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## Abstract

This paper develops a labor market model of educational technology-induced human capital, and demonstrates that the labor market for the vocational school graduates in Turkey is trapped into equilibria characterized by low levels of human capital and employment. First, we employ a stochastic equilibrium method so as to model and analyze the equilibria in question in the absence of educational technology. We prepare and use a carefully-crafted questionnaire to collect data for the key endogenous variables and relations and estimate the main parameters of the model. Second, we incorporate the effects of educational technology into the model and undertake system dynamics simulations so as to demonstrate the extent to which educational technology utilization could help avoid the equilibria in question, leading to higher levels of human capital and employment.

Keywords: Educational technology; Human capital; Social capital; Vocational school graduates; Labor market.

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## 1. Introduction

Human capital is among the central, educational technology-related concepts that have persistently remained at the center of social inquiry in the last twenty years. As a central organizing concept, it refers to the “the knowledge, skills, competences and attributes embodied in individuals that facilitate the creation of personal, social and economic well being” (OECD, 2001:18). The extent to which educational technology plays a role in the formation of knowledge, skills, and competences in question is an issue we will take up in this paper.

The particular context where relations between educational technology and human capital will be examined in this paper involves the recent labor market for the vocational school graduates in Turkey.<sup>†</sup> Clearly,

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<sup>†</sup> For an informative account of vocational education and training in Turkey in the context of European Qualifications Framework, see Borat (2005). Zaim (2009) provides an example of impact assessment for support

the job competences of graduates could be influenced by the prior technology-related educational methods involving, for instance, computerized learning practices in the school and in the workplace. Properly mastered software packages used for virtual undertaking of the tasks as well as estimation, projection and simulation of the processes required by the work are likely to be an integral component of effective job performance.

To theorize about the relations among the key variables involved, we will develop two interrelated sub-models, the first of which is presented in the second section which analyzes human capital in the absence of the effects of educational technology. The third section *presents* the empirical results. The fourth section extends the first model so as to incorporate the effects of educational technology and undertake system dynamics simulations. The concluding remarks follow in the fifth section.

## 2. The Model<sup>‡</sup>

Consider a labor market where workers provide a labor service, say  $L$ , to firms. Let  $Q_t^{DL}$  denote the *quantity demanded* for service  $L$  supplied by workers, which indicates the quantity of labor firms are willing and able to hire at time  $t$ .  $Q_t^L$  depends on the price of labor at time  $t$  ( $w_t^l$ ), prices of other inputs hired/used by firms at time  $t$  ( $w_t^i, i=2, \dots, m$ ), human capital of workers at time  $t-1$  ( $HK_{t-1}$ ) and social capital<sup>§</sup> of workers at time  $t-1$  ( $SK_{t-1}$ )<sup>\*\*</sup>.

$$\text{i.e., } Q_t^{DL} = f^D(w_t^l, \dots, w_t^m, HK_{t-1}, SK_{t-1}),$$

which is a labor demand function.  $Q_t^{DL} \in (0, \infty)$ . However,  $Q_t^{DL}$  is properly transformed so as to take values between 1 and 7.  $w_t^l \in (0, \infty)$ ,  $i = 1, \dots, m$ .  $HK_{t-1} \in [1, 5]$ , and  $SK_{t-1} \in [1, 5]$ .

to basic education in Turkey. Yılmaz (2009) points out a quality-centered problem of education and human capital (in relation to growth) in Turkey. For an example of a relatively different account of the relation between human capital and growth, see Tatoğlu (2011).

<sup>‡</sup> This model is based on a revised version of Kara (2010), and benefits, in part, from Kara (2007a, 2007b, 2013) and Kara and Zaim (2012).

<sup>§</sup> Social capital refers to “the collection of resources owned by the members of individual’s personal social network, which may become available to the individual as a result of the history of these relationships.” (Gaag, 2005:20). There are a number of works in the literature, such as Boorman (1975), Reingold (1999), Allen (2000), Fernandez, Castilla and Moore (2000), Munshi (2003), Calvó-Armengol and Jackson (2004, 2007) and Yueh (2009) which explore the links between social networks and employment. There are also models in the literature, which examine the relations between social capital and growth. A subset of these models are presented by Chou (2005) who explores how “social capital impacts growth by assisting in the accumulation of human capital”.

<sup>\*\*</sup> Human capital and social capital affecting period  $t$  are acquired in  $t-1$  and are available at the beginning of  $t$ .

Let  $Q_t^{SL}$  denote the *quantity supplied* for service  $L$ , which indicates the quantity of labor workers are willing and able to supply (sell) at time  $t$ . Suppose that  $Q_t^{SL}$  depends on the price of labor at time  $t$  ( $w_t^l$ ), the human capital of workers at time  $t-1$  as well as the social capital of workers at time  $t-1$  ( $SK_{t-1}$ ).

$$\text{i.e., } Q_t^{SL} = f^s(w_t^l, HK_{t-1}, SK_{t-1}),$$

which is a labor supply function.<sup>††</sup>  $Q_t^{SL}$  was rated on a scale with 1 representing the lowest score that can be assigned, and 7 representing the highest. Hence,  $Q_t^{SL} \in [1,7]$ .

For analytical purposes, we will assume that the labor demand and labor supply functions have the following explicit forms:

$$\ln Q_t^{DL} = \alpha_0 + \alpha_1 \ln HK_{t-1} + \alpha_2 \ln SK_{t-1} + \sum_{i=1}^m \delta_i \ln \omega_t^i + u_t$$

and

$$\ln Q_t^{SL} = \beta_0 + \beta_1 \ln HK_{t-1} + \beta_2 \ln SK_{t-1} + \gamma \ln w_t^l + v_t$$

where  $u_t$  and  $v_t$  are independent normally distributed white noise stochastic terms uncorrelated over time. They have zero means and variances  $\sigma_u^2$  and  $\sigma_v^2$  respectively.

To theorize about the movements over time (i.e., the dynamic trajectory) of human capital, we will assume that the relative strength (or magnitude) of the labor demand compared to the supply provides an impetus for human capital to be adjusted upwards over time. Taking this assumption into account, we formulate the following adjustment dynamic for human capital.

$$HK_{t+1} / HK_t = (Q_t^{DL} / Q_t^{SL})^k,$$

where  $k$  is the coefficient of adjustment. Taking the logarithmic transformation of both sides, we get:

$$\ln HK_{t+1} = \ln HK_t + k (\ln Q_t^{DL} - \ln Q_t^{SL}).$$

<sup>††</sup> The demand and supply equations could be obtained through appropriately formulated profit maximization and utility maximization problems, respectively.

We will call this the dynamic adjustment equation. Substituting the functional expressions (forms) for  $\ln Q_t^{DL}$  and  $\ln Q_t^{SL}$  specified above, setting the values of  $SK_{t-l}$ ,  $w_t^l$ ,  $i=1, \dots, m$ , to their average values  $SK_{t-l}^{avr}$ ,  $w_t^{lavr}$ ,  $i=1, \dots, m$  and rearranging the terms in the equation, we get,

$$\ln HK_{t+1} - \ln HK_t + k(\beta_1 - \alpha_1) \ln HK_{t-1} = k(\alpha_0 + (\alpha_2 - \beta_2) \ln SK_{t-1}^{avr} + \sum_{i=1}^m \delta_i \ln \omega_t^{iavr} - \gamma \ln w_t^{lavr}) + k(u_t - v_t),$$

which is a second order stochastic difference equation, the solution of which, for the intertemporal equilibrium human capital,  $HK^*$  is as follows:

$$HK^* = \exp \left\{ \frac{k(\alpha_0 + (\alpha_2 - \beta_2) \ln SK_{t-1}^{avr} + \sum_{i=1}^m \delta_i \ln \omega_t^{iavr} - \gamma \ln \omega_t^{lavr})}{k(\beta_1 - \alpha_1)} + \frac{\lambda_1}{\lambda_1 - \lambda_2} \sum_{j=0}^{\infty} \lambda_1^j z_{t-j} + \frac{\lambda_2}{\lambda_2 - \lambda_1} \sum_{j=0}^{\infty} \lambda_2^j z_{t-j} \right\}$$

where  $z_t = k(u_t - v_t)$

$$\lambda_1 \lambda_2 = k(\beta_1 - \alpha_1)$$

$$\lambda_1 + \lambda_2 = 1$$

In case where  $\lambda_1$  and  $\lambda_2$  are conjugate complex numbers, i.e.,  $\lambda_1, \lambda_2 = h \pm vi = r(\cos \theta \pm i \sin \theta)$ , the intertemporal equilibrium human capital is:

$$HK^* = \exp \left\{ \frac{k(\alpha_0 + (\alpha_2 - \beta_2) \ln SK_{t-1}^{avr} + \sum_{i=1}^m \delta_i \ln \omega_t^{iavr} - \gamma \ln \omega_t^{lavr})}{k(\beta_1 - \alpha_1)} + \sum_{j=0}^{\infty} r^j \frac{\sin \theta(j+1)}{\sin \theta} z_{t-j} \right\}$$

where  $r$  is the absolute value of the complex number, and  $\sin \theta = v/r$  and  $\cos \theta = h/r$ .

To study whether this intertemporal equilibrium human capital is high or low, and whether it remains stable over time, we need to empirically estimate the parameters involved. This is done in the next section.

### 3. Empirical Analysis<sup>\*\*</sup>

**3.1 The sample:** Data for this study was gathered using a questionnaire including questions about labor demand, labor supply, wages, human capital and social capital of vocational school graduates in Turkey. The questionnaire was distributed to 500 labor market participants in 2007-2008. 391 questionnaires were returned. Most questions (item) were rated on a scale with 1 representing the lowest score that can be assigned, and 5 representing the highest.<sup>§§</sup> The level of competence of the vocational school graduates, rated by the employers/firms will be taken to be a proxy for the human capital of the graduates. The degree of communication, coordination and cooperation/collaboration among the schools, graduates, firms and other partners in the vocational education and placement system and social networks, rated by the participants in the social networks in question, will be taken to be a proxy for the social capital of the graduates.

### 3.2 Estimation of the parameters:

**(i) Labor demand:** Because of the availability, at low wages, of new graduates of vocational schools as interns, the effect of their wages on their labor demand is negligible. Similarly, because of the low substitutability between new graduates' labor and other inputs, the effects of other input prices on the labor demand in question are negligible as well. Thus, input prices are left out of the labor demand function. We assume that minimal human capital and minimal social capital induce minimal quantity demanded for labor, i.e., if  $HK_{t-1} = 1$  and  $SK_{t-1} = 1$ , then  $Q_t^{DL} = 1$ , which implies that  $\alpha_0 = 0$ .

The regression-results are as follows:

$$\ln Q_t^{DL} = 0.514 \ln HK_{t-1} + 0.526 \ln SK_{t-1}$$

(2.322)                      (2.420)

$R^2 = 0.77$ . t-statistics are given in parentheses. Thus,

<sup>\*\*</sup> The empirical work and estimations in this section benefit, in part, from Kara and Zaim (2007). The constructions of the sample, labor demand and labor supply functions as well as the derivation/presentation of the analytical results in this section follow the procedures (and, in part, wording) similar those of Kara (2007a, 2007b, 2010 and 2013).

<sup>§§</sup> In some cases, the highest score was 7.

$$\alpha_0 = 0$$

$$\alpha_1 = 0.514$$

$$\alpha_2 = 0.526.$$

**(ii) Labor supply:** The quantity of labor new graduates of vocational schools are able to supply is not quite dependent on wages (which are left out of the labor supply function for this particular case); rather it is determined by the competences of the graduates (human capital) and the capacities of the social networks (social capital) which enable the graduates to find jobs. We assume that minimal human capital and minimal social capital induce minimal quantity supplied for labor, i.e., if  $HK_{t-1} = 1$  and  $SK_{t-1} = 1$ , then  $Q_t^{SL} = 1$ , which implies that  $\beta_0 = 0$ . To measure the human capital and social capital elasticity of labor supply, we asked some labor market participants questions, the answers of which yielded the following: a 1% increase in human capital leads to about 0.833 % increase (on average) in the quantity supplied of labor. A 1% increase in social capital leads to about 0.333 % increase (on average) in the quantity supplied of labor. Thus,

$$\beta_0 = 0$$

$$\beta_1 = 0.833$$

$$\beta_2 = 0.333.$$

**(iii) The coefficient of adjustment (k):** For simplicity, we will assume that  $HK_{t+1} / HK_t$  is proportional to the ratio of demand to supply, and hence,  $k = 1$ .

Given the empirical values of the parameters obtained above, we get,

$$\lambda_1 = 0.5 + 0.262i$$

and

$$\lambda_2 = 0.5 - 0.262i.$$

With all the needed parameter values at hand, the intertemporal equilibrium human capital is:

$$HK^* = \exp \left\{ 0.54 + \sum_{j=0}^{\infty} 0.56^j \frac{\sin \theta(j+1)}{\sin \theta} z_{t-j} \right\}$$

For analytical convenience, we will carry out some of our analysis in terms of logarithmically transformed human capital,  $\ln HK$ , rather than  $HK$ . Since  $\ln$  function is an order-preserving transformation, analysis in terms of  $\ln HK$  and  $HK$  will yield the same qualitative results; and the quantitative results could be

transformed into one another. The expected value of the logarithmically transformed intertemporal equilibrium human capital is:

$$E(\ln HK^*) = 0.54 + \sum_{j=0}^{\infty} 0.56^j \frac{\sin \theta(j+1)}{\sin \theta} E(z_{t-j})$$

Since, by virtue of the assumptions about  $u_t$ , and  $v_t$ ,  $E(u_t) = 0$ , and  $E(v_t) = 0$ ,

$E(z_t) = E(u_t) - E(v_t) = 0$ . Thus,

$E(\ln HK^*) = 0.54$ .

In view of the logarithmically transformed human capital scale of  $\ln 1=0$  to  $\ln 5 \cong 1.60$ , an intertemporal equilibrium expected human capital of 0.54 is low. As proven in the appendix A, the logarithmically expressed low human capital is also stable over time in the particular sense that it has a stationary distribution with a constant mean and variance.

The low level of equilibrium expected human capital implies a low level of equilibrium expected employment, i.e., substituting  $\ln HK^* = 0.54$ , and  $\ln SK_{t-1}^{avr} = 0.9$  into the  $E(\ln Q_t^{DL})$ , we get 0.75, which is low as well. This indicates a low human capital-low employment trap facing the vocational school graduates over time.

The following section will extend the model in this section so as to incorporate the effects of educational technology and undertake system dynamics simulations that will illustrate the extent to which educational technology could help avoid the trap in question.

#### 4. Educational Technology: Simulations

We will extend the previous model by reformulating the demand equation so as to incorporate the effects of educational technology. One of the central channels through which the effects of educational technology become evident is the growth of workers' productivity. Let  $\Phi$  represent the productivity growth rate. For the sake of simplicity, we will assume that demand for labor will increase in proportion to the growth of productivity over time, which is influenced by the rate of educational technology utilization over time.

We will represent the impact of the change in the rate of educational technology utilization on the productivity growth with the following equation.

$$\Phi = n \cdot T_t, \text{ where } T_t \text{ is the rate of change of educational technology utilization at } t.$$

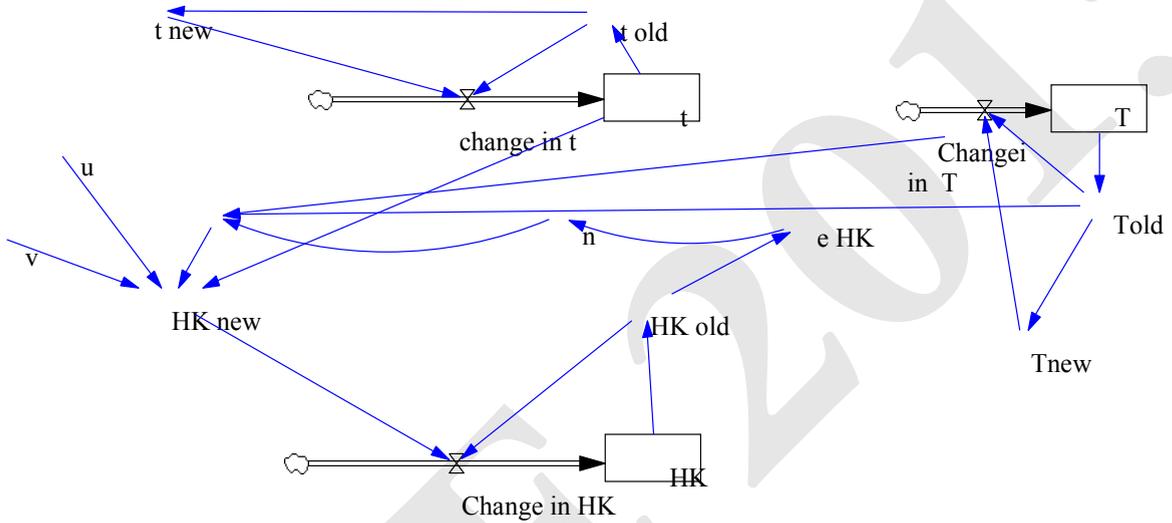
The parameter,  $n$ , is required to satisfy the following properties: At low levels of human capital, the impact of  $T_t$  on productivity growth is high. As the level of human capital and educational technology utilization increase, advantages of technology utilization will be more and more appropriated and exhausted, and hence the impact on productivity growth will become smaller and smaller. These properties will be captured by the following equation.

$$n = (\text{Maximum } HK_t - HK_t) / (\text{Maximum } HK_t - \text{Minimum } HK_t)$$

We will measure the educational technology utilization on a Likert scale with 1 representing the lowest use and 5 representing the highest use. Using VENSIM, a system dynamics simulation software, we will model the

equilibrium  $Q_i^{DL} = Q_i^{SL}$ , and simulate the effect, on human capital, of a 0.1 increase in the technology utilization in each period. The simulation diagram and simulation results are given below:

Simulation Diagram: HK represents human capital is in logarithmic form. e HK is human capital in the standard form.

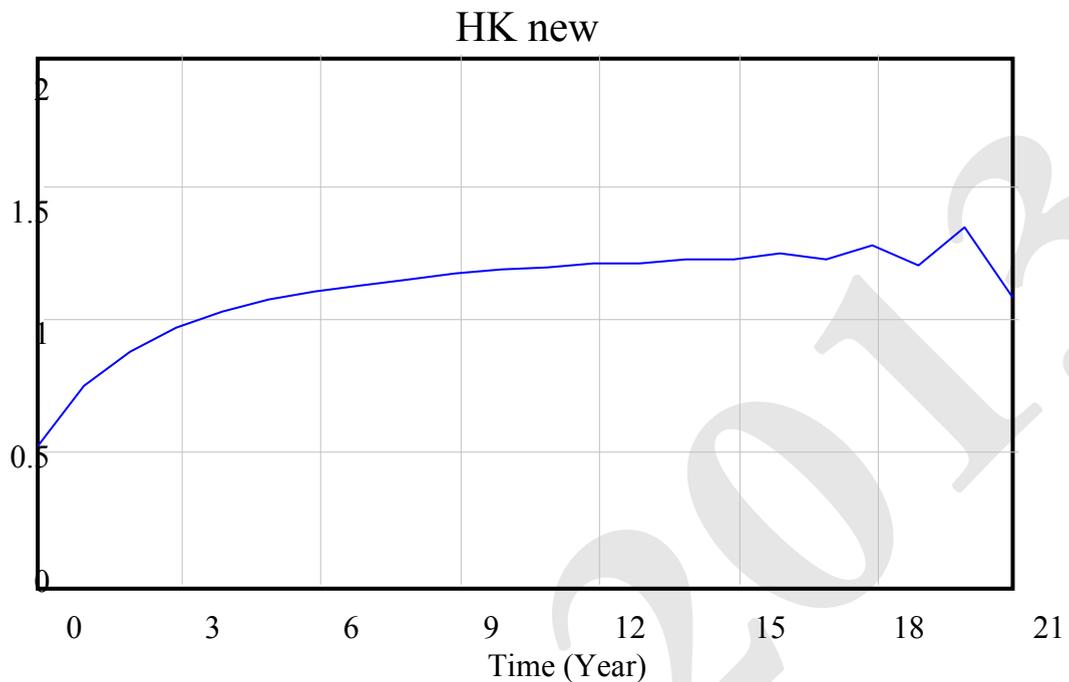


Simulation results

Time	"HK new"
0	0.539872 (0.54)
1	0.765487
2	0.901397
3	0.988229
4	1.04733
5	1.09152
6	1.12512
7	1.15074
8	1.17282
9	1.18941

10	1.20498
11	1.216
12	1.2289
13	1.23478
14	1.24851
15	1.24703
16	1.26792
17	1.24901
18	1.29702
19	1.22471
20	1.36881

Simulation graph: Graphical trajectory of human capital



A modest increase (0.1) in educational technology utilization in each period resulted in a considerable increase in human capital over time (i.e. from 0.54 to 1.36). Considering that the maximum value, in this study, of human capital in logarithmic terms is  $\ln 5=1.6$ , the increase is quite significant. A simple calculation would reveal a considerable increase in the level of employment as well.

## 5. Concluding Remarks

The paper develops a labor market model of human capital and demonstrates the presence of a low human capital-low employment trap plaguing the vocational school graduates in Turkey. The paper explores an educational technology-based way out of the trap in question.

The extent to which the educational technology utilization could influence human capital and market outcomes points out the existence of a considerable potential for educational technology-centered improvements in real life processes. Explorations of particular ways in which educational technology could contribute to different sectors of economy in particular and different dimensions of economic and social life in general would be worthy of future research.

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# Education and education practices among quilombolas: the school and the cultural diversity

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## Abstract

This text examines different aspects of the discussion on the disconnection between teaching and its practices and contents vs. the cultural diversity within the contexts it operates. Among these aspects one should highlight the types of comprehension and construing of the world, as these map our notions of Education and Culture and take place within an interconnected way. Here, we take as the basis for reference the study on culture and educational activities reflecting specific ways to understand and construe the world, within a quilombola community (black community) in Brazil.

Key Words: Cultural diversity; school organization; quilombo's education; culture and education.

## 1. Introduction

This text examines different aspects of the discussion on the disconnection between teaching and its practices and contents vs. the cultural diversity within the contexts it operates. Among these aspects one should highlight the types of comprehension and construing of the world, as these map our notions of Education and Culture and take place within an interconnected way (Aguiar, 2010). Here, we take as the basis for reference the study on culture and educational activities reflecting specific ways to understand and construe the world, within a quilombola community (black community) in Brazil.

The cultural practices in this community, which delineate their way of life, express the disconnection that exists between them and the contents of school practices. In the quilombola's daily activities – as they live in a rural area relatively close to the urban environment – education incorporates different knowing and merges different knowledge. Traditional resources mixed with other resources from modern days are used as teaching tools and as resources that help older people to spread and instill knowledge, therefore helping younger people to explore and adapt to the world around them.

It is worth mentioning that most adults in the community know very little or have no formal learning. Yet, they know how important school is and its influence on modern life, and they use this understanding to forge these two worlds of knowledge and recognition – the knowing from its practices and what comes from younger people learning at school.

Community data were collected 'in loco' during our work and field research, having as our basic procedures our research and observation, using ethnography as our fundamental methodology.

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The notions of education and cultural diversity discussed here may inspire educators, researchers and parents who have an interest in issues associated to learning and its system(s) – which are different issues that afflict those involved with this field of knowledge and which are usually translated into searches, exchanges and reflections.

### Multiculturalism: some definitions

A discussion we consider important is how the cultural difference has been studied by authors that discuss it within society and in the environment of our close interest, the school. Moreira (2002) highlights that the word ‘multicultural’ has been used to indicate the pluralistic characteristic of western societies today, and the different types of responses to such plurality. He quotes Kincheloe and Steinberg (1997), who consider the “multiculturalism” represents the nature of such response, which includes formulating conflicting definitions in our social world, arising from different economic, political and social interests.” For Moreira, within the realm of education, multiculturalism relates to the nature of the response that is given within the school environment.

Stuart Hall (2003) considers that multiculturalism can be both a qualitative and a substantive term. While qualitative, it describes the social characteristics and the movement of maintaining the original identity and life in common within a society where communities with different culture live together. While substantive refers to the political strategies used to manage the cultural differences in these societies.

Some authors, including Astrain (2003), make a distinction between multiculturalism and interculturalism and highlight that the latter is not just about two cultures that are mixed together or that integrate. The interculturalism is about the recognition of these existing differences and the mutual understanding and valuation of the different social groups irrespectively of their specific cultures. The prefix “inter” would express a positive intention that is concretely expressed by the effort to suppress barriers between different peoples, ethnic communities and human groups.

The discussion about cultural differences at school has taken differences nuances, ranging from the issue of mere acceptance and the respect for the culture brought by students and their families to questioning the originality of such culture and its handling by the media. Moreira (2002) refers to the critical multiculturalism showing the relations of power that are present when one discusses the different cultures that exist in social institutions. He reports that “by accepting that the cultural difference and power are intimately related, there is a need to reject, as done by Stoer and Cortesão (1999), the so-called benign multiculturalism. Such perspective is restricted to identifying the differences and encouraging the respect, tolerance and coexistence between them. He does not include, in his approach, the purpose of destabilizing the relations of power involved in situations where differences coexist. The effort to examine them and question them characterizes what has been called the critical multiculturalism.”

Within the critical multiculturalism perspective is the discussion about the pattern of interaction of different players within the school institution. Different interacting cultures bring aspects that are connected to patterns of the politically right that are present in the task of teaching, just as values that are connected to the everyday life of families, students and teachers and values and principles brought by the media and by the dominant ideology. Therefore, the critical multiculturalism proposes a reflection that will allow us to address different cultures and explain existing contradictions, either accepting or refuting these interactive patterns that, above all, are based on negotiation and mutual respect.

From these questioning by the authors discussed here and the observation and exchange with the target community (as well as other herein mentioned), we started to follow the reflection about the reality experienced

by those living in the quilombolas, particularly the practices related to the process of sharing and acquiring knowledge, which are distant from those used by schools.

### Sharing knowledge in the quilombola community

An event told by people living in the quilombola community is explanatory by itself. During a school test for children at about eight years of age, there is the following question that the student is expected to fill in: snake is a \_\_\_\_\_ animal. A child fills in “dangerous” but his answer was considered wrong because the correct answer would be “venomous”.

Although this is an example of what could take place at any school, it shows that there is a disconnection between the school and the student cultural universe or the knowledge the student brings with him to school, or from learning within the environment he lives. It is as if only what the school proposes were right; the answer that was considered to be wrong is laughable; and the school fails to teach that there are many ways to define a snake or any other thing or animal. Additionally and most significantly, is that the school instills prejudice in relation to other ways to understand and construe our world.

On the part of those living in the quilombola community, some social practices express the way they understand how knowledge is shared and learned. An example of these practices can be seen on a yard in the village, where children and adults leave several toys, including broken toys. In many instances, when they return from school, children get together to play at that site and, as they play, one can see their effort to fix a broken toy. It is common for adults to get engaged and help them fix the toys while there is a lot of talking going around.

During this activity, adults teach, in oral conversations, information about their way of life, about Brazil and the quilombo history; about life in general and the processes experienced. During these conversations, sometimes there is an education about the need to squander, sometimes there are historical facts about some specific toy and the memory of people and times that are, in one way or another, associated to that specific toy. Historical data are brought up: sometimes old names of some toys, that have changed and children did not know, and that are used as a source of references about the way of life, where people can make their own toys or can give it to others without having to buy it.

Sometimes they speak about how important it is not to throw toys away, even those that are broken, so that other children can play with them; sometimes about the type of tree that has provided wood to make some specific toy and the importance of taking care of the forests and nature. As a result, reflections come up, involving most different themes, building the fabric, for the benefit of children and youths, that depicts life in that place and the way they manage their everyday issues. Punctuated by facts from the history they have lived, where empirical data mingle together. These are procedures that express their beliefs about their way of life and consumption models, highlighting consumption values that govern the community relation with objects, people and the place.

As a quick clipping, follows some important historical details, taken from official data and which are also taught by adults to younger people.

Adults explain, for instance, the meaning of several words or terms that are a part of their cultural universe. Like quilombo, that comes from "ochilombo", from a Bantu dialect, that is today spoken by some peoples in Angola, from where most Brazilian slaves came. It used to mean a camp used by nomad populations. In Brazil, it was used as a name for nuclei of slave resistance.” (www.mds.gov.br)

They try to give long explanations about their origins and strengthen the importance of this knowledge and give several representative examples to children. Children listen actively and appear curious by asking questions on the subject. And they learn that quilombolas “are descendents from the inhabitants of quilombos. Most of them formed by black slaves that managed to escape from slavery in Brazil at the time. They ran away from sugarcane mills or coffee plantations and took refuge in the quilombos, sites of resistance and protection. Old slaves formed communities around these nuclei; and the communities of today, over one hundred years after slavery was abolished, have been named quilombolas, the areas of quilombolas or the territories of quilombolas”. (www.mds.gov.br)

They show the importance of community life, tell about the significance of building family ties and highlight the social process their ancestors went through so that they could be where they are today. One of the adults, member of the community, is graduated in History and in his explanation, historical and official data are taught to children in a formal and candid way when he speaks about the quilombola communities. He draws a Brazilian map on the ground and shows, by state or region, where there is, and still remains, to this date, a number of communities that are self-proclaimed quilombolas.

“Quilombola communities are ethnical-racial groups, according to self-attributed criteria, with their own historic trajectory, owners of specific territorial relations and with a black ancestry associated to a resistance to the historic oppression they suffered, according to Decree nº 4887/03. These communities are the rightful owners of their lands, as consecrated by the Federal Constitution of 1988. [...] An assessment by Fundação Cultural Palmares (FCP) has mapped 3524 quilombola communities in Brazil. There are other sources, however, that estimate that there are approximately 5 thousand communities.” (www.cpis.org.br)

“Quilombos do not belong to our slavery past. Neither are they communities that stand alone in time and space, without any participation in our social culture. [...] Quite contrarily, there are over 2 thousand quilombola communities throughout the Brazilian territory, which are alive and active, fighting for their right to be the owner of their lands, as provided by the Federal Constitution of 1988.” (www.cpis.org.br)

“There are quilombola communities in at least 24 Brazilian states: Amazonas, Alagoas, Amapá, Bahia, Ceará, Espírito Santo, Goiás, Maranhão, Mato Grosso, Mato Grosso do Sul, Minas Gerais, Pará, Paraíba, Pernambuco, Paraná, Piauí, Rio de Janeiro, Rio Grande do Norte, Rio Grande do Sul, Rondônia, Santa Catarina, São Paulo, Sergipe and Tocantins”. (www.cpis.org.br)

In one of the activities at a quilombola community, several people, while mixing earth, water, grass or fresh cattle manure to get a uniform, strong mass that is used to make large bricks or walls of a “taipa” or “pau-a-pique” house, sing tones, like in a choir and they also get together in long conversations, a time they use to introduce subjects of general interest that are important to the community. During the time they knead clay with their feet, children get involved, and they talk and laugh together. During this activity, one can see men and women engaged with the task of teaching and learning about their past and looking into their future.

Actually, this is about a class with many teachers, it very different from the one children experience at school, at a site that is also very different from the school facilities; where everything takes place on the ground, as they play with their props. Historical data are shared among all those present. Some subjects draw special interest and everyone gets involved in the discussion when the subject is slavery, language and beliefs, or the role of women, allowing them to show the different realities they experience, in different places, by many quilombolas in Brazil.

Regarding their language, for instance, one can highlight that “many quilombolas have their own language, formed by merging different dialects of black slaves brought from Africa with Portuguese. Like Cupópia, from Quilombo de Cafundó, in Salto de Pirapora, in São Paulo State countryside. This language was

extensively logged, for the first time, in 1978, when it had 40 speakers. Today there are 12 speakers of Cupópia among 80 people living in the Cafundó.” (Vogt and Fry, 1996)

### General notes

Concerned with the technology advances and disappointed with the urban cultural universe, several members of the quilombola community claim that children education should not be delegated to school only. They believe that as children and young people mature before their adult lives, they need to tread different paths and this requires dedication and time from adults and the community. And school can only offer one form of learning.

The activities performed by groups of people in the community, for instance, to perform tough and/or urgent tasks that require focus and objectiveness, can lead to visible inner changes in those involved, who learn to share their tasks, work collaboratively, leading to stronger social ties. It strengthens the notion of who we are, as we are similar and different at the same time. It shows that each one has a role in the life of the other, in a mix that strengthens, teaches and encourages people while preparing them to accept the different, their quests and struggles.

Through manifestations of culture and their practices, which permeate our relation with the other, is that one can imprint the way and the measure to experience the world that surrounds us. One understands, respect and values what is best known.

Expanding traditionally established limits to teaching and learning concepts increasingly requires an articulation between the educational processes and the socio-cultural conceptions. Identifying and understanding the ways of life and construe the world, as these are present in different social fabrics, by making visible the elements that associate culture and education, one may open new ways for educational proceedings that are more suited to people’s needs. The dynamic characteristic of our social relations, along with social-educational proceedings, performed in the daily lives, involving the exchange of knowledge, is a rich and promising field for essential information, so that one can define the socio-cultural and political role of school and education. (Aguiar, 1994)

Knowledge plays a key role for human choices. For educators and researchers, expanding knowledge about different ways of life opens space for new inspirations and creativity, therefore strengthening adequacy to the context in which school works. Education takes a large space in each individual life and this field can range through several areas of knowledge and human needs.

Addressing cultural diversity as a possibility to expand the actions and the understanding of the world can help untangle webs which, in education, are fossilized. It is required to shed light and start new quests for the cultural diversity that exists among peoples, in a way that can show horizons that are still uncovered.

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4<sup>th</sup> International Conference on New Horizons in Education

# Education as a factor of income differentiation of the population in Latvia within the period from 2000 to 2011

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## Abstract

The tendencies of income change and income differentiation levels, as well as the impact of education on income differentiation of the population in Latvia within the period from 2000 to 2011 are determined in the present article with the use of the regressive analysis.

Keywords: income, income differentiation, education

## 1. Introduction

A high level of income differentiation contributes to the increase of poverty, as well as decreases the benefits of economic growth for poor families as due to the large initial inequality the poor get smaller share from benefits. Consequently, without reference to the level of income in a country, wide income differentiation has a direct negative impact on social welfare. Thus the research of income and its differentiation has been of great importance at state, as well as regional level.

## 2. Methodology and Research Methods

Factors of income differentiation that have influence at micro level are explained by the theory of human capital, theory of filter or economic theory of signalling, as well as they have probable character that forms under the influence of occasional causes.

One of the researchers of the human capital theory was Theodore Schulz. He wrote: „one of the forms of the capital is education, human it is called because this form becomes a part of the human and capital it becomes as a result of being a source of future satisfactions or future profits, or both together” (Schulz T., 1960),

J.Mincer (Mincer J.,1994) believes that relation between the profit and education is not constant during the life time of the employee. In total approximately 25% of income inequality are due to the differences in education. The importance of production experience makes up approximately the same share. One more important factor that is included into analysis is the number of working days per year. By the impact of these three variables – education, experience and the number of working days – J.Mincer explains 60% of all differences of the level of labour income. The researcher R.Eckaus (Eckaus R.S., 1969).

The model introduced by G.Becker (Becker G., 1975) explains the inequality of income not only due to the labour (in fact – human capital), but also possessions. Return on investments in a

person in average are higher than return on physical capital. But in the case with human capital it decreases with the growth of investments, when in the case of other assets (real estate, securities, etc.) decreases little or does not change at all.

However, education should not necessarily be interpreted as independent variable. The level of educational background depends largely on natural skills of the person and conditions of his or her upbringing in a family. Education, consequently, can be only as a mediator and not as a principal cause for higher income.

The researches of P.Taubman (Taubman P., 1978) using the samples of twins show that 45% of income differences are due to the genetic potential, 12% due to the social origin, and due to education – only 6%. R.Herrnstein (Herrnstein R. J., 1971) proves that if social privileges were removed, there would be a new for of elite – biological elite.

Other researchers (A.Spence (Spence A., 1974), K.Arrow (Arrow K., 1973), A.Berg, J.Stiglitz) interpret education as a mean of selection, some kind of filter that sorts students.

However, there is an opposite point of view: the place of the worker in income hierarchy is conditioned by his or her social origin that is measured by the indicators of family income, the level of education of parents, the professional status of the head of the family etc., as well as it is explained with the transfer of moral values, motivations and behaviour stereotypes from generation to generation. Education here plays a role of a mediator, modifying inequality in social origin into income inequality.

K.Jencks (К. Дженкс, 1997) believes that income determination process has probable character and is formed under the influence of occasional causes: correlation between education and income is found only for aggregate group values, as in the analysis of individual data the correlation practically disappears. In addition, according to the evaluation, all factors that influence the level of income – origin, genetic potential, gender, age, colour of skin, education, occupation and others – are able to explain not more than 22% of all differences of income. Hereof the conclusion can be drawn that income depends mainly on the number of occasional causes – „luck”, „fortune” of the person.

It is necessary to note that education significantly influences the income of the individual, however the fact that education is the main determinant of income is insufficiently proved by the researchers. It is impossible to ignore both mental capacities, and characteristics of families. The quality of education is also important. Resources of family and personal potential of the individual change over time into certain qualities that are demanded on a labour market that leads to certain earnings.

For the research of the level and differentiation of income of the population the authors use several averages - an arithmetic average, structural averages - a median, and quintiles.

Herfindahl index is calculated according to the formula:

$$K_r = \sum_{i=1}^n d_i^2, \quad (1)$$

where  $d_i$  - the share of each population group in the total amount of population monetary income,  $i=1,2,\dots,n$  – the number of groups (Литвинов, В.А.,1997)

The limits of values of Herfindahl index is from 0 to 1. At number of groups advancing to infinity Herfindahl index advances to 0. When there is only 1 group, the coefficient is equal to 1. Herfindahl index is indifferent to the line of theoretically possible uniform distribution. Herfindahl index takes inequality of distribution for an axiom, and its changes reflect the changes in the proportions between groups, i.e. in ratios of shares of separate groups in the total amount of the monetary income of the population. At the set (invariable) number of groups increase of Herfindahl index in the current period in comparison with the period, taken as a base, directly testifies to concentration increase, i.e. concentration of the monetary income is more increasing in hands of one group and, respectively, indirectly characterizes the degree of deviation of the actual distribution of the income on groups of the population from the line of their theoretically possible uniform distribution (Литвинов В.А., 1999).

For the analysis of influence of the factors of differentiation of the population the regression analysis is also used in the present research.

### 3. Results

The empirical base of the research is the questionnaires of the population of Latvia carried out by SKDS firm within reports of the University of Latvia on economic development of Latvia for 2000, 2005, 2007, 2008 and 2011, and also questionnaire of the population "Social inequality III", carried out by the Institute of philosophy and sociology of the University of Latvia in 2009.

In the article for the study of income of families the indicator of the monetary income after payment of taxes on one family member (including social transfers) is used.

#### *Tendencies of income change of the population of Latvia.*

During the research 2 tendencies took place: the tendency of increase in the average income of the population during the period since January 2000 till January 2008 (the average income increased by 222% at increase of inflation index during the similar period for 57,1%) and a tendency of reduction of the average income of the population during the period since January 2008 till 2011 (January) (the average income decreased by 22%, the inflation index during the similar period increased for 1,8 %) is established. (Table 1).

Table 1. Income of the Population of Latvia in Quintile Groups within the Period from 2000 to 2011, Lats per Month

Indicators	Year	In Latvia	Part of the population				
			First quintile group (20%)	Second quintile group (20%)	Third quintile group (20%)	Fourth quintile group (20%)	Fifth quintile group (20%)
Average income in lats	2000	66	17	36	52	69	161
	2005	106	35	67	90	128	232
	2007	151	62	95	126	183	308
	2008	213	78	128	164	225	446
	2009	202	76	125	163	221	443
	2011	166	58	104	147	190	332
Quintile points in lats	2000		1-28	29-44	45-60	61-83	84-2500
	2005		5-54	55-75	76-100	101-150	151-1000
	2007		0-80	81-100	101-150	155-200	205-800
	2008		0-114	115-149	150-199	200-291	292-3000
	2009		0-100	101-145	146-180	181-267	268-2000
	2011		0-85	86-126	127-160	161-220	221-900

**Source:** calculations of the authors in the SPSS program according to the questionnaire of the University of Latvia within the report on development of national economy for 2000, 2005, 2007, 2008, 2011 and questionnaire data of the University of Latvia "... for 2009

The average income per one family member in Latvia in 2000 made 78% from the size of the minimum consumption basket (84 lats a month), in 2005 the average income per one family member was made even to the size of the minimum consumption basket and made 105 lats a month. During the period from 2006 to 2009 the average income per one family member considerably advanced the size of the minimum consumption basket (by 1,1-1,5 times), however in the winter of 2010-2011 returned to the level of 2005. As for the families where each member of a household has less than one set of the minimum consumption basket, than up to 2009 their quantity decreases: with 81% from all Latvian families in 2000 to 40% in 2009, however result of 2011 returned to quantity of households with consumption below the minimum basket on the level of 2005 and made 65%.

Thus, the tendency of increase in the average income of families during the period from 2000 to 2008 is stated, it is also possible to state a negative influence of crisis on the income of the population of Latvia. In 2008 and 2009 influence of crisis on the income of the Latvian households is expressed very poorly, most strongly the consequences of crisis were revealed in the winter of 2010-2011.

#### *Tendencies of the change of income differentiation of the population of Latvia.*

Analyzing the changes of the total income in quintile groups during the period from 2000 to 2011 (see table 2), it is established that the total income of the population of the first (poorest) quintile group fluctuates within 5-9% slowly, and the total income of the fifth (richest) quintile group slowly, but steadily decreases (from

47% to 40%). The dynamics of the change of the size of the total income of the second, third and fourth quintile groups is not unambiguous therefore it is impossible to judge the differentiation according to the total quintile income and it is necessary to apply other methods to establish the tendencies of the change of income differentiation of all population.

Table 2. The Share of the Income of the Population of Latvia in 20% Groups by Years, in Percentage

Group of the population	2000	2005	2007	2008	2009	2011
First (20%)	5	7	9	7	8	7
Second (20%)	10	14	12	9	11	12
Third (20%)	18	17	19	17	16	18
Fourth (20%)	19	21	20	25	23	23
Fifth (20%)	48	41	40	42	41	40
Total:	100	100	100	100	100	100

**Source:** calculations of the authors in the SPSS program according to the questionnaire of the University of Latvia within the report on development of national economy for 2000, 2005, 2007, 2008, 2011 and questionnaire data of the University of Latvia "... " for 2009

Table 3. Herfindahl Index

	2000	2005	2007	2008	2009	2011
Herfindahl index	0,31	0,27	0,26	0,28	0,27	0,27

**Source:** calculations of the authors in the SPSS program according to the questionnaire of the University of Latvia within the report on development of national economy for 2000 and questionnaire data of the University of Latvia "... " for 2009

Thus, it is established that the influence of crisis up to 2011 did not change the established tendency of reduction of income differentiation of the population of Latvia, and caused only small short-term increase in income inequality. However it has socially acceptable character in Latvia within the EU .

The assessment of education as a factor of income differentiation of the population.

As a result, the authors conducted regression analysis revealed the presence of a linear relationship between income per household member and education.

Table 4. Linear Regression Coefficients for the Year 2000

Model		Unstandardized Coefficients		Standardized	t	Sig.
		B	Std. Error	Coefficients		
1	(Constant)	11,607	13,483		,861	,390
	education	25,834	6,190	,135	4,174	,000

Note: a Dependent Variable: income of one member of the family per month in lats

Predictors: (Constant), education

Source: calculations of the authors in the SPSS program according to the questionnaire of the University of Latvia within the report on development of national economy for 2000

**Conclusion** The model is significant for 1% level since the value of  $F$  - criterion is equal to 17, and the corresponding significance value is almost equal to zero. Coefficient of regression are significant for 1% level (the exception makes only the last coefficient –importance at 5% level).

Having interpreted the results of the regression analysis, it is possible to draw the following conclusion: the increase of the number of years of training of one family member for 3 years leads to the increase of income in average for 28,5 lats a month

Having built the linear regression according to the data of 2007 for Latvia in whole, where a dependent variable is the population income per 1 member of a household, and independent variable is education of one of the family members (number of years of training).

Table 5. Linear Regression Coefficients for the Year 2007

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	
	B	Std. Error	Beta			
	(Constant)	80,492	11,880		6,775	,000
	Education	33,996	5,435	,233	6,255	,000

Note: a Dependent Variable: income of one member of the family per month in lats

Predictors: (Constant), education

Source: calculations of the authors in the SPSS program according to the questionnaire of the University of Latvia for 2009

The model is significant at 1% level since the value of  $F$  – criterion is equal to 39, and the corresponding significance value is almost equal to zero. Regression coefficients are significant at 1% level. Having interpreted the results of the regression analysis, it is possible to draw the following conclusions:

- the increase in number of years of training of one of the family members for 3 years leads to the increase of income in average for 34 lats a month.

Having built the linear regression according to the data of 2009 for Latvia in whole (see the appendix) where dependent are the same variables, was established the following:

Table 6. Linear Regression Coefficients for the Year 2009

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	73,011	72,469		1,007	,319
education	54,235	26,999	,296	2,009	,051

Note: a Dependent Variable: income of one member of the family per month in lats

Predictors: (Constant), education.

**Source:** calculations of the authors in the SPSS program according to the questionnaire of the University of Latvia for 2009

Having interpreted the results of the regression analysis, it is possible to draw the following conclusion: increasing the number of years of education of the members of the family of one of the 3-year increases in average income per month 54 lats.

Table 7. Linear Regression Coefficients for the Year 2011

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	
	B	Std. Error	Beta			
1	(Constant)	106,130	7,945		13,359	,000
	Education	23,670	2,776	,306	8,525	,000

a Dependent Variable: TIR\_IEN

Note: a Dependent Variable: income of one member of the family per month in lats

Predictors: (Constant), number of years of training .

**Source:** calculations of the authors in the SPSS program according to the questionnaire of the University of Latvia «...»for 2011

The increase in the number of years of training of one of the family members for every year leads to the increase of income in average for 23,7 lats a month.

#### **4. Conclusions and Recommendations**

The tendency of the increase of the average income of families during the period since January, 2000 till January, 2008 is established: average income increased by 222% at the increase of the inflation index during the similar period for 57,1%.

The tendency of the reduction of the average income of the population during the period since January 2008 till 2011 is established: average income decreased by 22%, the inflation index during the similar period increased by 1,8%.

It is possible to state the negative influence of crisis on the average income of families in Latvia. In 2008 the influence of crisis is expressed very poorly, in 2009 - also, however consequences of crisis revealed themselves most strongly in the winter of 2010/2011.

It is established that despite insignificant fluctuations of the indicators characterizing differentiation of the population of Latvia, the influence of crisis did not change the established tendency of reduction of income differentiation of the population of Latvia since 2000.

If the influence education factor on average income a month per 1 family member in dynamics from 2000 to 2009 crisis year is analysed, it is possible to state the increase of education aspect influence.

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## Effects of applying Webquest learning activities to disaster prevention education for 8<sup>th</sup> grade students

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### Abstract

This study aimed to explore the effects of applying WebQuest learning activities to disaster prevention education for 8<sup>th</sup> grade students. A total of 61 8<sup>th</sup> graders were divided into control (n=30) group and experimental (n=31) group with three teaching units. Descriptive statistics, One-sample t test, paired-sample t test, and One-way ANOVA were used to analyze the collected data. The findings of this study show that the immediate learning effectiveness between both groups of the students is significant. In addition, students in the experimental group performed better in areas of disaster prevention knowledge and learning attitude and skills. Also they were satisfied with the WebQuest teaching approach, learning interaction, and learning quality.

*Keywords: disaster prevention education, learning effectiveness, WebQuest*

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## 1. INTRODUCTION

Natural disasters always wreak havoc. For example, the typhoon Morakot in 2009 and the 9.0-magnitude earthquake off northeastern Japan in 2011 inflicted catastrophic damage and casualties to Taiwan and Japan, respectively. Both economies suffered heavy losses. To prevent natural disasters from causing casualties and damage, disaster prevention must be incorporated into school curricula, which echoes the UN-initiated “Disaster Risk Reduction Begins at School” campaign. The disaster prevention education in Taiwan is aimed at spreading knowledge of local disaster types and causes and teaching students to adopt a right attitude toward disasters and take proper measures when disasters strike. More importantly, such education must equip students with the skills for disaster prevention and train them to prevent natural disasters in their daily life. When awareness of environmental disasters among primary students is raised through disaster prevention, they can take effective action to prevent disasters, hence mitigating the consequent damage (Wang, 2003).

In the Internet era, online resources are indispensable for learning. WebQuest is a strategy for teachers to combine thematic inquiry-based learning into teaching. It broadens students’ life experiences beyond textbooks and motivates them to learn and develop various thinking abilities such as analyzing, comparing and organizing (Cheng, 2005). Through WebQuest teaching, teachers facilitate students, who are the focus of learning, to actively explore questions, formulate and confirm hypotheses, and discuss and arrive at conclusions by asking them questions or providing them with related data (Chan & Chang, 2001). This study therefore investigates the effect of WebQuest approach in disaster prevention education on junior high school students’ learning effectiveness and disaster prevention literacy.

## 2. LITERATURE REVIEW

As the name suggests, WebQuest teaching is a new curricular design that enables learners to seek knowledge of an issue, analyze and discuss it via collaboration with team members through quests on the web (Dodge, 1995; Batchelor, 2002). WebQuest consists of six elements: introduction, task, process, resource, evaluation, and conclusion. With these elements, teachers employing WebQuest can formulate a structured teaching strategy to effectively organize the teaching content and provide meaningful and quality learning for learners (Dodge, 1995 ; March, 2003). It creates a learning environment where learners can collaborate with peers to seek meaningful knowledge to research and critically consider an issue or make decisions. Specific tasks and proper resources and assistance are given through scaffolding to learners, who are induced to construct non-structural knowledge and then are facilitated by teachers to complete the tasks through cooperative learning. The WebQuest teaching, however, means more than just students copying and pasting web information. With the aid of multimedia, WebQuest guides students to internalize the information into useful knowledge through high level thinking, enlightening them to develop multiple intelligences (Kimberly & Cleborne, 2002; MacGregor & Lou, 2004). Cooperative learning has various benefits for students such as enhancing their learning achievement, encouraging them to use more advanced comprehension strategies, improving their achievement and intrinsic motivation, and helping them build positive interpersonal relationships with peers (Lu, 2005).

Disaster prevention education can spread knowledge of correct precautions, measures to take during and after disasters. Furthermore, it teaches students to cultivate a positive attitude toward disasters and contribute efforts to disaster mitigation, reducing physiological and material losses (Ye, et al, 2004). However, formal natural disaster prevention or mitigation education still can’t be found in Taiwan’s educational system. Instead it remains a mere component in natural or social subjects, focusing on knowledge of disasters and prevention. The more important qualities such as disaster prevention skills and attitude and post-disaster psychological reconstruction are neglected due to lack of teaching hours or teacher professionalism. Besides, regular disaster prevention drills are either absent or mere formalities in most schools with students displaying a lax attitude. To minimize the huge

losses incurred by natural disasters in Taiwan, comprehensive disaster prevention education must be incorporated into school curricula (Hsu, 2003).

Given the advantages of WebQuest and importance of disaster prevention education, this study thus employs the six elements of WebQuest in designing disaster prevention lessons to investigate the effectiveness of WebQuest teaching on preparing 8<sup>th</sup> grade students for natural disasters.

### 3. RESEARCH DESIGN AND IMPLEMENTATION

This study adopts a design of quasi-experimental research. The subjects are two classes of 8<sup>th</sup> graders, which are picked out of the four classes taught by the researchers through purposive sampling. The experimental group consists of 31 students (17 males and 14 females) and is divided into 5 teams of 6 (with one group containing 7 people) based on heterogeneous grouping according to the students' abilities, whereas the control group contains 30 students (16 males and 14 females) and is also divided into 5 teams of 6 based on free grouping. The experimental group conducts learning through WebQuest-based teaching websites; the subjects try to complete tasks, with sharing, discussion and commenting with team members as well as observing of other teams' outstanding works via Live@edu platform. In contrast, the control group is given traditional teaching and asked to carry out group discussion in class.

The research tools adopted by this study include Disaster Prevention Education Learning Achievement Test, Disaster Prevention Literacy Questionnaire, Learning Satisfaction Questionnaire, Lesson Planning Design, WebQuest Learning Opinion Questionnaire, and Microsoft Live@edu. The Disaster Prevention Literacy Questionnaire covers three dimensions of disaster prevention knowledge (8 items), attitude (15 items), and skills (18 items) based on the course objectives and ability indicators for junior high schools promulgated in the Ministry of Education's Disaster Prevention White Paper. The 5-point Likert Scale is used in the first two dimensions. This questionnaire is approved by expert validity test; 3 experts and 3 teachers reviewed the agreed on the content. The Learning Satisfaction Questionnaire is compiled based on the work of Wang (2002), Wu (2005), and Yang (2001), covering 5 categories of teaching method, learning quality, learning interaction, learning evaluation, and reflection on learning. The WebQuest Learning Opinion Questionnaire is developed based on the work of Chen (2005) and Chen (2010), containing four dimensions of teaching website design, WebQuest structure, reflection on WebQuest learning, and cooperative group learning. The Microsoft Live@edu is a free platform of educational assistance and communication, with various services and applications like E-mail, skydrive, calendar, document sharing, blogging, instant communication and grouping.

### 4. RESEARCH RESULTS AND ANALYSES

The data analyses of this research show the following results. The students' disaster prevention knowledge mainly comes from their school teachers (28.7%), followed by the Internet (22.3%), family and relatives (16.0%), TV and movies (14.9%), extracurricular reading (12.2%), and classmates and friends (5.9%). In terms of the teaching method, in the first teaching unit of earthquake, the results of students' learning achievements between the experimental group (M=66.21) and control group (M=68.25) do not show significant difference (F=0.006, p=0.938>0.05). In the second unit of typhoon and flooding, after excluding the pre-test impact effect, the experimental group has a slightly higher mean value (M=70.97) than the control group (M=67.917); however, there is no significant difference in the learning achievements between the two groups. In the third unit of mudslide. The result of the experimental group's learning achievements (M=71.613) is higher than that of the control group (M=59.73), and there is a significant difference between the two groups (F=12.196, p=0.001<0.05). These results indicate that after excluding the entry behavior difference of the two groups, there is no significant difference in learning effectiveness between the two groups for the first two teaching units. For the third unit,

however, a significant difference in the learning effectiveness between the two groups is found, indicating that WebQuest teaching obviously outperforms the traditional teaching up to the third unit. Besides, WebQuest teaching does not result in significant difference in learning achievements from the traditional teaching is inconsistent with that of Li (2002) and Cheng (2005). The reason for this finding may be due to the fact that the teaching hours are fewer in this study.

The statistical results indicate that there is a significant difference in the students' learning retention test between the information technology integrated instruction and traditional instruction. This shows that the WebQuest teaching in experimental group has created a lasting effect despite the short teaching period, leaving an impression of disaster prevention knowledge on the students. This finding is consistent with that of Chen (2009) and Su (2012), which states that IT integrated instruction outperforms traditional instruction in terms of students' learning retention. Through IT-aided teaching lessons, learners are initiated into using, analyzing, combining and evaluating information, activating deeper thinking and internalizing the learning content to store it in the long-term memory, hence the better learning retention.

The analysis of the disaster prevention literacy questionnaire shows the following results. In the category of disaster prevention knowledge, the experimental group obtains a t-value of 14.039 ( $p=.000<.05$ ), reaching significant standard. The result is significantly different from the test value of 3, indicating that the experimental group's knowledge acquirement is well above par. In the category of attitude toward disaster prevention, the experimental group has a t-value of 10.431 ( $p=.000<.05$ ) with the result significantly different from the test value of 3, showing that the experimental group displays a positive and active attitude toward disaster prevention. In the category of disaster prevention skills, the experimental group acquires a t-value of 6.303 ( $p=.000<.05$ ), with the result significantly different from the test value of 3, which suggests that the experimental group demonstrates aggressive response to skill attainment. The t-value of the students' total scores in this questionnaire reaches 12.237 ( $p=.000<.05$ ), significantly different from the test value of 3, indicating that the experimental group's overall disaster prevention literacy is well above par. In summary, the experimental group's achievements in both individual categories and total scores are well above par, with only one exception in the category of the attitude toward disaster prevention. The result of the question item that "I want to learn about how other countries carry out disaster prevention work" does not reach significant standard ( $p=0.054$ ), indicating that the students are less concerned about international affairs. Nevertheless, the one-sample t-test results of the other question items in this questionnaire all reach significant level. This demonstrates that the experimental group is concerned about the disaster victims and the environment, adopts an active attitude toward disaster prevention in daily life, and is willing to accept the disaster prevention teaching from the school and government. Through WebQuest website teaching, teachers can enable students to learn at their own pace and heighten their learning motivation by introducing multimedia into enriched content. The IT-integrated instruction creates a virtual reality environment for learning that can't be emulated by traditional teaching.

In terms of the learning satisfaction of the experimental group, the t-values for the five categories of teaching method, learning quality, learning interaction, learning evaluation, and learning reflection are 13.151, 11.453, 8.913, 10.205, and 10.909, respectively. All reach significant standard ( $p=.000<.05$ ) and are significantly different from the test value of 3, showing a great level of satisfaction on these dimensions. The total scores of this questionnaire obtains a t-value of 12.368 ( $p=.000<.05$ ), indicating that the experimental group is highly satisfied. In addition, there is no significant difference between the students' satisfaction with the WebQuest website design and the test value of 4, which suggests that students' satisfaction scores average about 4 in this category, except for the question item that "I think the WebQuest teaching website is perfect and needs no improvement", whose score is lower than the average. The findings from the student interviews reveal that the video clips are good but take too much time to load (S03), the website can be more animated (S04), too much text makes the website too difficult to read (S07), and the WebQuest website link can be placed in the class's homepage.

## 5. CONCLUSION AND SUGGESTIONS

### 5.1. Conclusion

The results of the study show that the experimental group and control group have reached a significant difference in both the immediate learning effectiveness and the retention of learning achievements. Besides, the experimental group performs better in disaster prevention literacy, is satisfied with learning activities and has positive feedback on WebQuest teaching. It is also observed that WebQuest instruction motivates the students to be active learners and to develop cooperative learning and improve interpersonal relationship and communication skills through group discussion. The students also express a high level of satisfaction with the learning activities. WebQuest integrated instruction is a new learning method for students. Benefits will be evident to students once they get accustomed to it. With well-designed lesson plans, the WebQuest teaching can bring valuable diverse learning experience to students and enable them to tap into their own information literacy, turning them into active learners.

Compared with traditional instruction, the WebQuest teaching is well received by the students, who are highly satisfied with the learning activities and have acquired a great sense of accomplishment. They become active learners, are able to obtain more knowledge, and are willing to apply WebQuest teaching to other fields of study. One vital element in the design of WebQuest teaching is division of labor among peers through cooperative learning, which allows students to complete their assigned tasks based on their own abilities so as to enhance their learning motivation and sense of accomplishment. By integrating diverse teaching strategies, teachers can not only boost students' learning interest but also improve their teaching quality.

### 5.2. Suggestions

For future studies, researchers may look extensively into related literature on WebQuest so they can follow the five FOCUS principles to customize their WebQuest teaching websites and activities that both meet their teaching objectives and suit students' abilities. Besides, the experiment period may be lengthened to one semester to ensure that more stable patterns of change in students' knowledge, attitude and behavior can be observed. Furthermore, WebQuest disaster prevention education can include field trips that tap into local resources and environment characteristics. This way students' motivation and learning effectiveness may be strengthened.

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4<sup>th</sup> International Conference on New Horizons in Education

# Effects of applying blended teaching approach to English sentence translation for vocational high school students

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## Abstract

This study aims to explore the effects of applying blended teaching approach to English sentence translation for vocational high school students. This study adopted quasi-experimental research design with 9-week traditional and blended teaching sessions for two classes of students. Learning attitude questionnaires for pre- and post-teaching sessions, learning satisfaction questionnaire, interview, pre- and post-tests, and students' records were analyzed by ANCOVA, one-sample t-test, and paired t-test. The results of the study show that there is no significant effectiveness found in the blended-teaching group. Also, the students in the blended teaching group show significant learning satisfaction than those in the traditional teaching group. Finally, there is significant difference found in learning attitudes among the two groups of students.

Keywords: blended teaching, learning attitude, learning satisfaction, vocational high school students

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## 1. INTRODUCTION

The traditional, face-to-face classroom teaching has long seen problems such as students lacking motivation in learning. However, with the development of technology, students now can learn English through various media. Among these media, the Internet is the most influential and changes the learning patterns. Thus, blended teaching method, which combines the traditional face-to-face teaching and learning through the Internet, appeared (Taradi, Taradi, Radić, & Pokrajac, 2005). A number of tools are available for students on the Internet, such as Moodle, weblog, and Face Book. These tools allow users to post messages on the platform with having to design a web page. Given its ease of application, they are commonly used among student communities. This study therefore investigates students' learning effect, learning attitude, and learning satisfaction toward a blended teaching that employs a weblog as a platform for teaching English sentence translation.

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## 2. LITERATURE REVIEW

Blended teaching is a method that combines on-line teaching with traditional class teaching (Garrison & Kanuka, 2004; Ayala, 2009; Shih, 2010; Lou et al, 2012). More specifically, in this method, part of the classroom teaching is replaced by net activities (Albrecht, 2006). There are many advantages of blended teaching. Hiltz (1994) compares virtual classroom with traditional teaching and indicates that in the teaching conducted through the net, learners have more frequent and versatile interactions, and the learners have more opportunities of discussion. Kleinman and Entin (2002) also states that students who use on-line learning are more positive in giving feedbacks to peers. Singh (2003) points out that blended learning not only provides more flexible combinations and choices, but also brings about many benefits.

Weblog is a net tool that is free, easy to use, and can be readily adopted in learning, communication, content management and personal publication (Wang, Fix, & Bock, 2005). Moreover, weblogs can enhance learners' expression, feedback, thinking, and sharing, hence offer the opportunities of self-expression and self-reflection (Topping, 1998; Oravec, 2002; Brescia & Miller, 2006; Ferdig and Trammell, 2004), and increase communication between learners and instructors (Supyan et al, 2010; Shih, 2010). Given these advantages of weblogs, this study thus employs weblog as the platform of instruction and conducts blended teaching on English sentence translation in order to investigate the learning effect and learning attitude of vocational high school students in studying this subject.

## 3. RESEARCH DESIGN AND IMPLEMENTATION

This study adopts a design of quasi-experimental research. The subjects are a class of second-year students in a comprehensive high school in Taiwan. The experimental group consists of 38 students from Food Processing Program, and the control group contains 38 students from Food Service Program and Arts Program. The students are divided into groups of three. The experiment takes nine sessions of instruction on English sentence translation. The experimental group receives blended teaching, whereas the control group receives traditional teaching. Before the experiment, questionnaires on learning effect and learning attitude of English sentence translation are conducted on both groups. After the experiment, questionnaires on learning effect, learning attitude, and learning satisfaction are again conducted on both groups.

The collected data are analyzed by Kendall Coefficient of concordance to ensure the consistency of evaluation. The Kendall's W value of the control group is .987,  $p=.000<.05$ , while the experimental group's Kendall's W value reaches .971,  $p=.000<.05$ , indicating the three teachers are highly consistent in evaluation. The questionnaire on learning attitude is approved by expert validity test; three experts and three experienced English teachers review and agree the content. The learning attitude questionnaire is divided into three dimensions: cognition, emotion, and behavior. The questionnaire on learning effect is also reviewed and approved by expert validity test. The learning effect questionnaire is divided into 4 categories: opinions on peers' feedback, opinions on teacher's feedback, opinions on the process of studying English sentence translation, and opinions on the overall learning method. The weblog, which is set up at Wretch, includes functions such as composing, giving feedback, posting pictures, uploading audio files, uploading video files, posting messages, etc. The analyses of this study contain both quantitative data and qualitative data. Quantitative data include descriptive statistics, one-sample t-test, and paired t-test. Qualitative data contain instruction records and content of post-experiment interviews. The quantitative and qualitative analyses are used to collaborate with each other in order to understand the influence of different methods on vocational high school students' learning effect and learning attitude toward studying English sentence translation.

#### 4. RESEARCH RESULTS AND ANALYSES

The data analyses of this research show the following results. Most of the students use computers 1 to 3 hours. Most of them post messages on the weblog every two or three days, and the majority visits other teams' sentence translation work twice a week. Moreover, the content of the messages posted on the weblog belongs to the categories of sharing the processes of sentence translation practice, sharing questions and problems, learning experience of group discussion, and encouragement and support to classmates.

Comparing the learning effect of the two groups of students reveals that there is no significant effectiveness found in the blended teaching group. This research result is inconsistent with that of Yu (2008) and Singh (2003) stated that blended learning improves learning effect compared with traditional learning. The reasons for this research result may be due to the fact that students are not tested on English sentence translation in the entrance exam, so they consider such skill dispensable, or even not worth learning. In addition, vocational high school students are fundamentally poor in English, and it is difficult to enhance students' ability in sentence translation with only 9 sessions of experimental teaching. As a consequence, there is no significant difference in the learning effect between the two groups.

The comparison of learning attitude toward translation course of the two groups indicates a significant difference. The learning attitude of the experimental group between the questionnaires for pre- and post-teaching sessions shows a difference of p value of .000, indicating the two groups have reached the significant difference, whereas the control group's learning attitude obtains p value of .213, indicating that the experimental group has significant difference on learning attitude between the pre- and post-teaching sessions but the control group.

The results demonstrate that applying blended teaching to vocational high school English translation course does have positive effect on students' learning attitude. This finding is consistent with that of Miyazoe and Anderson (2010), which asserts that blended learning has positive influence on students' learning attitude, and also with that of Ferdig and Trammell (2004) and Wang (2009), which declare that teaching with weblogs can improve students' learning attitude.

Student's learning satisfaction is assessed by a questionnaire compiled by the researchers. The questionnaires were analyzed by one-sample t test. The statistical results show that the control group does not reach significant satisfaction on peer feedback, teacher feedback, sentence translation processes, and overall opinions on the teaching method. And the total scores of learning satisfaction present clear dissatisfaction. On the other hand, the experimental group has reached .05 significant satisfaction on peer feedback, teacher feedback, sentence translation process, and overall opinions on the teaching method, indicating the experimental group is satisfied with all these categories.

These results corroborate the findings of Kleinman and Entin (2002) and Miyazoe and Anderson (2010), which state that blended learning promotes students' learning satisfaction. These results also agree with the findings of Ducate and Lomicka (2005), Wang (2009), and Shih (2010), which mention that using weblogs as the teaching platform can enhance students' learning satisfaction.

This research observes that the students interact enthusiastically and accept others' suggestions with an open mind. Their interactions with the teacher are also active and positive, and the learning effect is better than through traditional learning. Moreover, the platform of weblog motivates students to study and to practice often, consequently leading to the improvement of English translation skills. In conclusion, students prefer learning English sentence translation through weblogs than through the traditional teaching method.

## 5. Conclusion and suggestions

### 5.1. Conclusion

This research discovers that the experimental group and control group show no significant difference in the learning effect of sentence translation, which is inconsistent with Singh (2003) and Graham (2004), which believe that blended learning can effectively promote learning effect. On the other hand, this research notices that in blended teaching, students can practice English sentence patterns on the weblog and look up the answers on the Internet when they encounter difficulties. Consequently, students of the experimental group steadily become more confident in English sentence translation and are more interested in writing. Furthermore, students under blended teaching can ask questions any time during the teaching process and make corrections instantly on the weblog. As a result, learning attitude is improved. This finding agrees with Miyazoe and Anderson (2010), Ferdig and Trammell (2004), and Wang (2009), which point out that blended learning has positive influence on students' learning attitude, and that teaching with weblogs can improve students' learning attitude. Moreover, this research observes that students show better learning satisfaction when learning English sentence translation with blended teaching method: students interact actively, and accept others' suggestions with an open mind; their interactions with the teacher are also active and positive, and the learning effect is better than through traditional learning; furthermore, the platform of weblog motivates students to study and to practice often, consequently leading to the improvement of English translation skills; students prefer learning English sentence translation through weblogs than through the traditional teaching method. These observations corroborate the findings of Kleinman and Entin (2002), Miyazoe and Anderson (2010), Ducate and Lomicka (2005), and Wang (2009) that blended learning promotes students' learning satisfaction, and that using weblogs as the teaching platform can enhance students' learning satisfaction.

### 5.2. Suggestions

For future studies, researchers may include more group discussion and teacher's feedback in addition to course instruction. Some talented students may be able to solve problems by themselves, but most students do need assistance in the process of learning. Thus, the teacher needs to closely observe students and provide timely help and encouragement. Moreover, students need more assistance at the beginning of the experiment, so the teacher may have one or two teaching assistants to help solve students' problems, since the sooner the students solve their problems, the more significant their learning effect.

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4<sup>th</sup> International Conference on New Horizons in Education

# Effects of computer technology on formation of illustrations in children's books in pre-school education and application example on educational aspects

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## Abstract

By the development of technology, ready patterns and characters through computers have replaced the original pre-school children's books illustrations. It has been seen as a problem that these illustrations aren't suitable for pre-school children's cognitive, social, linear, visual development. Document review on qualitative research method is used in research. 10 children books of various publishers in Turkey illustrated on computer media and 10 children books written and illustrated on computer media by 4<sup>th</sup> class students of Education Faculty's Graphic Branch are examined, appropriateness of illustrations have been put forth by a data collecting material-13 criterion and expert opinions. In the study, it is concluded that the necessity of taking the views of experts and giving task to expert illustrators in the preparation of children's books in computer media.

Key Words: Keywords: illustration, pre-school, art education

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## **Introduction**

After the industrial revolution technology affects all areas such as developing a revolutionary impact on graphic arts. This affect caused graphic artists' well tracking of technology, so creativity, design power, hardware synthesis of the aesthetic use of the computer environment has become compulsory. Graphic programs are not only equipment used by graphic artist in the production; they are creative to support design. Conscious using of graphic programs which have significant role on the artists and the art works is very important, they should be support the artists not dominating. Graphic artists made by hand their original illustration designs which are in graphic design areas, began to make the computing environment of today and made up with the technological developments. Many illustrations made by artists are belongs to children's story books for the period 0-6 years. Children of this age period learn to recognize by looking, touching, smelling before reading and talking. Considering that the close relationship between seeing and learning, It is an unavoidable reality that the story books which are good illustrated and proper language expressions have an important place in the lives of children in this age group. Besides good language expression suitability of illustration, the choice of the appropriate character size, the use of suitable materials and book cover pages, harmony between the page arrangement and illustrations are very important criteria. In this study, document analysis and the data collection material is prepared according to the criteria mentioned above

## **Problem**

By the development of technology predefined templates prepared on computer and carelessly drawn illustrations are taken placed instead of original illustrations made in the hands of artist's. When we think the contribution of illustrated children's books to preschool children's cognitive, social, linear, aesthetic, it is seen as a problem, some illustrated children's books published by various publishers in Turkey by using graphic programs for the ages of 0-6 illustrated not suitable for children in this period not suitable for children in this period in accordance with the illustrations and layouts of these books.

## **Purpose**

In research; demonstration the affects of children's books between the ages of 0-6 illustrated on computer environment to the child's life, demonstration the required qualifications of illustration which is submitted to children whose aesthetic and visual accumulation, skills developed during this period, and drawing attention to families are aimed. Also making example illustrated children's books appropriate to the development of children between the ages of 0 to 6.

## **Sample and Limitations**

This research is limited to 10 children's books selected from various publishers which published in the academic year 2012-2013 in Turkey, have been illustrated on computing environment. Also it's limited to 10 children's book for the period of 0-6 ages which stories written and illustrated by fourth graders Graphic Arts Department of Marmara University, Ataturk Faculty of Education. Examples are examined and evaluated by persons who trained on this area. Research data are limited to findings obtained from data collection material prepared by researcher.

## **Definitions**

In research, selected books of various publishers in Turkey is defined as I. GROUP BOOKS books made by Graphic Arts Department's students is defined as II. BOOKS GROUP BOOKS.

## Method

Document analysis method among qualitative research methods was used in this study. Document review, research, analysis of written materials that contain information about the targeted cases and covers subjects. Examination of the document as a standalone data collection method may be used in combination with other methods of data collection (Ali Yıldırım, Hasan Şimşek, 2006). Documents for research essay are done, data collection material prepared (table 1). 13 questions are determined for creating data collection material by the researcher. After determining the questions, it is requested to evaluate the books to two groups to 10 persons expert in the field by using the survey forms. Data collection material used three options to yes-partly-no. Descriptive analysis technique is used for statistical analysis. The qualitative data obtained from each of the experts based on their responses to a question tabled by specifying frequencies and percentages. The data obtained for this purpose, first a systematic and clearly depicted, described and interpreted in the descriptions and conclusions reached examine the relationship between cause and effect. Descriptive analysis is often included direct quotations (Ali Yıldırım, Hasan Şimşek, 2006). The data were classified according to the results of research in the light of the preliminary information obtained as the stages of data collection can be arranged (Remzi Altunışık, Recai Coşkun, Engin Yıldırım, Serkan Bayraktaroğlu, 2001).

## Solution of Data

Table 1 Questions and Answers of Research

QUESTIONS	BOOKS	ANSWERS (NUMBER)			ANSWERS (%)		
		YES	PARTLY	NO	YES	PARTLY	NO
1. Is the illustration on the book cover interesting?	I. Group Books	36	40	24	36%	40%	24%
	II. Group Books	63	37	0	63%	37%	0%
2. Is the emphasis used in appropriate place?	I. Group Books	44	36	20	44%	36%	20%
	II. Group Books	67	33	0	67%	33%	0%
3. Is the movements of characters (gestures, facial expressions, emotions, etc.) are reflected in right way?	I. Group Books	37	46	17	37%	46%	17%
	II. Group Books	73	25	2	73%	25%	2%
4. Are illustrations carrying artistic concerns?	I. Group Books	29	38	32	29%	38%	32%
	II. Group Books	60	30	10	60%	30%	10%
5. Are the colors of illustrations inner, intuitive and creative?	I. Group Books	40	35	24	40%	35%	24%
	II. Group Books	63	31	6	63%	31%	6%
6. Are illustration technically integrated with text and is technique sufficient for the age group?	I. Group Books	34	44	22	34%	44%	22%
	II. Group Books	75	23	2	75%	23%	2%
7. Is the template elements draw attention in figures created in computing environment?	I. Group Books	41	33	24	42%	34%	24%
	II. Group Books	7	40	52	7%	40%	53%
8. Are there careless iterations (copy-paste) on illustrations elements?	I. Group Books	36	30	33	36%	30%	33%
	II. Group Books	8	30	60	8%	31%	61%
9. Does the page layout aesthetic and appropriate to age group?	I. Group Books	31	37	30	32%	38%	31%
	II. Group Books	82	17	1	82%	17%	1%

QUESTIONS	BOOKS	ANSWERS (NUMBER)			ANSWERS (%)		
		YES	PARTLY	NO	YES	PARTLY	NO
10. Are the illustrations compatible with the text content?	I. Group Books	48	37	15	48%	37%	15%
	II. Group Books	88	9	3	88%	9%	3%
11. Do the illustrations support language development?	I. Group Books	40	41	19	40%	41%	19%
	II. Group Books	66	33	1	66%	33%	1%
12. Do the illustrations develop the child's imagination and creativity?	I. Group Books	35	41	24	35%	41%	24%
	II. Group Books	62	35	2	63%	35%	2%
13. Do the illustrations develop child's aesthetic point of view?	I. Group Books	38	26	36	38%	26%	36%
	II. Group Books	67	28	3	68%	29%	3%

## RESULTS AND COMMENTS

For two group book, in accordance with the answers to data collection material it is analyzed, graphical editing and percentiles are made, given with comments.

## EVALUATIONS

### Question-1 Is the illustration on the book cover interesting?

Looking at the conclusion, book covers of the first group of books is found interesting by 24% and found partially sufficient by 40%. Proportioning on the first group children's books issued by publishers prepared on computing environment shows us the need of careful examination of books by expert persons. Because children who can't read the book will look to the cover of the book and will be attracted by magical atmosphere of the story. Children with this illustration will gain insight about the book first without knowing the contents of the book. For this reason, the cover picture should outline the content of the book (Alev Sınar Çilgin, 2007). The second group of books, book covers is found good at a rate of 63% and found partially sufficient at rate of 37%, this shows us when designing a book cover, training in this area is necessary. Book cover illustrations are as important as those inside the book. When designing on computer environment by taking into account physical characteristics of children between the ages of 0-6 and aesthetic values, the title, the illustrator's name, publisher's name and age group is important to note. Should be noted that this is an element of their design.

### Question-2 Is the emphasis used in appropriate place?

Looking at the conclusion, emphasis isn't used in appropriate place by 20%, partially used 36% and used in a good manner by 44% in first group books, this shows us in illustration made in computing environment, there aren't adequate relationship between illustration and text, designer cannot reflect his/her emotions and artistic viewpoint by his/her drawings, graphics programs not used carefully. Emphasis used in appropriate place answer is given by 67%, and partially used answer is 33% in second group books. Various / different illustration expressions for the child a chance to plunge into a new world, and thus expand the possibilities of the imagination means (Cem KARA, 2012). The designer creates the movement element by the help of the visual

elements and ensures mobility of element by the emphasis. Emphasis makes intensifying interaction by continuous movement with interruptions and explosions. Suitable and proper emphasis facilitates transmission of the message and provide permanence of information (Serpil Gvendi Kaptan, Ata Yakup Kaptan, 2004) Illustrators have been trained in this area who know the computer programs in accordance with their capabilities available to their comments by using artistic styles with the emphasis on aesthetic values will provide opportunities for enriching children's imaginations. Illustration drawn in the event of the child at the forefront of important items to establish the relationship between image and text, making it easier intensify attention provides easier. (Glseren Tr, Aye Turla, 1999)

**Question-3 Is the movements of characters (gestures, facial expressions, emotions, etc.). are reflected in right way?**

Looking at the conclusion, the first group of books, the result is presented as characters in the illustration reflected properly by 37%, reflected partially by 46% no reflected by 17%, this shows us by the movement of the created characters is so much ignored as a result. However, movements, postures, gestures and mimics the characters create a hero in every child's dream of the period; analysis to sketch the necessity of a solid phase should be done before developing in the computer. Creating the original characters on stage of computer is in the hands of the illustrators. The answers received from the second group books, slice of the answers given importance to the movement of the characters by 73%, partly taken into account by 25%, not taken into account by 2%. Students who illustrate this group books make character analysis and sketch figures from the front, side, rear postures as well as crying, laughing, as emotionally behavior reflected before creating character and prepare illustrations by paying special care to space relations and embody characters through the eyes of the child. According to the results when illustrator is competent on graphic programs, illustrator is reached success in using his own style and enriches the child's imagination. Pictures cases, the existing lines to express mobility make it easy to establish a relationship between image and text. Still pictures almost a motion photos or event doesn't express the viability is not suitable for little children. (Glseren Tr, Aye Turla, 1999)

**Question-4 Are illustrations carrying artistic concerns?**

Looking at the conclusion, the responses of first group books are that carry artistic concerns by 29%, partially by 38%, don't carry artistic concerns by 32% ratio. This situation can be seen as a result of the first group books causes a negative impact on dream force, aesthetic and artistic point of the improvement of preschool children. The responses of second group books are carrying artistic concern by 60%, partially 30% and not carrying artistic concern 10%, this can be indicator of students trained in this area uses graphic programs creatively in illustrations and thus their works are successful and carries artistic values for children between ages of 0-6 age thanks to giving importance to artistic values and avoid from commercial concerns. Illustrations lends an aesthetic child at a young age, learning accelerates or slows down according to the nature of the illustration. Faced illustrations of children in this period, the child must lead to spectacular painting. These illustrations are expected improve the capabilities of detection, day dreaming, a sense of beauty, socialization, information and entertainment in children (Serdar Tuna, 1997)

**Question-5 Are the colors of illustrations inner, intuitive and creative?**

Using of colors has been found inner, intuitive and creative by 40%, partly creative by 35% and not creative by 24% in the first group books. When we look at rates in the first group books it is given importance to expressive power of color, even if. Using of colors has been found creative by 63%, partly creative by 31% and not creative by 6% in the second group books. Colors are highly intuitive, inner and creative at child paintings (Şahika Çağlar Özünel, 2000). If we take into consideration the situation, it should be noted that use of color in child books will help child to face a different perspective. Harmony and unity between colors is very important in using many colors together as stated by Tür and Turla. The use of color shouldn't be forefront of line, and colors and lines should form a whole. Vivid colors, should be compatible with the fund, and must not allocate attention (Gülseren Tür, Ayşe Turla, 1999). Such an explanation and sincerity of author, however, may contribute to the development of creative and aesthetic of readers.

**Question-6 Are illustration technically integrated with text and is technique sufficient for the age group?**

Integrity of illustration with text has not been found sufficient by 34%, partially found by 44% and found by 22% in the first group books. In this situation, it can be concluded the first group books prepared by computer graphics programs aren't appropriate technically to the level of creativity of children, don't paid attention between the technical and the text used to capture the atmosphere. Books in the second group, 75% by creating technical illustrations integrated with the text, 23% partially and 2% not. It can be concluded that trained students can combine technique by their ability to match their own artistic interpretation of the text books. The most important advantages of the work of the computer imparted illustrator, evaluation and modification of the arrangement of colors as soon as possible to make lots of income. In addition, the software used in almost every way, and this software is able to adapt to the illustrative work can bring an unlimited choice of artistic creation. Software used in the basic drawing tools (airbrush, pencil, brush, etc.) and the use of computer technology in terms of reserves located brings some advantages (Nihan Sarı, 2006). It should be noted that a negative effect on the artistic development of children's benefits when it is not used carefully.

**Question-7 Is the template elements draw attention in figures created in computing environment?**

Template elements draws attention has been rated by 41%, partially by 33% and not by 24% in the first group books. This can be concluded as some template elements used from place to place in illustrations. Facilities provided by the computer should be use carefully; illustration artist interpretation should take precedence. Composition is a system bought together elements in the context of the basic principles of design. There is a bond between character and event around in children's books, in this sense, the place of the character in the composition is also important. By taking account location, scale and proportion of the character in sketches in the integrity of the composition, determination of dimensions of the points still need to be considered by the designer truthfulness. The child's love the character created, following with great interest totally depends on the conception and creativity. (Halime Özge Mardi, 2006). Therefore, the composition sketch stage, the relationship between the text formats, aesthetic values should be considered. In the second group, the items are encountered templates of 7% and 40% partially encountered, conscious not to have 52% of the items in good hands templates can be seen as necessarily a result of the computer correctly.

**Question-8 Are there careless iterations (copy-paste) on illustrations elements?**

In the first group books, drew attention to the careless iterations 36%, 30% is partially careless iterations, no iterations rate of 33%, as a result it can be concluded there is an occasional careless copy-pastes and use of unnecessary duplication. In the second group book careless iterations drew attention to the rate of 8%, 30% is partially careless iterations, and no iterations to the rate of 60%, as a result in sketching stage of students trained in this area resolved creativity, resolving design by taking into account the children's artistic development, the form of each element forming part of the composition of the text elements that capture the atmosphere of integrity and avoidance of unnecessary duplication that can be seen in the illustration.

**Question-9 Does the page layout aesthetic and appropriate to age group?**

In the first group books, the page layout is appropriate to age group by 31%, partially appropriate by 37%, isn't appropriate to age group by 30%, so as a result, the child's age group is not addressed, relationship between text, images that holds page layout is not observed. These books are available on the market with commercial concerns, increasing restrictions on page arrangements, efforts to save paper, revealed moderate, not suitable for the child's age level, can be called mediocre shows that are placed on the shelves of books. In the second group books, the page layout is appropriate to age group by 82%, partially appropriate by 17%, isn't appropriate to age group by 1%, as a result children's books is more than just illustrations, size of the book and page arrangement are also carried importance, illustration with computer graphics, layouts using programs should be considered as an element of the composition. Not only the illustrations, paper quality, page size, fonts, blocks the effect of manuscripts, the cover arrangement should be given importance, in particular should not errata (Şahika Çağlar Özünel, 2000).

**Question-10 Are the illustrations compatible with the text content?**

The first group books, the text content is compatible with by 48% illustrations, is partially compliant by 37%, is not appropriate by 15%, as a result we see generally done illustrations appropriate to the content of the text. In the second group the books, illustrations of the text content is compatible by 88%, are partially compliant 9%, to be incompatible by 3% as a result of students trained in this field sketching phase resolve the relationship between text and image and they are conscious of the artistic values, give attention even illustrated in computer environment. The vivid colors, drawings' aesthetics increase the interest to works. However, the issues to be reflected in the first degree by means of illustration, text - image relationship are most important factor in children's books. (Fahrettin Bozdağ, 2000)

**Question-11 Are the illustrations compatible with the text content?**

The first group of books, illustrations support the development of language rated by 40%, partially sufficient rated by 41%, isn't sufficient rated by 19%, as a result, books illustrations are partially sufficient, Illustrations of books published in the market is not qualified to support the language of the child, illustrations are not qualified to develop language skills for the child who is illiterate yet and signifies pictures by looking. In order to aid the development of the language of the book, lavishly illustrated book to be read to children, children to explain the

pictures in the book, answer questions about the book complete half left sentence, explain the book was left unfinished, and then the owner should be encouraged to summarize their own words. These are ways to stimulate and support of literature for development of children's language literature (Mübecel Gönen, 2005). The second group books, illustrations can support language development by 66%, partly support by 33%, not support by 1%, as a result, we can say students design books in support of the development of the child's language and illustrators are important as text authors. Illustrations have a separate expression language as the text. In other words, pictorial narratives, beyond putting out whatever is in the text, the main idea of the text plan, or overlapping, but it is now located next to the new one with a new and rich narratives or should be. (Cem Kara, 2012)

### **Question-12 Do the illustrations develop the child's imagination and creativity?**

The first group books, illustrations is to develop the child's imagination and creativity by 35%, partially develop imagination and creativity by 41%, don't develop by 24%. According to illustration artist Nazan Erkmekçi: Illustrations for children, written and drawn there, to be the most perfect form of art. For the children write, drawing is very separate art and requires a different understanding. Individuals in stage of development to develop self-confidence are very important. This group of illustrations in books designed in computer is not at the forefront of creative anxiety. Therefore, it can be considered the gains to the child will be more without thinking with commercial concern, so illustrators and publishers of books will develop children's imagination and creativity, so will give an aesthetic point of view. In the second group books, illustrations improve the child's imagination and creativity by 62%, partially improve by 35%, don't improve by 2%. As can be seen nowadays trained illustrators, although an indispensable tool in the field of computer illustration, computer illustrations would make sense in an ingenious intuition and imagination, and is intended to reach. Pictures imagination enriches the child's imagination be included in the elements. Imagination items and fantasies embodies by lines. Thus, children more easily able to establish the relationship between fantasy and real. how much detail given in illustration is important. Illustration should be as simple as to help to establish a relationship between the text and event. If there is a detail in the picture must always be mentioned in the incident. On the other hand a lot of cases, without significant unnecessary details or distract the child and makes it difficult to establish the relationship between image and text (Gülseren Tür, Ayşe Turla, 1999)

### **Question-13 Do the illustrations develop child's aesthetic point of view?**

The first group books, illustrations can improve the child's aesthetic skills by 38%, partially improve by 26%, don't improve by 36%, as a result that illustrations isn't just a picture for the child's understanding of the text, but also an aesthetic point of view as it develops creative thinking is also a duty to bring this group is neglected books. Zafer Gençaydın said the seriousness of the work reveals by "devoid of wisdom knowledge and aesthetics is dangerous, life devoid of aesthetics is primitive and ugly". The second group books; the illustrations that can improve the child's aesthetic ability rate by 67%, improves partially by 28%, don't improve by 3%, as a result trained illustrators use their plastic values of the drawings made in computer is to develop the child's artistic view and this isn't ignored during drawing. When child selects books from the shelves is consciously so should be guided by parents who have knowledge of aesthetics.

## CONCLUSION AND RECOMMENDATIONS

In the first group books it is seen failure in formal specifications, suitability to the text, the artist's interpretation in expressing of the text in compositions, unconscious use of plastic elements (color, color harmony, color contrast, space occupancy, texture, space, rhythm, feeling, comments, etc.) unconscious use of aesthetic values due to the acquisition of absence of an effort, although the characters are important for preschool-age children gesture and expression are not observed, absence of necessary emphasis made on the illustration for complete understanding of the main idea of the text content and the main idea, less attention to the cover of book which is a statement that described in the book and also an advertisement item, graphic programs isn't use in technique which is very important for expressing the subject in illustrations, although the layout of the book illustrations should be carry as much as aesthetic values made as haphazard arrangements, not given enough attention of illustration reflect the text, adjusting to the content of the text, proper selection of the colors used in the text. In this case, pre-school children's books are preparation carelessly, caution should be taken in this regard arises.

In the second group books, it is seen illustrations drawn parallel to the text is associated with the text, all considered with emphasis on composition and on-site as part of the expression is used, the characters need to be in place as part of a narrative using gestures, draws attention to the book cover illustrations, page layout, text, images used at the relationship between aesthetics, art books as a whole places great emphasis on aesthetic values used carefully, reached purpose by books made in computing environment by the use of technique and appropriate use of purpose of graphics programs to the level of children.

## RECOMMENDATIONS

In various publishing houses on the market for the period of the pre-school in computer books observed, illustration problems. These books which has commercial concern, have problems such as sizes and the layout of the page and the print quality issues, and for these reasons, careful preparation of children's books publishers, received the support of expert illustrators and children's pedagogues is to be observed. Preparing and illustrator should be work together in stage of preparation; it is recommended illustrator may think illustration and layout together, if possible. This people for being adequate in the field are required to follow computer programs and technology, changes in the graphics area, the child's developmental stages, the developments in the field of contemporary artistic values and development on their field.

Illustration shouldn't be done by every person who knows about computers. Approaches like "all who know the graphics programs can make this job" is wrong, trained in the art also important besides knowing the program. For the development of pre-school children's creativity and imagination illustrators should give importance to aesthetic values for the development of gaining artistic eye, should give importance to the relationship between text and illustrations for the child's language development. To raise awareness of parents it should be organized seminars, conferences, issuing articles in children magazines.

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# Effects of total quality management on teachers and students

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## Abstract

In educational establishments, a study has been done on the results of Total Quality Management (TQM) between student and teacher. Training prudential students in company with a coherence and solidarity by the educational establishments, which play a part in forming of the public, will be possible only by training in line with the expectations of students and the public. TQM (Total Quality Management) has a great contributory in forming of this education system. Adapting to TQM (Total Quality Management) will make important changes in classroom. By the help of this method, the communication distance between student and teacher will disappear. Therefore, student and their self-confidences will increase within guidance. For TQM (Total Quality Management) the thing is to catch the better not the perfect. TQM (Total Quality Management) has important superiorities in development of education system and according to its education that can meet the expectations of the public. It's a more rational process to apply this method in educational establishments than manufacturing sector. When it is compared with traditional education, it's seen that it has more superiority in development of education system and in training of qualified personals who can meet the expectations of the public. TQM (Total Quality Management) creates an opportunity to restore trust of the public to the education system.

Keywords: Total Quality Management, education system, student and teacher;

## 1. INTRODUCTION

Societies that hold the knowledge by human sources will be dominate in centuries to come, it is inevitable. All countries must invest in human sources which will work in goods sector, service sector and information sectors and will keep these sectors alive. Educational institution which sustain this human source is vocational education. Therefore, we have to prepare vocational education to information society by reviewing it once again, in our country.

In recent years, big changes have occurred in the economic field in the world, in parallel with this, changes have been needed in every field of working life in our country too. In this sense, role and importance of the education have increased in the economic, social and cultural development. It has become an obligatory to review current structure and content of secondary education, in particular vocational secondary education.

In our day, there is an intense competition in global market. It's gaining more and more importance to grow man power has the quality to meet expectations of business world in this competition. If education system will fail at growing qualified man power, the price for this failure shall be paid either by enterprises thereby training their available employees with a very high cost, or by society thereby standing for purchasing of goods and services of

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poor quality.

For many years, state institutions and organizations and private enterprises have difficulties with finding personnel is suitable for the qualifications they want. Non-existence of qualified personnel in a country, where most of the young individuals graduated from higher education have become unemployed, results in increasing of the worries about education institutions.

If it is desired to have a dedicated work force with specific skills, concept of quality should be considered and discussed in education institutions, before the enterprises. This is because a quality product and service will be possible only by a good education.

In accordance with National Education Basic Law, law no.1739 and dated 1973, that determines the structure of education system in Turkey, education system is composed of two main parts as formal education and non-formal education. Formal education includes pre-school education, primary education, secondary education and higher education. From 2009, studies have been maintained for raising access to pre-school education of 5-age-group children up to 100%. As for 8-year compulsory primary education, it includes 6-14 age group.

In primary education grade in which different school types don't exist, all students follow general education program. Programs for vocational and technical education don't exist at this grade. After 8-year compulsory primary education, there options are offered. General secondary education, vocational and technical secondary education and non-formal education. Secondary education, in Turkey, aims at young individuals between the age of 14-17. Secondary education, which is raised to four years in 2006, is followed by high education; two-year vocational school of higher education and/or four-year university education. Current education system in Turkey is illustrated on Figure 1 (ERI, 2012).

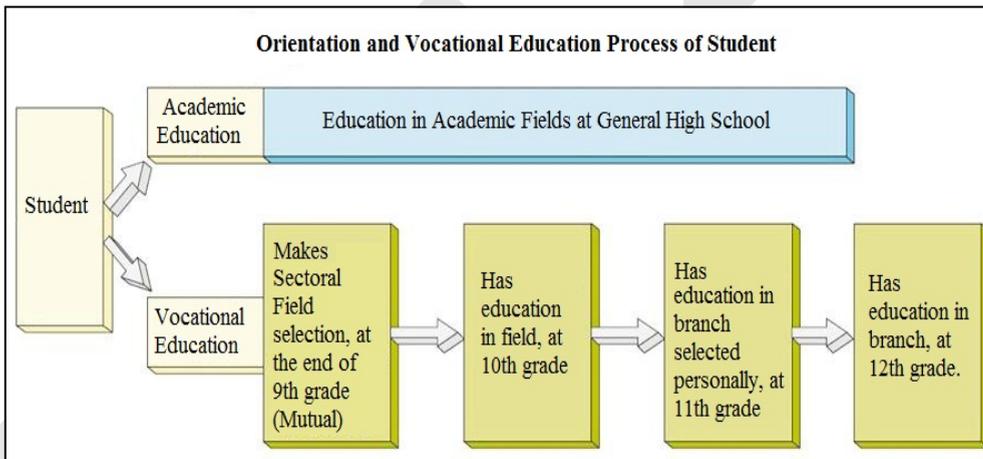


Fig 1. Current education system in Turkey (VTTW 2012).

As you see on Figure 1, student who reaches to secondary education process, goes towards academic or vocational education. No option other than progress in higher education is offered to the students who go to general high school as having an academic purpose, that is way these students go training centers under the current conditions or seek to increase their chances in higher education by taking private lessons. As for students who head towards vocational education, they must have education at the field to be selected or has to be selected

by them and then must begin to work, because their academic education alternative is too low. Due to the education is taken by the students, who take mutual lesson at 9th grade, intended for field at 10th grade and for branch at 11th grade, will be based on determination of their futures, their educational levels must go parallel with current technological conditions. While conventional education model focuses on ability of individuals in reading, writing and calculations of basic arithmetic, the basis of focusing on imagination and design phases of the role of individual in production process needs to be structured on eight key competences, aligned as; 1) communication in native language, 2) communication in a different language, 3) basic mathematics, science and technology competences, 4) digital competence, 5) learning to learn, 6) interpersonal and civil competences, 7) entrepreneurship and 8) cultural expression. Cycle of instruction schedule is illustrated on Figure 2.

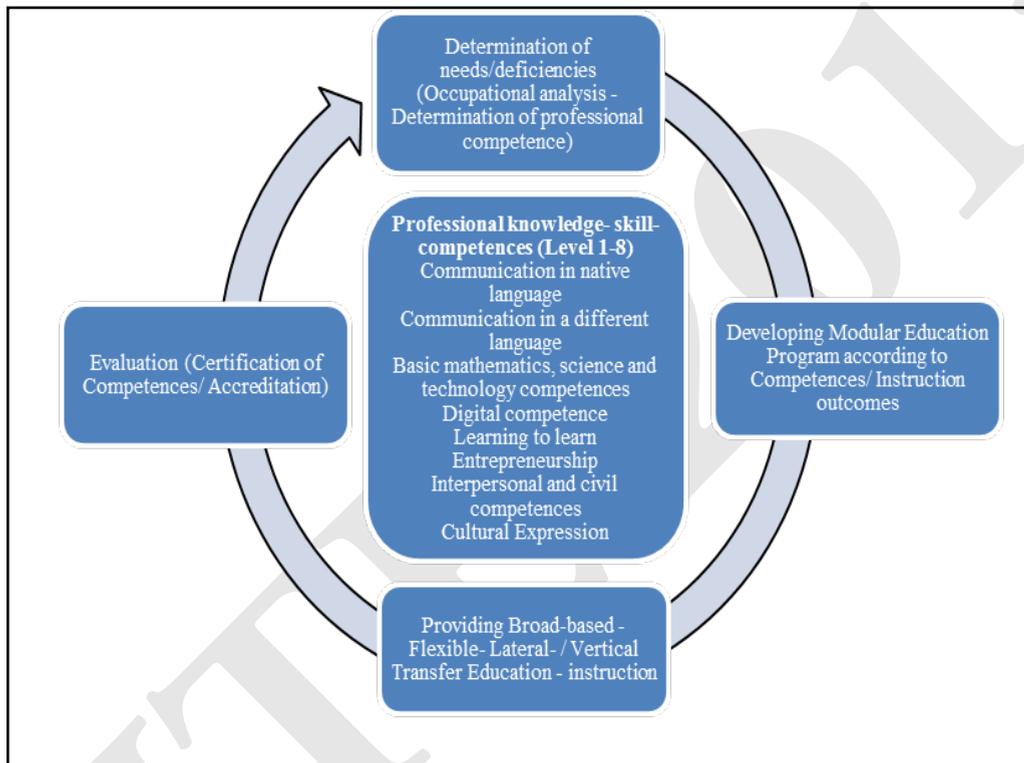


Fig 2. Instruction schedule cycle (VTTW 2012).

Countries have the desire to solve basic problems of vocational education by crossing into models of forming new instruction schedule, need to establish “Instruction Schedule Cycle” firstly. After this stage, a structure that allows education programs to be updated constantly in parallel with market demand, should be added in this cycle. Managements forms of this structure are important as well as its establishment. It should be provided that employee, employer, education institutions etc.all stakeholders work together in order to system can work. It will mean that if one wheel doesn't work, system doesn't work too. These wheels are illustrated on Figure 3.

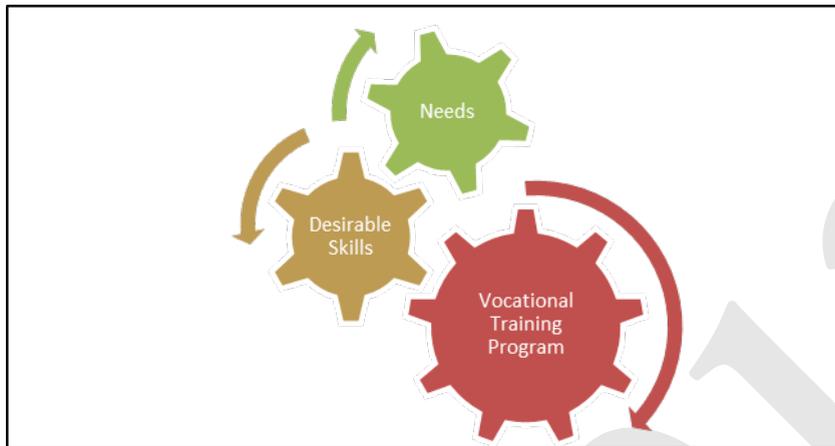


Fig 3. Wheels of Instruction Schedule (VTTW, 2012).

In our country, classical education concept dominates in all education institutions in particular higher education institutions. This concept raises individuals who are greatly passive, with weak character in investigation, without self-confidence, cannot easily accommodate with innovations and change.

In classical education, education activity is generally practiced through a one-way information transfer from teacher to student. As for student, listening silently instead of participating is considered as a proper environment for instruction. In this environment, success is achieved by measuring generally how much of the transferred information is kept in mind? It is not taken into consideration whether the students graduated from universities (outcomes) are suitable for expectations of our clients (society, establishment in which career is built, protectors and even students in person) or not.

In classical education concept, there is almost no information exchange between education institutions and neither “suppliers” nor “clients”. It seems like that success of such a system depends on carrying out how it is planned. As for our “outcomes” are being admired by supreme establishments are in our client position (society, establishment in which career is built, protectors and even students in person) it is not among the worries of education institutions. On table 1, Income, process and outcome concepts in the Conventional Education Concept are illustrated.

Table 1. Income, process and outcome concepts in the Conventional Education Concept (Karabulut, 2004).

Income	Process	Outcome
Student Teacher Classroom, Laboratory Library	Information transfer from teacher to student	Students with information storage

While the reason why desired purposes cannot be achieved in this concept is seen as that the rules are violated, education institutions don't feel the need to cooperate with the establishments where our graduates work, with the protectors and the students in order to enhance the success; and motivation of students and teachers is not important in this concept.

### *1.1 Total Quality Concept in Education*

Access to quality education has been becoming more and more important for Turkey. We should offer, primarily, a comprehensive basic education program to our young individuals in order to they can make their potentials real, participate effectively in social life in the way they want and benefit from employment opportunities are with dignity. Afterwards, we should offer programs that give wider and transferable skills as well as vocational skills within the scope of quality secondary education.

On one hand, while steps are important for enhancing vocational and technical education has been taking, on the other hand, problems are important in many fields, such as access and attendance to secondary education, quality of offered education, general education and vocational education and even quality differences among different vocational education programs, learning level accessed by our young individuals, relationship between vocational education and labor markets, and experiences of our young individuals in working life, attract the attention ERI (2012).

Quality concept has been a subject that was interested too much throughout history and that was born with production relations even though their dimensions are different. Although it is suggested that first records on quality go back to B.C. 2150, existence of the quality as a concept runs across 19th century (Yalçın, 1998).

In our days, it is commonly accepted that quality should be used in all firms and in all fields of firms. Although quality issue has been brought into question by directors of modern organizations more frequently and on a great number of academic and business publication, on media and in education seminars, it is seen in the literature that there is been no agreement on quality subject and quality has been defined in many different ways (Reeves and Bednar (1994). For Reeves and Bednar (1994), quality is defined as "The most important power leading the economic development of the companies in international market"; as for Jüren it is "suitability for use"; as for Crosby it is "suitability for necessities" Tan and Peşkirçioğlu (1991). For Kauro Ishikawa, one of the leaders of Total Quality Management, quality is defined as to develop the product is control-applied, the most economic, the most useful and always consumer-pleasing, and then to make design of it and to produce and to provide after selling services" Deimer (1994). Apart from these, although it is possible to give many definition of quality, the common property of definitions made is that they discuss the quality as the customer-oriented concept Peker, 1993 and Kavrakoğlu, (1996).

Total quality management is a management concept that defines the quality as "suitability for purpose" and that defines the purpose as "requests of client". As being different from the other regimes, total quality management is seen as a regime that can be adapted to structure of any kind of organizations and makes the organizations, which they are adapted, more excellent. It is argued that the most important reason why total quality management is different than the other regimes is that it has a way of thinking which creates the synthesis formed by evaluating the necessities of the establishments in a too different way than conventional approaches, in other words, it has a philosophy. Because it is possible to adapt philosophic properties of quality management to structure of any kind of organization. It is possible to put these philosophic properties in order, as Yenersoy (1997).

#### Main Objective:

- To maintain own entity

- A healthy infrastructure is assurance. In order to provide persistence in quality, management efforts should be supported by a correct work system.
- Customer satisfaction.

Education institutions that play role in forming the society may train prudential students in unity by means of giving education in accordance with the expectations of students and society, it should be prepared an environment to enhance quality of goods and services by training the people as producer and consume. The point is allow the students to realize the necessities that will head them towards developing, constantly. It should be kept in mind that Total Quality Management is a problem solving method that will meet necessities in question. In order to develop qualification of education and to raise success of student, it is required to create the infrastructure that will meet expectations of education organizations, students and society. A studying method that is participative and based on collaboration, should be formed.

A balance should exist between their own qualifications of school directors and teachers and qualifications required by their duties; they should get the most proper behavior in resolving knowledge and skill deficiencies acquired before service, in benefiting from in- service training and in applying new method and new technology. In the rapidly changing world, no education institutions has the opportunity to give knowledge and skills are enough for a lifetime, at once. Countries look over their education systems, constantly, and restructure them in accordance with the conditions of age and today.

Table 2. Student size in general and vocational education (VTTW, 2012).

Years	Total	General Secondary Education	Vocational and Technical	(%) 3/1
1997-1998	2.129.989	1.166.195	963.794	45,2
1998-1999	2.280.676	1.282.605	998.071	43,8
1999-2000	2.316.350	1.399.912	916.438	39,6
2000-2001	2.362.943	1.487.415	875.528	37,1
2001-2002	2.579.819	1.673.363	906.456	35,1
2002-2003	3.023.602	2.038.027	985.575	32,6
2003-2004	3.014.392	1.963.998	1.050.394	34,8
2004-2005	2.949.449	1.937.055	1.012.394	34,3
2005-2006	3.258.254	2.075.617	1.182.637	36,3
2006-2007	3.386.717	2.142.218	1.244.499	36,7
2007-2008	3.245.322	1.980.452	1.264.870	39,0
2008-2009	3.837.164	2.271.900	1.565.264	40,8
2009-2010	4.240.139	2.420.691	1.819.448	42,9
2010-2011	4.748.610	2.676.123	2.072.487	43,6

As seen on Table 2, when statistics of education is examined, it is seen that interest to vocational and technical education increased by 2003-2004 academic year. While total rate of vocational education at secondary education is 32,6% in 2002-2003 academic year, the rate of students of vocational education increased to 43,6% in 2010-2011 academic year, in proportion to students of general education. The main reason why the interest to vocational technical education increased, is explained in several ways. One of them is defined as the increased demand of growing economy to labor. Post crisis, between the years of 2002-2007, average annual growth rate was 7,3. Growing manufacturing industry formed 727 thousand additional employments in the period in question. In growing period, especially in Marmara region, there was a strong demand to vocational high schools, this demand could not be met because of the lack of capacity. Another reason for the interest increase to vocational secondary education is defined as the opportunity of open admission that is provided to MYO (Vocational school of higher education). It is seen that positive and negative effects of open admission will be always an object at issue. As for another reason for the interest increase to vocational secondary education, the reason is the efforts in order to remove the coefficient application by means of government. Both expectations from government in this direction and efforts of government and support given by society to these studies, provide an increase in rate of schooling at vocational secondary education. Although it has been decided to remove the coefficient completely for 2011-2012 academic year, there are worries about that this subject will be delayed for a longer time, because this subject has been brought to trial by politicians, and therefore it causes worries about in preferring vocational secondary education even if just a bit (VTTW, 2012).

### *1.2 Centralist Education System*

Education system is highly centralist in Turkey. Education and instruction entities, programs and curriculums are prepared in center. According to data of OECD, 94% of decisions about education is made at central level, in Turkey. Existence of differences continue among the regions, provinces, districts and schools. That is why charge of central organization has gradually increased over the years; this approach caused development of central staff and gathering teams of experts in Ankara, and moreover, local staffs that are not given authority and responsibility cannot be grown. Therefore, even locally designed projects are obliged to be carried out as center-oriented. Local demands have no impact on the curriculum that is determined centrally. Central curriculum restricts creativeness of teacher (VTTW, 2012).

### *1.3 Occupational Standards, Educational Standards, Learning Outcomes*

When the subject of validity of formal, common and informal learning is discussed, it is possible to mention three type standards about competences. Two main standards are related to category:

- 1) Occupational standards
- 2) Education-Instruction standards
- 3) Measurement of learning, evaluation, validity and certification process standards

First two are related to main standard category. These two categories work according to different logics that reflect different priorities, motivations and purposes. Occupational standard is a classification and also are definitions of main works done by people. According to the logic of employment, in these standards, it is emphasized what should people do, how can he do this and how well should he do. These are expressed as competences and are written as learning outcomes. For this reason, when educators prepare their programs, they should base these upon current occupational standards or should determine learning outcomes in the studies that they do with relative sector. All countries have occupational standards; every country has specific style and format. International Standard Classification of Occupations (ISCO) supported by ILO (International Labor Organization) is a occupational standard which is mostly-accepted. Occupational standards function as a bridge between labor market and education system; because educational standards (curriculums and pedagogy) are developed based upon occupational standards.

#### *1.4 It is possible to align total quality principles in education as following.*

- Determination of objectives are suitable for expectations of society.
- Reaching the set purpose at once.
- Measuring the level of reaching the purpose.
- Adopting to follow the developments as a principle.
- Giving importance to qualified training.
- Establishing the active communication network.
- Giving importance to team work in management.
- Providing the motivation in management.
- Establishing a democratic management system.

#### *1.5 Properties of Total Quality Education*

It is possible to align properties of total quality education as; Relations with suppliers, full participation, continuous improvement.

#### *1.6 Relations with Suppliers*

In contrast to conventional management concept, Total Quality Management predicts a close cooperation with the other education institutions providing income (Student, teacher and education material) to itself. Since, unless “income” is quality, an education with desired quality cannot be realized. For this reason, it is extremely important that also institutions that provides students to customer education institution, should give quality education. Today in our country, the reason why university education hasn't the desired quality is, before the sustained educational activities, that secondary education institutions cannot train students in expected standard.

In this case, the duty of university managements is to indicate clearly they expect how a student profile and which properties should be exist, by providing a close cooperation with institutions related to secondary education (Ministry of National Education, relative General Directorates. National Education Directorships and school managers) and to give the needed support for providing this.

#### *1.7 Full Participation*

Quality of educational activities should not be expected only from instructor. As we mentioned before, the purpose is not to load knowledge. Directors of education institution are responsible for forming the learning environment. For providing general participation, motivation of instructors, students and other personnel should be provided. The main rule of providing the quality is to provide active participation of everybody in a working group or quality circle. Working groups related to education are an important and inseparable part of quality organization of the institution.

By cooperating with the other teachers, incorporating these teachers into team work by means of teacher is in leader position, gives positive results. If we need to clarify the issue by an example; an economy professor who applies Total Quality Management on Master program at “Eastem Miane Technical Coltege”, indicated that students began to read the graphics properly and interpret the basic equations properly with the help of mathematics professor. Again in the same program, he indicated that success of the students increased in marketing class as a result of insisting on price theory through the request of marketing professor. Student, who apprehends whole subject by means of team work and knows he has a role and responsibility in dealing with the problems in his team, will control himself and his team friends in order to increase the success, by protecting his duties and responsibilities.

### *1.8 Continuous Improvement*

Total Quality Management is not to catch the perfect, it is to catch better of the good. Seeking to better is a thinking and practicing process. Total Quality Management concept that aims to raise quality of products and to increase productivity in manufacturing firms, also aims to raise quality of education in education sector.

Quality improvement is required to continuous improving of all activities in the education process. Better quality can be reached by internal and external quality improvements. The main purpose of improving the internal quality is to make business processes more simple and more fluent. Avoiding from the problems and failures in the business processes, will decrease the cost in the long term. The purpose of improving the external quality is to raise satisfaction of external customer. For this, innovations should be reflected on curriculums and new learning methods should be practiced. In this way, quality of our products, in other words, quality of students trained by us, will increase too. If education institutions want to enhance current quality of education or to present new quality purposes, they should adopt continuous improvement as a principle.

## **2. Instructor and Student in Total Quality Management**

Certain changes will come into existence in classroom environment by adopting Total Quality Management. By putting Total Quality Management into practice, an instructional profile that that can establish a dialog with his student instead of the formal relationship between student and teacher and that can focus on the student, that guides student away, that doesn't criticize but leads the way, that shares the knowledge rather than give coordinated knowledge, that looks for knowledge in external environment, not in classroom, that follows the developments of science and technology, that promotes the students to research, that knows all kinds of necessities of student, that looks for the reason of the failure but doesn't judge, will be drawn.

By practicing Total Quality Management, the radical change in the top management and teaching staff, will affect the students unavoidably. Students graduated from the schools where Total Quality Management is applied, will develop skill in the fields of communication, team work, problem solving, learning. Student won't be bored in the lessons any more, will express his thoughts easily and will head towards search and examine. He will go an upper foundation by Desire to Knowledge acquisition. A society that follows technological developments, that loves team work, that has respect for his teachers and friends, that products but doesn't consume with students, will come into existence. A student who became qualified before the service, will see with a critical eye. It will bring student in ability of reel thought. In this way, individuals that became qualified before the service, will play a big role in country development.

## **3. Result**

In comparison with conventional education concept, Total Quality Management has great superiorities in developing education system and in growing qualified personnel that can meet expectations of society. Total Quality Management creates an opportunity in restoring reliance of the society on education system. Missing of business world to reach qualified personnel, will be met by continuous improvement of education system. It seems that this improvement cannot be provided by conventional education system, which is closed to environment. Improving the education system will lead to an increase in producing power of country. For this reason, it is more significant and essential to practice Total Quality Management in education institutions, before the production enterprises. If our education system fails and produces outcomes of poor quality, it will mean wasting all of the sources of society.

Total Quality Management has a qualification that will provide important contributions to competition in global market, by means of catching the innovation in our enterprises and society, and that will bring a breath of fresh air to our education system. In order to make Total Quality Management real in education institutions, however, top

management must read philosophy of Total Quality Management like a book, set his heart on and take the leadership. If not, making Total Quality Management real won't be possible.

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Execution of Total Quality Management in education provides the following advantages:

- Avoidance of wastage
- Increasing the quality
- Forming of well-kept buildings and environment
- Procuring successful academic members
- Raising the morale and prolificacy
- Achieving perfect exam results
- High success rate
- Specialization
- Getting support from families, industry and society
- Active usage of sources and enhancement of this usage
- Continuous improvement and development.

When enterprises producing good and service carry out concept and philosophy of Total Quality Management properly, they will reap many benefits of this modern management model. In the same way, this model, which is carried out in education sector too, will bring several benefits especially in terms of students, educators and personnel.

First of all, high student will be achieved. Because 7 requests and necessities of students are in the heart of this model. Along with high student success, there will be an increase in number of student that will want to check in this education sector. Therefore, advantage to find qualified student among the increased number and to make selection, will be caught. Anyone works in education sector will develop a sense of responsibility. Similarly, it can be brought directors of education sector in strong competences of leadership and planning.

Workers will have high morale due to participation in management and decisions. A desire and an ability to finish a given work in a shorter time, will be created to workers. In order to production of unlimited, common and continuous knowledge, as opposed to inadequacy in information transfer, "learning the way to reach the knowledge and improving himself continuously" of human has become the main objective of education. In other words, the underlying purpose of for modern education is to give behaviors of "Capability development", "Creativeness", "Impersonating", "Adaptation to new situations in the future", "Generating new solutions for new problems". Education sector and system should adopt concept of Total Quality Management that has view of continuous improvement and development in its philosophy and should put it into practice. If the desire is to have a self-dedicated labor with significant skills, concept of quality should be handled in education institutions before the enterprises and should be discussed. Because a qualified product and service will be possible only by a good education. It should be kept in mind that Total Quality Management is a problem solving method that will meet need in question. In order to develop qualification of education and increase success of student, a working system of education organizations based on sharing and cooperation, should be formed in schools.

Result is obtained by a teacher profile that can establish a dialog with his student instead of the formal relationship between student and teacher and that can focus on the student, that guides student away, that doesn't criticize but leads the way, that shares the knowledge rather than give coordinated knowledge, that looks for knowledge in external environment, not in classroom, that follows the developments in science and technology, that promotes the students to research, that knows all kinds of necessities of student, that looks for the reason of the failure but doesn't judge.

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### Abbreviations:

ERI: Education reform initiative.

VTTW: Vocational and technical training workshop.

4<sup>th</sup> International Conference on New Horizons in Education

# Effect of a computerized visual feedback on the adjustment of time in planning physical education

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## Abstract

The planning in Physical Education (PE) is a crucial competency of Pre-service Teachers (PTs) that is developing throughout the university courses. The adjustment of the time planned is a common problem for PTs without experience, and they show high differences between the time that they program and the real time that they employ during the intervention phase of teaching PE. We created a computerized time sheet to deliver visual feedback to PTs about this difference. Our aim was to accommodate quickly the adjustment of the time in planning in PE in a few sessions of visual feedback and coaching meeting with the supervisor of the faculty. We expose the computerized sheet and its application on one PT (an individual case) with a repeated measures series (three trials of baseline and ten trials of intervention were carried out). The results show us the efficacy of the computerized sheet (visual feedback and coaching meeting). We could verify the inflection of the curve since the first treatment trials, decreasing the differences between the time planned and the real time employed during the classes. We conclude that this method is a good way for PTs training during their university courses and for in-service teachers who want to improve their accuracy of planning PE in the future.

*Keywords:* Coaching; time management; repeated measures; computerized sheet

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## 1. Introduction

Since the classic paradigm of Competency-Based Teacher Education (García-Álvarez, 1987; McDonald, 1974; Morgan, 1984), and the rise of this competencies' learning in the European Space for Higher Education, all the abilities that a Pre-service Teacher (PT) must have after his degree are again at the height of the science of teaching (Nizam, Mahmoud, Bani, & Mohammad, 2009). Among these competencies, the planning of teaching is one of the most important areas because all novice teachers find support in it to increase their security and their intervention into the classroom (Del Villar, 1993). Other authors also stated that planning was more important than intervention to assure a greater level of efficacy. Curtner-Smith (1996) measured the

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impact that an early field experience had on 28 pre-service PE teachers in secondary school. In this research the planning competency was more important than the intervention for achieving success in the teaching process. Fernández and Barquín (1998) declared that teachers considered the planning more important than the evaluation phase to improve as a professional, and to be a good curriculum maker and a good planner for assuring certain teaching efficacy.

One of the most important aspects in planning PE is the time management of the class; PTs need to adjust it for an accurate plan in PE and it supposes an added difficulty to planning PE correctly. Numerous researches have been developed around this issue (Viciana, Fernández, Requena, Zabala, & Lozano, 2003; Lozano, Viciana, & Piéron, 2006; Momodu, 2000). Among the time categories that we are necessary to plan and apply correctly, the Motor Engagement Time (MET) is perhaps the most important. MET is the time that the students are involved in physical activity, and motor learning depends on it. However, the time that students spend paying attention to the PE teacher while he/ she explains the tasks or theoretical contents [Student Attention Time (SAT)] and the time employed to organize the students before the tasks [Organization time (OT)] are also important. When these two categories of time increase they cause a decrease in MET. So if our goal is to get an effective motor learning session in PE, we need to reduce OT and SAT in order to increase MET as much as possible. Planning is the instrument to achieving this, but we need to teach this competency in the university and the PTs need to practice different plans to assimilate the strategies for good planning (Van Der Mars, 1994; Viciana, 2002).

It is well known that feedback helps teachers to be aware of their actions in teaching (Viciana & Salinas, 2008). Viciana et al. (2003) developed a computerized sheet to deliver feedback about the time management that PTs employed in a practical session of PE. In 2002, the University of Granada gave this computerized sheet an award in the first edition of the 'Teaching Innovation Awards'. For these reasons, we decided to apply the use of this computerized sheet to deliver visual feedback to a PT (in a coaching meeting) in order to teach him to adapt his intervention in the classroom. This could allow us to achieve good levels of MET with respect to the time of MET planned. Consequently, the purpose of the present pilot experience was to examine the effect of the application of a computerized sheet to deliver visual feedback on good levels of MET with respect to the time of MET planned in PE classes in a PT. We hypothesized that the application of the computerized sheet to deliver visual feedback could allow to the PT to achieve good levels of MET with respect to the time of MET planned.

## 2. The computerized time management register sheet

The computerized time management sheet has an entry screen where you can choose registering the time management in a practical PE session or registering the feedback that the teacher delivers to the student during the session. The figure 1 shows the sequence of different screens in this computerized sheet from the beginning to the results presentation.

In general, the computerized sheet has several buttons corresponding to the different time categories. It works like a continuous chronometer that only changes the amount of time to the category that you click on. Each category has its own display to see the chronometer working in each case or stopped if the category is not clicked. The categories and buttons that you can control and register in the computerized time management sheet are:

- a) *Motor Engagement Time*. The time that the students are involved in physical activity. There are three options inside (alternative tasks, consecutive tasks and simultaneous tasks). These three subcategories let us control if a student is doing physical activity the whole time that a task is being carried out or the

time employed in the task we need to divide between two students (alternative execution) or more than two (consecutive execution). Simultaneous execution means that all the students are involved in physical activity during the tasks, and the global time registered for the task is equal to the MET.

- b) *Student Attention Time.* The time that the students are paying attention to the teacher's explanation. There are three options or subcategories (Initial session information; initial task information; and feedback given to the students). The three subcategories add time to the total amount of the general category SAT.
- c) *Organization Time.* The time that the teacher spends organizing the materials and the students prior to the task. There are two subcategories (material and resources organization; and student organization). Both categories add time to the general category OT.
- d) *External and Internal causes of unforeseen time are also registered.* They both add to the total amount of time in the general category of "unforeseen time" (UT).
- e) *Finish session.* This button stops the general time counter of the session. After this button is clicked, the computerized application generates an internal file to process the data.

After this process is finished, we can ask the computerized sheet to generate figures that show the different categories registered and the comparison to another model or a previous time value that you can introduce into the sheet (such as the time value of the categories planned prior to the practical session). These figures let us compare the time planned and the time employed in the categories of the PE session analyzed in a visual way (Martínez Álvarez, Cocca, Ocaña, Gómez-López, & Viciano, 2008).

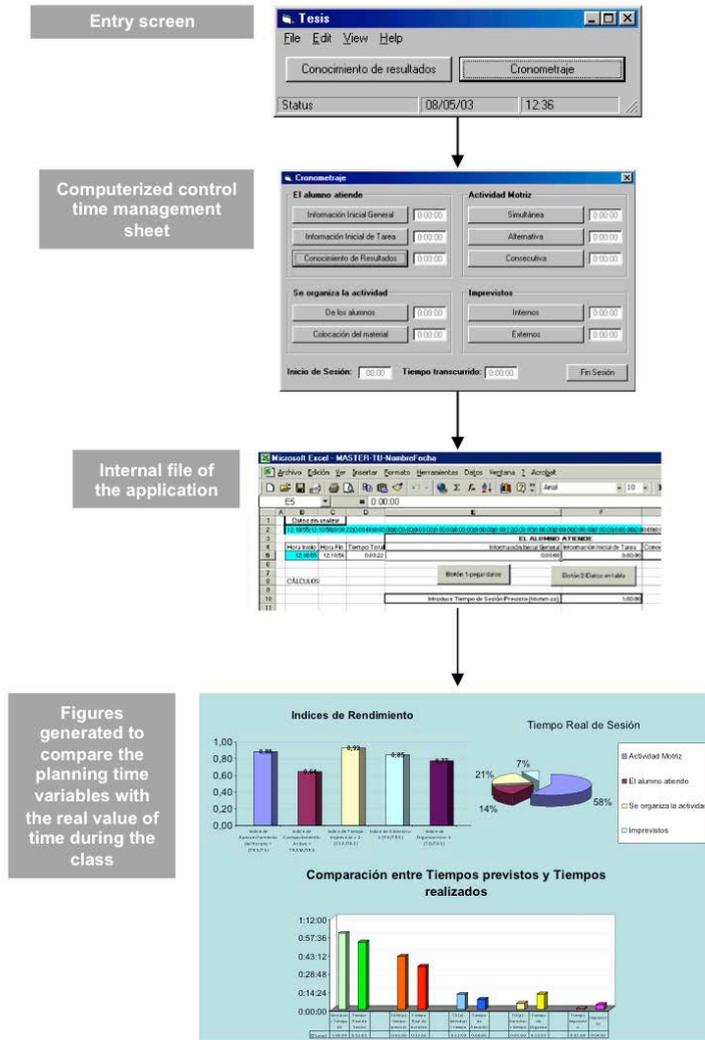


Fig. 1. Sequence of screens on the computerized time management register sheet

### 3. An experimental case to analyze the usefulness of the computerized time management register sheet

#### 3.1. Participants

The participant was a male PT that studied in the Faculty of Physical Education and Sport of Granada University. He was 24 years old and he was in his last year at the university doing the internship programmed by the supervisor in a School Center. The observer and supervisor was the teacher of Planning in PE subject and he was the main researcher of this study. All sessions carried out in this study were applied to a secondary school group, formed by 27 students (10 females and 17 males, aged  $14.0 \pm 1.0$ ).

#### 3.2. Design and variables

We employed an observational dependent temporal series design. We used only one case to analyze the usefulness of the computerized sheet. We used three trials for the baseline (practical sessions) without treatment (feedback), and ten trials with their corresponding visual feedback of the management time categories made by the PT (registered and compared to the planned values).

The dependent variables were:

- a) Motor engagement time (MET). The time that the students are involved in physical activity.
- b) Student attention time (SAT). The time that the students are paying attention to the teacher's explanation.
- c) Organization time (OT). The time that the teacher spends organizing the materials and the students prior to the task.
- d) Unforeseen time (UT). The time employed in unforeseen causes during the class.
- e) Motor engagement time adjustment (METad). The difference between planned MET and real MET during the practical session analyzed.
- f) Student attention time adjustment (SATad). The difference between planned SAT and real SAT during the practical session analyzed.
- g) Organization time adjustment (OTad). The difference between planned OT and real OT during the practical session analyzed.
- h) Total absolute adjustment. This variable is composed by the sum of all adjustments in their absolute value.

The variables 1-4 were registered by the computerized sheet, and the variables 5-8 were calculated (planned time minus real time registered). The independent variable was the visual feedback given by the computerized sheet and the coaching meeting (PT and supervisor) carried out after the practical session was finished.

#### 3.3. Instruments

The computerized time management register sheet was used for controlling the time during the practical sessions of the study. It works as a chronometer, changing the category depending on the button that the observer clicks during the practical sessions. The description of the sheet and some illustrations appear in figure 1. The variables controlled by the computerized sheet are described above.

#### 3.4. Procedure

During a teaching unit, the PT and the supervisor planned a set of practical sessions with some special characteristics with the aim to control all possible contaminating variables. These characteristics were the following: (i) The same content was planned in all sessions (introduction to team sports); (ii) the different

temporal variables were planned with the same amount of time in all practical sessions. MET was 30 minutes, SAT was 12 minutes, OT was 8 minutes, and UT had to try to be at zero; (iii) all the sessions were planned with 50 minutes, because it was the time available on the schedule; (iv) all sessions were applied to the same group of secondary school students in the same school center and at the same hour.

Principally, the PT applied the three sessions corresponding to the baseline, where no feedback was delivered to the PT after intervention. Secondly the ten sessions of the treatment were developed and a coaching meeting with the supervisor was carried out after each one. These coaching meetings had feedback as the main issue to discuss. This feedback gives visual information about the real time managed by the PT and the time planned as a criterion of efficacy. The adjustment or the difference between these two values of time (planned and registered) was the main object of the discussion between PT and supervisor, and several strategies to solve the adjustment were discussed.

#### 4. Results

The results of the temporal variables registered by the computerized sheet are shown in table 1. We had shown the results in minutes and seconds because it is the best way to interpret the differences with the criterion (MET = 30; SAT = 12; OT = 8; UT = 0).

Table 1. Data registered by the computerized time management sheet for each category

VDs	Sessions of the baseline			Sessions of the treatment									
	1	2	3	4	5	6	7	8	9	10	11	12	13
MET	22'18"	24'30"	23'50"	23'51"	25'42"	25'50"	26'30"	27'28"	27'42"	29'30"	30'30"	28'52"	29'25"
SAT	16'34"	15'13"	16'40"	13'52"	12'40"	10'06"	14'30"	13' 20"	11'14"	9'21"	10'27"	11'38"	10'33"
OT	6'56"	8'57"	9'10"	9'12"	10'31"	8'34"	8'15"	8'04"	09'32"	9'09"	8'35"	8'48"	9'12"
UT	3'12"	1'20"	0'25"	3'05"	1'07"	5'30"	45"	1'08"	1'32"	2'00"	28"	42"	0'50"

Note: MET = Motor engagement time; OT = Organization time; SAT = Student attention time; UF = Unforeseen time. VDs = Dependent Variables measured.

Table 2 shows the calculated variables. They represent the differences between the times registered during the practical session and the times planned prior to the intervention. They are also shown in minutes and seconds to facilitate the interpretations of the adjustment. We can observe that the total adjustment (the sum of the absolute adjustment of all variables) decreasing across the sessions of the treatment.

Table 2. Calculated variables (difference between registered variables by the computerized time management sheet for each category and the planned variables)

Temp. adjust.	Sessions of the baseline			Sessions of the treatment									
	1	2	3	4	5	6	7	8	9	10	11	12	13
METad	-8'12"	-5'30"	-6'10"	-6'09"	-4'18"	-4'10"	-3'30"	-2'32"	-2'18"	-30"	30"	-1'08"	-35"
SATad	4'34"	3'13"	4'40"	1'52"	40"	-1'54"	2'30"	1' 20"	-46"	-2'39"	-1'33"	-22"	-1'27"
OTad	-1'04"	57"	1'10"	1'12"	2'31"	34"	15"	04"	1'32"	1'09"	35"	48"	1'12"
UT	3'12"	1'20"	0'25"	3'05"	1'07"	5'30"	45"	1'08"	1'32"	2'00"	28"	42"	50"
TOT. adjust.	17'02"	11"	12'25"	12'18"	8'36"	12'08"	7"	5'04"	6'08"	6'18"	3'06"	2'30"	4'04"

Note: METad = Motor engagement time adjustment; OTad = Organization time adjustment; SATad = Student attention time adjustment; Temp. adjust. = Temporal adjustment; TOT. adjust. = sum of all absolute adjustments; UF = Unforeseen time.

Next, figure 2 represents the curves of the evolution of the adjustments (METad and Total absolute adjustment) across all the sessions developed (baseline and treatment).

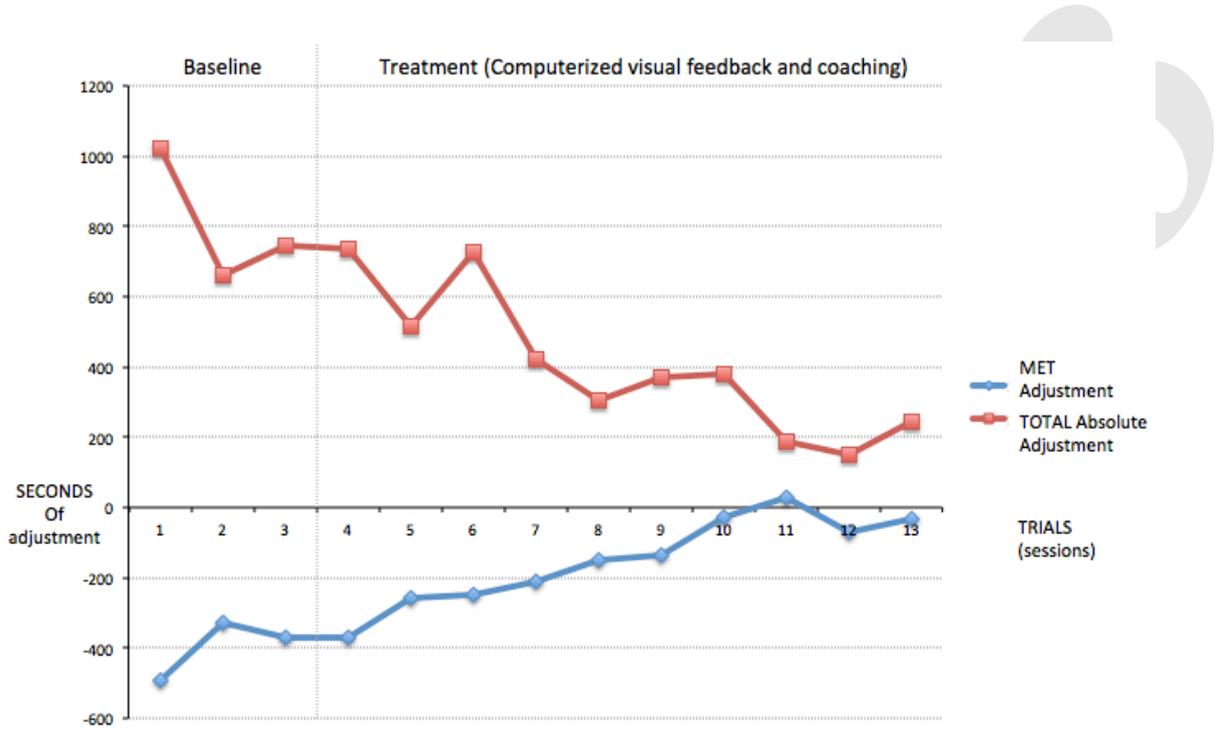


Fig. 2. Curves of adjustment of MET and Total Absolute Adjustment during all the sessions carried out in this study

## 5. Conclusions

The computerized time register sheet is easy to use and it contributes efficiently to the pre-service teacher training in PE. The PT who experienced this formative process valued it as a very positive experience. He highlighted the help that the computerized sheet gave him to be aware of his mistakes in planning and intervention. The use of this computerized sheet in PE faculties could contribute to better teacher and coach training using the visual information from their practical actions. Finally, the use of the present computerized sheet could be a better pedagogical resource than the traditional manner that we used to put into practice (only verbal recommendations for PTs after their interventions).

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## Effect of inquiry based learning method on students' motivation

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### Abstract

The purpose of this study was to determine the effect of inquiry based learning method on students' motivation. Nonequivalent Control Group Design was employed as the research method and the population of this study was comprised of first-grade students attending the Faculty of Education at Hacettepe University. The Motivated Strategies for Learning Questionnaire (MSLQ) which was developed by Pintrich, Smith, Garcia and McKeachie (1991) and adapted into Turkish by Büyükoztürk, Akgün, Özkahveci and Demirel (2004) was applied to determine students' motivation. For the evaluation of the data, statistical analysis was applied.

*Keywords:* Inquiry based learning, student motivation, chemical equilibrium

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## 1. Introduction

Laboratory work plays an important role in science and chemistry teaching. Several researchers also suggest that students will be more successful through participation in activities in the science laboratory (Hofstein and Lunetta, 1982, 2004; Hodson, 1990; Tobin, 1990; Garnett and Hacking, 1995). They believe that positive developments will occur in learners' meaningful learning, in their conceptual understanding and in their views of the nature of science especially in consequence of their participation in inquiry based laboratory activities.

Researches stress the fact that traditional lab work is not adequate in achieving the goals (Hofstein and Lunetta, 1982; Tobin and Gallagher, 1987; Tobin, 1990; Hofstein and Lunetta, 2003). In such traditional lab education, confirmatory activities are used in general (Lunetta and Tamir, 1979; Domin, 1999; Hofstein and Lunetta, 2003). Students follow the instructions step by step and do the experiments; indeed they often focus on completing the experiments they are working on, and they fail to understand the process of experiment in depth. According to many students, working in the lab means working with materials of experiment, and such objectives as learning and changing the views are given the secondary importance (Hofstein and Lunetta, 2004). Therefore, inquiry based work in the laboratory should be done (Abd-El-Khalick et al., 2004). Inquiry based learning is defined as the process of learners' creating meaningful and useful knowledge from knowledge at-hand by asking questions, drilling, and analyzing the knowledge (Perry and Richardson, 2001). In the learning environments where inquiry based learning takes place, students perform the experiments and the activities individually or in groups, and thus it is made sure that knowledge becomes more meaningful and more permanent. In this process, students try to respond to the problems to be answered or solved with their research which they construct through active participation (Tatar & Kuru, 2006).

Hofstein and Walberg (1995) contend that laboratories based on inquiry are the centers for science learning; because they make students participate in such processes as comprehending scientific questions and problems, generating hypotheses, designing experiments, collecting and analyzing data, and making inferences about scientific problems and phenomena (as cited in Qing, Jing and Yan, 2010).

Hofstein, Nahum and Shore (2010) found that students actively took part in the learning process in inquiry based lab settings, and that they developed positive attitudes towards laboratories. The participants stated that inquiry based lab experiments provided them with the opportunity to develop independent thoughts, to understand the chemical concepts, and to form a group atmosphere with more fun.

According to Domin (1999), students recognize the problems related to the experiment, identify the sub-problems, collect the data necessary for the solution of the sub-problems, and reach scientific conclusions by analyzing the data that they obtain so as to test their hypotheses in the case of experiments to be done by means of inquiry. They play active roles during such experiments since they determine their own problems and they themselves develop the solutions to those problems (Hodson, 1990).

Ergin, Şahin, Pekmez and Öngel Erdal (2005) emphasized that students needed to prepare a research activity for the inquiry based experiment activities, which was assigned by the teacher. For instance one such activity could be: "research the way heat is gained and lost for different systems".

In this process, students are expected to decide as to what different systems can be, to design their own experiment, and to collect and analyze their own data (as cited in Aydoğdu and Ergin, 2008).

A review literature demonstrates that inquiry based learning methods have been found to be more effective than traditional instruction and made contributions to the development of students' academic achievement, thinking, problem-solving, motivation and laboratory skills (Haury 1993; Smith 1996; Shymansky, Hedges, and Woodworth 1990; Rubin 1996; Crawford, 2000; Holbrook and Kolodner, 2000; Marx et al.,

2004; Oliver-Hoyo et al. 2004; Oliver-Hoyo and Allen 2005; Tuan et al., 2005; McReary, Golde, and Koeske 2006; Madden, 2011).

### *1.1. Significance of the Study*

A review of national and international literature demonstrates that inquiry based activities contribute to students' understanding the nature of science (Backus, 2005), to the development of their knowledge of the topic (Lord and Orkwiszewski, 2006), their skills of scientific process (Holfstein, Shore and Kipris, 2004; Deters, 2005; Aydođdu&Ergin, 2008), their attitudes towards science learning (Jones, Gott and Jaman, 2000; Gibson and chase, 2002; Lord and Orkwiszewski, 2006), their motivation in science learning (Tuan, Chin, Tsai and Cheng, 2005), and their communication skills. In research conducted by Allison and David (1972) and by Charen and George (1970), it was found that inquiry based experiment activities made contributions to the development of students' critical thinking skills (as cited in Qing et al., 2010). In our country, science courses are often taught through confirmatory type of activities, and inquiry based experiments are scarcely used. This paper aims at contributing to performing inquiry based experiments in science classes and making its use widespread; and the effects of such experiments on students' motivation are also investigated in line with our purpose. Thus, answers are sought to the following question:

Are there any significant differences between students taught with inquiry based learning approach (experimental group) and students taught with traditional instruction (control group) with respect to intrinsic goal orientation, extrinsic goal orientation, task value, control of learning beliefs, self-efficacy for learning and performance, and test anxiety in terms of chemistry course?

Sub research problems of the study are:

- Are there any significant differences between students' MSLQ pre-test scores in experimental group and control group?
- Are there any significant differences between students' MSLQ pre-test and post-test scores in experimental group?
- Are there any significant differences between students' MSLQ pre-test and post-test scores in control group?
- Are there any significant differences between students' MSLQ post-test scores in experimental group and control group?

## **6. Method**

### *2.1. Research Model*

The study was conducted in the Nonequivalent Control Group Design (Fraenkel and Wallen, 2006; Gay and Airasian, 2000).

### *2.2. Study Group*

A total of 37 students attending the Department of Secondary Science and Mathematics Education at the Faculty of Education of Hacettepe University participated in the research.

### *2.3. Data Collection Tools*

Motivated Strategies for Learning Questionnaire (MSLQ): The Motivated Strategies for Learning Questionnaire was employed in order to determine students' motivation in chemistry course. The MSLQ which was developed by Pintrich, Smith, Garcia and McKeachie (1991) and adapted into Turkish by Büyüköztürk, Akgün, Özkahveci and Demirel (2004) so as to evaluate university students' motivational adjustment and their use of differing learning strategies for their courses at university. The MSLQ comprised of two main parts: motivation, and learning strategies. The motivation part contains 31 items and the sub-dimensions of intrinsic goal orientation (IGO), extrinsic goal orientation (EGO), task value (TV), control of learning belief (COLB), self-efficacy for learning and performance (SLP), and test anxiety (TA). The results of confirmatory factor analysis which was performed to determine university students' motivation for chemistry were:  $\chi^2/df = 3,04$ , GFI= 0.87, AGFI= 0.77 and RMSEA= 0.07. The reliability coefficients were 0.74 for IGO, 0.575 for EGO, 0.89 for TV, 0.72 for COLB, 0.91 for SLP, and 0.56 for TA (Şen, 2011). In Table 1 the theoretical framework of motivation part of MSLQ can be seen.

Table1: The Theoretical Framework of Motivation Part of MSLQ

	Factor	Explanation
Value	Intrinsic goal orientation	Learners' beliefs and concerns about the importance of tasks
	Extrinsic goal orientation	
	Task value	
Expectancy	Self-efficacy	Learners' beliefs and concerns about performance
	Control of learning belief	
Affective	Test anxiety	Learners' affective reaction to a task

(Büyüköztürk, Akgün, Demirel, & Özkahveci, 2004)

#### 2.4. Data Analysis

The data obtained were analyzed through Mann-Whitney U-test and Wilcoxon Signed Rank Test.

#### 2.5. Procedures

The chemical equilibrium experiment was done via inquiry. The aim of the experiment was to prove the availability of the balance in the reaction occurring between the KSCN and  $\text{Fe}(\text{NO}_3)_3$  solutions. Prior to the experiment, groups of 3-4 students are formed, and the in-group roles are distributed.

1. Starting position: The experiment/observation is done. (Teacher: plans a starting position for the scientific problem). The teacher puts two solutions, the names of which are unknown to the students (the solutions of  $\text{KSCN} + \text{Fe}(\text{NO}_3)_3$ ), into reaction in a test tube. The students are asked to observe the phenomena occurring. (Result: a dark brown solution is derived.) No mention is made about chemical equilibrium here to the students. They are guided through activities and inquiry to conclude that there is chemical equilibrium.

2. It is made sure that students wonder and do self-inquiry: Students activate their prior knowledge and present their views. (Teacher: promises the students, structures the inquiry, gets them to define the words.) The teacher asks the students to make comments based on the dark brown solution obtained, and to state their initial thoughts: what happened here?

3. It is made sure that students formulate their thoughts and compare them with others' views: (Teacher: gets the students to state their opinions, ensures that a comparison is made between the prior knowledge of each student.) The students comment on their observations. One of the group members writes down what things are considered to be important by the group. The groups are asked to present in front of the class what they have written. The notes which are about chemical equilibrium are determined by the teacher. No mention of equilibrium is made yet. The teacher asks a new question: What will happen if we add a little more  $\text{Fe}(\text{NO}_3)_3$  solution to this solution? Note down your predictions.

4. Hypothesizing: Having determined the scientific problem, groups of students form their hypotheses. (Teacher: helps first with formulating the scientific problem, and then with formulating the hypotheses, highlights the difference between the two.) The students generate a hypothesis on what happens if the  $\text{Fe}(\text{NO}_3)_3$  solution is added to the mixture. If my hypothesis is real, I should observe these things, etc.

5. The students reflect on how to test the hypotheses (experiments, observations, questionnaires, documents, etc.) (Teacher: permits students enough time to work autonomously, and makes sure they compare their views.

He confirms the method of inquiry chosen.) Here, students have access to the sources of knowledge and reach the knowledge to test their hypotheses.

6. Testing the hypotheses: The hypotheses are tested with the method or methods (experiments, observations, questionnaires, document research) selected. (Teacher: brings together the materials (or circumstances) needed to apply the method of inquiry selected.) He adds a bit more  $\text{Fe}(\text{NO}_3)_3$  solution to the mixture and concludes: a darker brown solution is obtained. Here the causes are questioned. The changes at microscopic level are questioned. How did the addition of the  $\text{Fe}(\text{NO}_3)_3$  solution influence the concentration?, .....

7. The results are obtained, they are noted down for presentation (Teacher: helps with shaping the results.) The data obtained are organized. The groups perform their presentations.

8. Each hypotheses is tested for validity: unless a hypothesis is valid, they go back to step 3. (Teacher: encourages and re-starts the process of inquiry.) If the hypothesis is valid (teacher: helps with choosing the support and forming the synthesis. He recommends a new application situation.) The knowledge obtained is validated by the teacher, or is refused.

### 3. Findings

Table2: Mann-Whitney U-test results

	IGO	EGO	TV	COLB	SLP	TA
Mann-Whitney U	171,000	87,500	129,000	169,500	166,500	168,000
Wilcoxon W	361,000	258,500	300,000	340,500	356,500	358,000
Z	,000	-2,552	-1,280	-,046	-,137	-,092
Asymp.Sig.(2-tailed)	1,000	,011	,201	,963	,891	,927
Exact Sig.[2*(1-tailed Sig)]	1,000 <sup>a</sup>	,010 <sup>a</sup>	,201 <sup>a</sup>	,964 <sup>a</sup>	,893 <sup>a</sup>	,940 <sup>a</sup>

a. Not corrected for ties.

b. Grouping Variable: Group

According to the Mann-Whitney U-test results, there is a significant difference in favor of control group between pretest scores of extrinsic goal orientation ( $U=87,5$ ,  $p<.05$ ). However, there is no significant difference between the pretest scores of the other factors of students ( $p>.05$ ).

Table3: Wilcoxon Signed Rank Test Results

	IGOPost-IGOPost	EGOPost-EGOPost	TVPost-TVPost	COLBPost-COLBPost	SLPPost-SLPPost	TAPost-TAPost
Z	-1,103 <sup>a</sup>	-2,485 <sup>a</sup>	-1,510 <sup>a</sup>	-,143 <sup>a</sup>	-1,238 <sup>a</sup>	-1,027 <sup>b</sup>
Asymp.Sig.(2-tailed)	,270	,013	,131	,886	,216	,304

a. Based on negative ranks.

b. Based on positive ranks.

## c. Wilcoxon Signed Ranks Test

According to the Wilcoxon Signed Rank Test results, there is a significant difference in favor of posttest between scores of extrinsic goal orientation ( $z=-2,485$ ,  $p<.05$ ) pretest-posttest of students in the experimental groups. *However*, there is no significant difference between the scores of the other factors pretest-posttest of students ( $p>.05$ ). *Considering the results of the study, it is seen that the Inquiry based Learning made positive contributions to the motivations of students in the sub-dimensions of extrinsic goal orientation.*

Table4: Wilcoxon Signed Rank Test Results

	IGOPre- IGOPre	EGOPre- EGOPre	TVPre- TVPre	COLBPre- COLBPre	SLPPre- SLPPre	TAPre- TAPre
Z	-1,667 <sup>a</sup>	-1,040 <sup>a</sup>	-1,572 <sup>a</sup>	-,887 <sup>b</sup>	-,119 <sup>a</sup>	-2,165 <sup>b</sup>
Asymp.Sig.(2-tailed)	,096	,298	,116	,375	,905	,030

a. Based on negative ranks.

b. Based on positive ranks.

c. Wilcoxon Signed Ranks Test

According to the Wilcoxon Signed Rank Test results, there is a significant difference in favor of pretest between scores of test anxiety ( $z=-2,165$ ,  $p<.05$ ) pretest-posttest of students in the control groups. *However*, there is no significant difference between the scores of the other factors pretest-posttest of students ( $p>.05$ ).

Table5: Mann-Whitney U-test Results

	IGO	EGO	TV	COLB	SLP	TA
Mann-Whitney U	155,500	117,000	128,000	169,500	158,500	108,000
Wilcoxon W	326,500	288,000	299,000	359,500	348,500	298,000
Z	-,474	-1,649	-1,310	-,046	-,381	-1,927
Asymp.Sig.(2-tailed)	,635	,099	,190	,963	,703	,054
Exact Sig.[2*(1-tailed Sig)]	,641 <sup>a</sup>	,105 <sup>a</sup>	,199 <sup>a</sup>	,964 <sup>a</sup>	,707 <sup>a</sup>	,057 <sup>a</sup>

a. Not corrected for ties.

b. Grouping Variable: Group

According to the Mann-Whitney U-test results, there is no significant difference between the scores of the posttest of students in the experimental and control group ( $p>.05$ ).

#### 4. Conclusion and Discussion

According to the statistical results, it was found that students' extrinsic goal orientation developed after the application. Extrinsic goal orientation is defined as evaluating students' themselves and comparing with friends in reaching goals, having grades or performance (Pintrich, Smith, Garcia, &McKeachie, 1991). This is a finding supporting the finding obtained in earlier research studies concluding that inquiry based activities promote students' motivation (Crawford, 2000; Holbrook and Kolodner, 2000; Marx et al., 2004; Tuan et al., 2005; Madden, 2011). In a similar vein, Gibson and Chase (2002), and Shimoda, White and Frederiksen (2002) also concluded that inquiry based activities were influential in students' having positive attitudes towards science learning.

Several researchers (Blumenfeld et al., 1991; Eilam, 2002; Lepper, Woolverton, Mumme and Gurtner, 1993; Polman, 2000) stated that inquiry based activities might raise students' motivation due to the fact that they give students freedom in making their choice, provide them with opportunities to carry out self regulation and to take part in projects they are interested in (as cited in Tuan et al., 2005). In this current research, the results stating that students' motivation increases on the sub-dimensions of extrinsic goal orientation are in the form of the proof of an experimental process.

#### 5. Recommendations

Well-constructed research problems are likely to contribute to students' meaningful learning. Inquiry based experiments instead of traditional laboratories of confirmatory type make students more active. The inquiry based experiment method can easily be implemented in our country, where the constructivist approach is adopted; and it is capable of making positive contributions to increasing the other affective variables in addition to achievement.

According to the research results and the results encountered in literature, it affects many affective variables influential in achievement. Therefore, making inquiry based experiment techniques widespread on the course and topic basis will lead to the emergence of healthier results for both teachers and researchers. In prospective research studies, alternatives to the traditional confirmatory type laboratories may be recommended.

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4<sup>th</sup> International Conference on New Horizons in Education

# Efficiency Measurement in Higher Education: Concepts, Methods and Perspective

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## Abstract

The aim of this research is to provide a conceptual basis for addressing efficiency in economics, focusing on higher education. The definition of economic efficiency using the Pareto criteria is presented. It is followed by the application of these concepts to higher education framework. The concepts and methods for estimating efficiency in higher education are quite complex and this may impair policy recommendations stemming from an incorrect definition or understanding, still, efficiency is a suitable and needed goal for any educational system, especially in a developing country.

*Keywords:* efficiency; higher education; inputs; outputs

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## 1. Introduction

In the current literature on education, there is an apparent lack of theoretical guidance and the term 'efficiency', although extensively used, is either not carefully defined or the definitions differ. The aim of this paper is to provide a conceptual basis for addressing efficiency in a higher education (HE) framework. Although the concepts of efficiency are quite complex, and this may impair policy recommendations stemming from their inappropriate use or incorrect understanding, still, efficiency is a suitable and essential goal for any educational system, especially for a developing country.

The paper is organised as follows. In section 2 the origin of the theory of efficiency is analysed, the definitions of consumption, production and allocative efficiency are presented, and the concept of efficiency in the neoclassical framework is examined. Further modifications to the efficiency concept are examined in section 3 when the concept is applied in the HE framework. Section 4 introduces methods and techniques used in measuring efficiency in education and also presents some of their problems. Given the limitations apparent in the critical appraisal of efficiency in HE several definitions for efficiency are proposed and techniques for measuring them are considered. Concluding remarks are offered in section 5.

## 2. The Theory of Efficiency

To ensure a Pareto efficient allocation there must be consumption, production and allocative efficiency. Assuming a two-person, two-commodity pure exchange model, an allocation is Pareto efficient when, firstly, the consumers have the same marginal rates of substitution between any two goods (consumption efficiency or exchange efficiency), secondly, the producers have the same marginal rates of technical substitution between any two inputs and these (production efficiency) and finally, when the consumers' marginal rate of substitution is equal to the producers' marginal rate of transformation between the two goods and (allocative efficiency or product-mix efficiency). This analysis of consumption efficiency assumes that the commodities are fixed in supply and hence, the inputs devoted to their production are also fixed. Contrastingly, in the analysis of the production efficiency one assumes that the quantities of various commodities can be altered by reallocating inputs between their productions.

Symbolically, in a two-good (X, Y), two-input (L, K), two-person (A, B) exchange economy necessary conditions for Pareto efficiency are:

Table 1. Pareto efficiency conditions

Conditions	Efficiency
$MRS_{xy}^A = MRS_{xy}^B$	consumption (exchange) efficiency
$MRTS_{LK}^X = MRTS_{LK}^Y$	production efficiency
$MRS_{xy}^A = MRT_{XY}; MRS_{xy}^B = MRT_{XY}$	allocative efficiency

Only under these conditions is Pareto efficiency attained and no individual can improve his/her position without making another individual worse off. Achieving only the consumption and production efficiency does not ensure that the right combination of goods is produced in the economy. Therefore, it is only when allocative efficiency is attained that all the alternatives for Pareto improvements are exhausted. However, not every Pareto

efficient outcome can be considered as desirable and the Pareto efficiency criterion does not imply equity. Therefore, Pareto efficiency is a necessary but not a sufficient condition for social welfare.

The foundation of the theory of efficiency and its measurement was laid out by Farrell (1957) who used three main measures of efficiency. He explicitly decomposed total economic efficiency (referred to by Farrell as the overall economic efficiency) into two components: technical and price (allocative) efficiency. However, the difference between total economic efficiency and allocative efficiency in Farrell's framework remains unclear. A different view can be found in Devine, Lee, Jones, and Tyson (1985) who acknowledge two main elements of productive efficiency: technical and factor price efficiency. In their view, technical efficiency implies producing a maximum level of output from a given set of inputs and unchanged technology. Factor price efficiency assesses the ability to use the most favourable combination of inputs given their relative prices.

In general, allocative efficiency refers to the distribution of productive resources among alternative uses which allows the production of an optimal output mix, i.e. allocative efficiency is focused on selecting between different technically efficient combinations. In a competitive market, allocative efficiency is attained when three conditions are fulfilled: each level of output is realised by equating the marginal cost to price, each consumer's marginal benefit is equal to the price and, finally, the relative marginal benefits are the same for all consumers. Next we will analyze how these concepts are transposed to an HE framework.

### **3. Concepts of Efficiency in Higher Education**

Efficiency concepts are frequently found in national education planning documents but without clarification as to whether efficiency is a final goal or a channel to achieve a certain educational objective. When used by economists the term efficiency is mostly context-specific, whereas practitioners affix diverse, conceptually different, uses to the term. In this section the conceptual and definitional issues regarding efficiency in education is presented. In order for efficiency in education to be defined it is necessary to point out some of the characteristics of the education sector, focusing on higher education.

Firstly, higher education institutions can be considered as multi-product enterprises (e.g. Belfield, 2000, and Cohn and Cooper, 2004) which produce multiple outputs and have multiple inputs which are difficult to measure since many of them do not have market prices, e.g. number of students enrolled, their prior attainment and teacher characteristics. Furthermore, higher education providers use what Rothschild and White (1995) call 'customer-input' technology i.e. customers (students) are also inputs in the production (function) and the quality of students recruited may serve as a signal of the quality of the HEI. Along these lines Dixit (2002) points out that the education system consists of multitask, multiprincipal and multiperiod organisations that are quite similar to monopolies and have poorly observable, complex goals. Given the multiple goals it is difficult to apply some simple criterion for measuring success or failure in achieving the specified goals and it follows that there are no absolute criteria that can lead us in the measurement of efficiency and effectiveness of a HE system.

The commonly examined types of efficiency in both the public sector and education studies cover both technical and allocative efficiency. An extension of these two concepts can be found in McMahon (1983) who discusses four concepts of efficiency in the provision of education. These are technical, price, exchange and allocative efficiency and each is described in turn. According to McMahon's terminology, technical efficiency examines the time and resources used in the production of a given output (these resources include teaching methods, instructional materials, student's learning activities, over some time period). Price efficiency is an extension of technical efficiency since it takes into consideration the relative costs of resources (e.g. whether the educational services in the HEIs priced in a cost efficient way). To provide a distinction from Farrell's (1957) original concept of price efficiency, a more appropriate term in this case would be factor price efficiency; this can

then be linked to the definition by Devine, Lee, Jones, and Tyson (1985). Continuing with McMahon's terminology, exchange efficiency represents education's ability to meet the needs of other institutions (business, civic and religious organisations), and concerns questions like whether the credentials are valued in the labour market or whether workers are overqualified. Allocative efficiency is attained when there is technical, (factor) price and exchange efficiency, i.e. it represents the maximisation of satisfaction given scarce resources with competing uses (and it allows for a comparison of educational costs with its expected benefits). Related to the four concepts considered, the concept of exchange efficiency is sometimes conflated with allocative efficiency. Given that price efficiency is an extension of technical efficiency, often there is not as clear a distinction between these efficiency concepts. The two dominant concepts in education (i.e. technical and allocative efficiency) are analysed next, while also examining additional concepts applied in educational studies and how they are incorporated in the proposed efficiency framework.

Blank (2000) defines technical (in)efficiency as the extent to which services can be expanded without increasing resources, or alternatively, the amount by which resources can be contracted without reducing the services. This seems consistent with the previous classification. Allocative efficiency is here defined as the extent to which a service bundle can be expanded by selecting another mix of resources at given costs, or by which a resource bundle can be contracted by changing the mix of service deliveries at given revenue. However, this definition of allocative efficiency is oriented towards costs and revenues without taking into consideration the social benefits and is not consistent with the features of public sector providers (and HEIs), where cost minimisation and revenue maximisation are not the dominant economic goal. More relevantly, this allocative efficiency concept is not considering the other aspects of efficiency as described by McMahon, thus Blank's definition of allocative efficiency actually corresponds to McMahon's price efficiency.

Another description of allocative efficiency can be found in Hoxby (1996) who argues that allocative efficiency is "getting the amount of education right" (p. 54), while productive efficiency concerns minimising the cost of schooling provision. Hoxby also uses the cost aspect when examining productive efficiency which is expected considering that she is examining school finance in a sample of secondary schools in the USA. In a similar vein, Barr (2000) points out that allocative efficiency is centred on producing the types of educational outcomes which equip individuals, socially, politically and culturally, for the societies in which they live. The efficient level of educational output is, thus, at the point where expected marginal social benefit equals the resulting marginal social cost. However, quantifying this relationship is complex and some of the main problems in doing so are discussed in the next section.

The above discussed studies introduced various concepts of efficiency used in the education framework. The goal of this section was not to devise new efficiency concepts but to provide a critical examination of the ones already in use. Although in some cases the terminology between the authors differs, many of the efficiency concepts can be related back to the framework developed by Devine, Lee, Jones, and Tyson (1985). This particularly refers to productive efficiency, consisting of technical and factor price components. The definitions differ more when the concept of allocative efficiency is taken into consideration. This concept is often confounded with factor price efficiency and some authors do not acknowledge that this concept goes beyond the boundaries of a decision making unit (e.g. HEI). The terminology proposed in this paper is similar to definitions by Hoxby (1996) and Barr (2004a) where allocative efficiency refers to a comparison of marginal social costs and benefits, and does not solely relate to a comparison of HEI costs and revenues, as some authors state. In terms of estimating efficiency in education, several very distinct techniques have developed in the literature. The next section provides a survey of these techniques and introduces an approach that will be followed in this paper.

#### 4. Measuring Efficiency in Education

Two most widely applied approaches in efficiency measurement are the Stochastic Frontier Estimation (SFE) and the Data Envelopment Analysis (DEA). The former is developed along statistical lines and pioneered by Aigner, Lovell, and Schmidt (1977) and the latter is a non-parametric technique based on linear programming and developed by Charnes, Cooper, and Rhodes (1978). The majority of this type of research has been related to education institutions in the USA and, lately, in the UK and the Netherlands. Although widely used, both methods have a number of disadvantages. A third method for examining efficiency in HE is also presented, it uses regression analysis and is rooted in the educational production function literature. Some of their main characteristics are presented next and the main problems encountered when using these approaches are identified and discussed.

*Stochastic Frontier Estimation (SFE).* When using stochastic frontier analysis, the researcher establishes a functional form for the relationship between a set of explanatory variables and the dependent variable. The estimated coefficients are assumed to be constant across observations. Stochastic frontier estimators, as previously noted, provide parametric estimates of efficiency. The difference between stochastic frontier estimators and traditional parametric regression is that the error term in SFE is composed of two parts: a normally distributed random error term ( $u$ ) and a second term capturing the remaining error i.e. inefficiency ( $v$ ). The presence of the first type of residuals ( $u$ ) allows the tools of statistical inference to be employed, and this is often considered a considerable advantage of this techniques. However, an assumption regarding the distribution of this noise needs to be made along with those necessary for the inefficiency term ( $v$ ) and the production technology. Given that a considerable structure is imposed upon the data from stringent parametric form and distributional assumptions, misspecifications can be incorporated in the efficiency measure. Additionally, SFE uses information on prices and costs which, according to Worthington (2001), may introduce additional measurement errors.

A recent application of SFE is Agasisti and Johnes (2010) who use a panel dataset to estimate a stochastic frontier models of costs for 57 public Italian universities from 2001-2003. Costs are defined as current expenditures during the year and exclude capital costs and depreciation. Outputs include measures of student numbers and of research activity (number of students on undergraduate courses in sciences, number of students on other undergraduate courses such as the arts, humanities, and social sciences, the total number of research students and, as a measure of research activity, the value of grants for external research and consultancy). The authors find that the estimated technical efficiencies are high, with an average efficiency score of 81 percent. Average costs are in line with studies of university costs conducted in other countries. However, it may be argued that all of these output variables can actually be considered as educational inputs, as suggested by the discussion at the beginning of this section. Furthermore, there are some outliers in the estimation of technical efficiency (universities with very low scores) which the authors cannot account for, this may suggest that there may be some problems in the statistical method used.

In the UK, a study using the SFE by Izadi, Johnes, Oskrochi, and Crouchley (2002) specified a constant elasticity of substitution (CES) cost function and used data for 99 universities in 1994-1995. The dependent variable was the total expenditure of the institution and there were four independent variables (undergraduate student load in arts subjects, in science subjects, postgraduate student load and the value of contracts and research endowments). Again in this study no proposal was made as to how the inefficiencies can be remedied and what were their causes.

*Data Envelopment Analysis.* In contrast to the previous approach, DEA is a non-parametric method thus it provides efficiency estimates which are not conditional on the specific functional form, although it does impose some restrictions such as monotonicity and convexity (in Thanassoulis, Portela, & Despic, 2008). Linear programming methods are used to assign an observation-specific set of weights to outputs and inputs in such a way that the ratio of weighted output to weighted input is maximised for each observation, subject to certain constraints. This approach amounts to constructing a piecewise linear surface over the data so that the actual input/output quantities are either on or in the interior of this frontier. The method can handle multiple inputs and multiple outputs and this makes it an appealing choice for measuring the efficiency of HEIs (examples of this technique include Johnes and Yu, 2008; Johnes, Johnes, Thanassoulis, & Kortelainen, 2011). This method seeks to evaluate the efficiency of a given decision making unit (DMU) relative to the performance of other DMUs producing the same good or service. The unit of analysis for DEA is in most cases an institution or a department, however a new approach has been developed that performs individual-level DEA, i.e. it is applied to individual students (Johnes, 2006b). Still, preliminary evidence indicates that the results of institutional ranking obtained by

using individual-level DEA and the university-level DEA differ and hence further research is necessary to determine the way DEA should be applied in evaluating efficiency in education.

There are several disadvantages of this approach identified in the literature. Primarily, there is no scope for (regression-type normal) residuals to be evaluated, and hence statistical inference cannot be used to examine for the possible bias resulting from external shocks, measurement error or omitted variables. Furthermore, the entire deviation from the frontier ('envelope') is examined as being the result of inefficiency which may lead to an under or over-statement of efficiency and, as Worthington (2001) notes, being a non-stochastic method there is no technique with which probability statements on the shape and the placement of this frontier can be made. Some authors have also brought into question the validity and stability of DEA efficiency results. For example, Smith and Mayston (1987) evaluated the sensitivity of DEA measures to omissions of outputs and inputs. In their evaluation of UK's local education authorities they find that the exclusion of an important output distorts the results of the analysis. Furthermore, DEA only provides relative efficiency scores so it might just be that the selected decision making units are all actually underperforming compared to global best-practice. Performance in DEA analysis is evaluated entirely on the basis of a physical transformation process without taking into account the behavioural objectives of service providers i.e. maximising service provision or revenue (service-oriented approach) or, in contrast, minimising resource consumption or resource expenditure (resource-oriented approach) and efficiency is measured against a benchmark of current best practices.

*Regression analysis.* An additional approach to examining efficiency in HE is from the education production function literature and uses regression analysis (Smith & Naylor, 2001; Johnes & McNabb, 2004; Beirne & Campos, 2007). Here, the use of economic principles to assess the efficiency of HEIs relies on the analogy between educational enterprises and firms, where educational enterprises produce educational outcomes in a way similar to firms producing outputs. Hence, the underlying economic principles from the neoclassical theory of the firm (Baumol, Panzar & Willig, 1982; Varian, 1999) are applied to model the functioning of educational enterprises in which a production function can be used to express the relationships between an institution's inputs and outputs. In a higher education system, universities comprising of faculties, art academies, colleges and polytechnics can be considered as multi-product enterprises using what Rotschild and White (1995) label as a customer-input technology. The quality of students recruited has an impact on peer effects in the HEI which in turn have been found to have a significant effect on student attainment and non-completion (e.g. in Sacerdote, 2001; Smith & Naylor, 2001; Johnes & McNabb, 2004; Winston & Zimmerman, 2004; Stinebrickner & Stinebrickner, 2006). Some other inputs which serve to measure an HEI's contribution to educational outcomes are the socioeconomic background of students, parental income and occupation, student's gender, age, marital status, tuition fee status, race, country of origin, etc. (e.g. in Smith & Naylor, 2001; McNabb & Johnes, 2004; Kokkelenberg, Dillon & Christy, 2008). These inputs and outputs, although being important determinants of educational outcomes, are rarely considered in the two previous approaches leading to questionable results and potentially misleading policy proposals. Using the above mentioned variables is particularly important in light of the reforms in education in Europe since, for example, it allows the examination of the possibly adverse effects on completion and student attainment associated with increased tuition fees and other costs of study. Additionally, the use of regression analysis may identify students who are more at risk of prolonging their studies thus enabling the HEI to act before this inefficiency occurs and the student drops out or extends the duration of their studies. This type of analysis is beyond the scope of DEA or SFE. Another advantage of this approach is that the focus is on students as the main decision making units, a level which is mostly disregarded when using SFE or DEA. The regression method also provides estimates of parameters whose significance can be tested.

## 5. Conclusion

A substantial amount of research has been carried out focusing on inputs and outputs of the education system, in most cases in order to obtain some ranking of institutions in terms of efficiency scores. However, published indicators that are appearing in e.g. 'league tables' often take the form of some simple 'efficiency' ratios such as costs per student or ratio of students achieving a certain qualification divided by the total number of students in a year. The problems of using such indicators have often been pointed out and are related to the specific nature of the educational system. Ideally, all inputs and outputs should be included in an efficiency analysis. However, a separate issue is the level of the analysis, i.e. the unit which is observed and characteristics related to it that should be considered. In HE studies the units in most cases are the individual students, the HEI, the same subject across different HEIs, different departments at the same university or individual universities. In the empirical studies where an individual level approach is taken (similar to Smith & Naylor, 2001) there is an advantage over the aggregate-level studies in that they provide more information and may point out to significant determinants of educational outcomes. In contrast, results from aggregate level studies analysed using DEA or SFE are more easily analysed and interpreted, but there is a considerable loss of information due to the aggregation process and there are also limitations using the mathematical programming approach in examining efficiency and this was presented above.

There is an evident gap in the research in measuring HE efficiency and a diversity of definitions of efficiency may be encountered. This is to some extent understandable given the complexity of the educational process and the general lack of relevant information and data. The terminology proposed in this paper is consistent with that customarily found in the literature on efficiency measurement and provides a clearer understanding of technical and allocative efficiency concepts in the context of higher education.

The review of empirical work on efficiency measurement reveals that the calculation of efficiency scores using DEA or SFE dominates the empirical work. However, there are problems primarily related to the difficulty in measuring educational outputs, inputs and establishing a connection (causal link) between them. Moreover, there are significant limitations in producing simple technical efficiency estimates (i.e. scores) of HEIs in order to rank them. Indicators appearing in 'league tables' often take the form of simple 'efficiency' ratios, such as costs per student or ratio of students achieving a certain qualification divided by the total number of students in a year. The problems in using such indicators have often been pointed out and are related to the specific nature of the educational system. As Adnett, Bougheas, and Davies (2002) caution, 'league table' results are usually based on unadjusted attainment and do not capture objectively the educational value added. Hence they encourage dysfunctional effects, i.e. schools trying to improve their position in the league tables through 'cream-skimming' or grade inflation (Adnett and Coates, 2003; Johnes, 2004). Additionally, when using DEA or SFE a problem may arise in explaining these efficiency scores, because they are relative rather than absolute. This means that the technique identifies benchmark HEIs (from the dataset) which themselves may have scope for efficiency gains relative to some absolute standard not captured by the dataset. Other problems are mostly related to the difference in results stemming from different specifications of inputs and outputs (and data availability) and the choice of technique for estimation. Caution should be taken in how the information stemming from efficiency research is used and this leads to a conclusion that results from such investigation cannot be considered as providing definite guides to policy measures and recommendations. This does not imply that there should be no efficiency studies, but that caution should be taken in interpreting any particular set of results given the conceptual and measurement issues raised in this paper.

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# Elearning content 'usability': semiotic and didactic parameters in digital texts and textuality

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## Abstract

The paper deals with the notions of e-learning content digital texts and digital textuality as design guidelines for the development of didactic materials in the light of semiotic and psycholinguistic approaches. A typology of didactic texts/goals and the cohesive relation between language and visual components in didactic tutorials as far as perception, comprehension and finalization of content will be dealt with.

The semiotic and didactic assumptions will be theoretically illustrated and discussed through the analysis of a number of online demo referring to maths, medicine, and economic sciences presentations.

Conclusions on the need for design implementation of e-learning content will be summed up through a specific checklist of semiotic and pedagogical features for e-content development.

Keywords: e-content semiotics, e-learning textuality, didactic digital texts, iconic-linguistic relation

## 1. Theoretical and applicational issues in elearning content development

As I proposed in earlier contributions, the pedagogical approach to e-learning is basically influenced by e-learning technology (Zuanelli, 2003).

Learning processes through e-learning technologies roughly include: HW, SW and web infrastructures that support learner's activities of communication and interaction with other subjects of the learning community: teachers, tutors, other learners, etc. as well as with electronically supported didactic material (i.e. e-content/learning objects, etc.): synchronous and asynchronous software and multimedia services, courseware, etc.), on one side; on the other side LMS/LCMS and pedagogical platform services: teleconferences, forum, FAQ, blogs, etc.; administrative services; didactic services: enrolling, tests administration, etc.

As a consequence we can state that:

- e-learning contents are basically influenced by their technological HW/SW infrastructure; e-learning implies use and reuse of materials requiring innovative ways of didactic interaction. These innovative

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electronically based procedures positively influence learning processes but at the same time pose new problems as regards the multimedia integration of the didactic message and of the learning objects;

- electronically supported didactic messages and learning objects imply a brand new attention to different methodological procedures as preconditions to perception, memorization and learning itself;
- e-learning requires a prospective definition of new learning paths in order to take care of the didactic integration of different media and content.

Core specifications for the integration of multimedia multicultural e-learning content may be summarized as follows:

S.1.classification/organization of e-learning content

S.2 definition of methodological criteria for a structured elaboration of courseware in the perspective use of content within a platform, with or without the aid of a teacher and/or tutor

S.3 definition of final, intermediate and immediate didactic objectives and tasks in different thematic and functional e-learning paths

S.4 finalised elaboration of didactic content as different from free content

S.5 methodological description of learning units/learning objects as related to S.2

S.6 methodological orientation to e-learning paths as related to approach, method and techniques

S.8 LMS specification of different learning services for different end users

S.9 elaboration of tools for guided learning paths and courseware: informative, operative, transactional units and typologies of e-content: e-books, e-papers, videos, etc.

S.11 supply procedures: on line, off line, print, download, etc.

S.12 communicative interfaces for didactic interaction

S.13 didactic metacommunicative and metalinguistic guides: instructions, introductions, applications, etc.

These specifications would require the following modeling of e-content:

Table 1. Methodological specifications for e-learning content usability

psychopedagogic modeling	goals	approach	content	method	activities
e-based modeling of didactic communication and interaction	type of didactic communication/elearning support	multidisciplinary approach	definition of learning paths	method/content	didactic techniques/e-learning tools
modeling of didactic electronic interface learner/machine (accessibility/usability design )	multifaceted web design	approach	learning architecture	communicative interfaces for didactic content and interaction	didactic electronic devices
modelling of metacommunicative aids for elearning interaction	aided /self directed learning	content presentation	didactic techniques	metalinguistic activities  communication activities/services  interaction instructions	structured/unstructured content
a semiotic approach to interface design	syncretic elaboration of audio-visual materials	content development	textual- iconic typology	function of language content and metalanguage	techniques of didactic presentation

### *1.1. The notion of e-learning usability*

The literature on the subject (Ardito et alii, 2006) sums up different approaches and confirms that the theoretical field is largely conditioned by a juxtaposition of different items subsumed under the notion of e-learning usability (accessibility) such as:

- usability of platforms (LMS and LCMS): functionalities for pedagogical activities
- usability of didactic e-content namely courses/modules in an overall path (structured or unstructured: the sequence of didactic templates, containing didactic functionalities)
- usability of instructional content for achieving didactic goals: structure and sequencing of units/content, didactic elaboration of texts, images, videos and the sincretic structure of materials.

The notion of usability in this paper does not refer to LMS or LMCS. It refers to e-content didactic structure and interface of courses and tutorials as developed into texts, having to do with on line content presentation whether within LCMS or on other platform supports.

As we shall demonstrate, e-learning content development generally lacks a number of instructional specifications needed for on line interaction. In particular:

- the lack of didactic metalanguage and psychopedagogical tips for learning activities
- clear definition/perception of didactic goals in the course and in a unit
- thematic and functional interactional cues in words or icons
- thematic environment (maths, computer science, medical science, economy, etc.)
- typology of texts as related to learning content goals: informative, procedural, transactional (what the learner will get as a result of learning materials and suggested activities)
- finalized typology of e-content texts: descriptions, comments, observations, generalizations, etc.
- audio-visual textuality.

### **E-learning context usability**

An overall appreciation of an e-content context should take into consideration a number of usability variables such as e-learning functionalities, namely didactic activities provided by the course/units/materials; typology of pedagogical texts and related textuality; semiotic communication syncretism of different codes (written and/or oral language, images, drawings, videos, animation, pictures, etc.); clear finalization of messages as related to comprehension, memorization and retrieval for use, both theoretical/conceptual and/or applied/operative.

All together these features of instructional design should appear in e-learning digital texts as provided in visual/auditory displays.

### **E-learning content structure usability**

As for the architecture of the course/lessons display, we should consider a hierarchical, relational and linear sequence of contents: for instance, the possibility of navigating through the course moving from one specific page to related links and moving back without losing context. This implies the definition of the e-learning context

to be related to the course functionalities and the permanent visual contextualization of the learner (see a 'dated' example in [www.pragmema.it](http://www.pragmema.it), home formazione, ecdl, pedagogical database of courses and free demo, 2001).

### E-learning didactic structure

Key didactic parameters, in general (Zuanelli, 2009a), as preconditions for the effectiveness of learning goals in content structure are:

- the preliminary definition of the learner's background knowledge
- metalinguistic tools for the language of presentation
- didactic meta-communication having to do with the cues and explanations of learning tasks and learner's expectations
- e-learning typologies of digital multimedia texts and related digital textuality.

#### 1.2. Internet design: e-learning text typologies and digital textuality

The notion of *text* in linguistics defines a text as an oral and/or written sequence of phrases. These phrases respond to a number of *textuality* parameters, the most important of which are logical-semantic *coherence* and related *cohesion* (deBeaugrande & Dressler 1983).

Cohesion refers to language means used in the production of texts. A typology of texts regard linguistic communicative functions realized (informative, narrative, descriptive, argumentative, didactic, etc.) and pragmatic/performative functions as well (deBeaugrande & Dressler, 1983; Zuanelli, 1981, 2006, 2009b).

From a communicative viewpoint, the possibility of integration of oral, written and iconic components of texts poses a semiotic theme that we may define as the *cohesive syntactic functions* in icons and words (Zuanelli, 2009b, 2013) or else the syncretism of the visual components, written language, graphics, drawings, videos and oral language as well. This is partially the object of the studies in *semiotics of interface design* (Ferreira, 2005; Ferreira J., Noble J. and Biddle R., 2005; Zuanelli 2009b, 2013)

In *digital communication* (Zuanelli, 2006, 2009b, 2012), the identification of pragmatic functions in digital interaction is assigned to the notion of *digital text*.

A *digital text* is the integration of the pragmatic component having to do with the functionalities of a program/software, the *macro-act*, with the content to which functionalities are applied, namely the *electronic text* (Zuanelli 2009b, 2012). The integration of the two allows for a specific definition of usability parameters in web design.

A first look at icons as present in graphical user interfaces (GUI) of sites, informs us of two basic things. First, icons and words define both the **context of interactions** and the **actions suggested for interaction to users**. The context is generally rendered through a visual and linguistic metaphor whereas actions are conferred to visual metonyms. Second, graphical interfaces use different functional typologies of visual information: graphs, icons, colors, space, etc. with the implication that 'concrete', better said 'figurative' icons, as well as already known visual information are better understood than 'abstract' or new ones (Dormann, 1994; Ferreira 2004).

Digital textuality includes a number of information visual elements as appropriate to digital interaction according to *knowledge* and *communication architecture* (Zuanelli 2006, 2009b).

I consider e-learning content software as a specific application of digital communication.

In an e-learning perspective, digital texts correspond to e-learning software as developed in courses and tutorials for pedagogical interaction.

The psychological coexistence of multimedia and multimodal integration of content (Kumar, 2007) is a crucial point and requires a semiotic and psycholinguistic approach to e-content development.

If we limit our analysis to the relation of linguistic-iconic texts we can detect at least the following criteria for the analysis of *digital multimedia textuality*.

Textuality parameters, besides coherence and cohesion, suggest that the virtual situation of interaction, namely a didactic one, has to do, specifically, with the *informativity* of texts and their *acceptability* on behalf of addressees. This implies, as well, attention to specific variables of age, dual information processing, etc.

In general, text coherence as related to linguistic-iconic contents allows for the following modalities of cohesion.

*Linear cohesion*, can be defined as the sequence of images straightly related to an oral text: it is the case of descriptions, informations, comments, namely *representative pragmatic speech events* having to do with transference of conceptual meanings related to principles, notions, situations, etc.

*Relais* (Barthes, 1964) *cohesion* has to do with an alternated sequence of words and images where words let images proceed and viceversa (as in narrative texts, movies, cartoons, etc.).

*Procedural cohesion* is a specification of *relais* cohesion that is needed in interactive stimuli for operative and transactional cues where an oral, written or iconic information require the user's response to proceed.

*Redundant cohesion* has to do with the referential or *performative (directive)* function of oral/written language as matched by a visual metaphor/metonym: the photographic translation of an object (the concept of 'car' as an instance of 'goods' in economy) or metonymic icons for performative functions, i.e. the image of an X for closing, an oriented icon to proceed or the icon of 'file' for opening a file (Zuanelli, 2009b, 2012).

For the development of didactic digital contents, I propose a simple typology of didactic functions/goals having to do with related digital texts and textuality in content presentations.

**Informative goals** have to do with the presentation and description, comment of specific knowledge: historical, economic, mathematical, etc. The audio-visual development presents a number of solutions such as the auditory and/or written explanations matched with drawings, graphs, pictures, as in a face to face presentations aided by traditional technologies. The conceptualization of received information may process facts, principles, notions as related to a specific discipline.

**Operative goals** have to do with texts that translate received information into an operative task and therefore include directive cues: how to perform a maths addition, how to make a medical diagnosis, how to perform a computer task.

**Transactional goals** relate to digital texts that imply a complex interactional task either conceptual and/or operative in a complex computer event virtualization (a statistics elaboration, the solution of a maths problem, the writing of an electronic text).

Digital textuality in transactional goals corresponds to the functional virtual environment for different simulations and tasks: 'an addition for a bill in a restaurant', 'a medical diagnosis in a hospital', 'a desk invoice for a professional accountant' are instances.

## 2. Case studies

The analyses of demo examples of online tutorials/courses offer a 'field' analysis of presentation problems in e-learning content textuality as follows.

### *Case study 1.*

The presentation of measurement language for **weight** in comparative terms:

**Grade 1: Mathematics curriculum/measurement**, state of Louisiana ([www.link2math.com/demo](http://www.link2math.com/demo))

**Objective:** " Use of comparative and superlative vocabulary in measurement settings (e.g., **longest, shortest, most, hottest, heaviest, biggest**)".

As we shall see, the iconic animation, auditory and written support are meant to represent and explain weight comparison as correlated with specific nomenclature to be learnt.

We may guess the didactic objective is twofold: understanding the conceptual difference in weight comparison and acquiring the linguistic skill in maths nomenclature: **light** as opposed to **heavy**, **heavy** as opposed to **heavier**.

The presentation is assigned to an animated video governed by a linguistic oral/written representation of the notion followed by questions of knowledge elicitation/verification and tasks of specific measure nomenclature.

### **Presentation:**

iconic animated text1: narrative (informative goal)

auditory text1: dialogue related to narrative event

auditory text2: directive didactic dialogue (operative task)

written text 2: representative words/phrases (referential function+ representative function of nomenclature)

iconic text 2: referential representation of objects and animals

The video animation presents a boy and a girl in a car.

The car gets stuck.

The girl gets off and tries to push the car.

She asks the boy why she does not succeed in doing it.

The boy says that the explanation, a **larger weight**, can be given by answering a few simple questions. Here comes the directive text in the form of questions and answers,

## Questions

The video shows an **elephant** and a **deer** (in a balloon **visual format**); the boy asks which has a **larger weight**.



Fig.1. Question on animals size

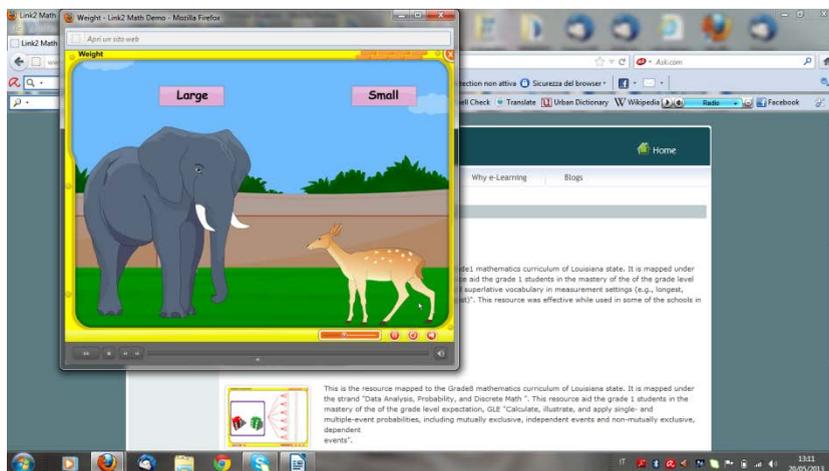


Fig. 2. Labelled drawings

The drawing opposes two labels appended to the two animals: **large** versus **small**.

The visual and conceptual implication seems to be that 'large' has to do with 'size'.

The girl answers: "the elephant".

Then the boy asks which is **lighter**: a **car** or a **bicycle**.

The drawing opposes a **car** to a **bicycle** and opposes, as well, **lighter** to something not defined as heavier.

The girl answers: " a bicycle".

Finally, the boy asks the girl to think of different human actions: holding, pulling, pushing, lifting.

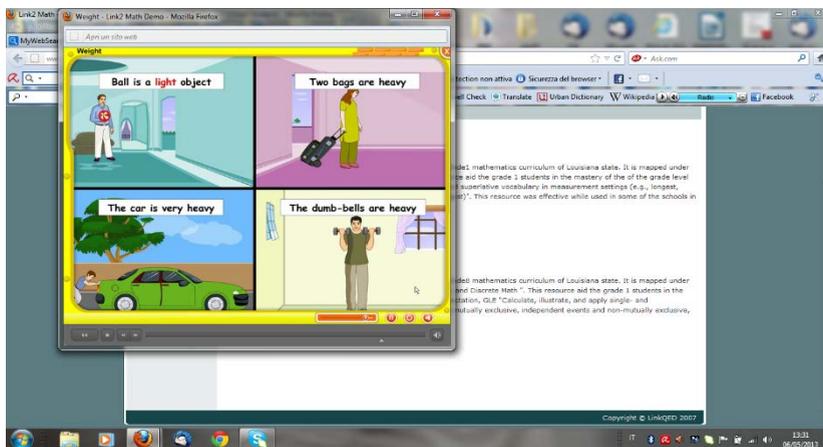
He shows four images that oppose 'light' to 'heavy', as related to different actions.

We suppose the implication is a relation of cause-effect (if **light** then **holding**), (if **heavy** then **pulling**, **pushing**, **lifting**???)

**Light** is opposed to **heavy** through the different actions as related to different objects.

The implication here would be that certain objects are **heavy** and other ones are **light** as related to actions.

However, the conceptual effort is threefold: an auditory and visual correlation, the reference item **light** as opposed in the three examples to **heavy** objects whose context may be misleading, the correlative comparison of weight.



In fact:

The man **is holding** a ball, that is light

A woman **is pulling** two bags (why not one?) that are heavy

A man **is pushing** a car, which is heavy

A boy **is lifting** dumb-bells, which are heavy too.

The comprehension needs the activation of a number of suggested iconic and linguistic inferences.

If you drag/pull something, then that something is heavy; if you push something, that particular something is heavy; whereas holding a ball is naturally a light task whilst lifting dumb-bells requires an effort because dumb-bells are heavy.

The implication is that when one does something with an object, the weight may be light or heavy, according to the object, depending however on human activities you are engaged in.

The task is threefold: an informative conceptual task, an operative one, namely the measurement comparison, and the linguistic skill for denomination of concepts.

On behalf of students, the 'logical' sequence of presentation needs iconic inferences as well as linguistic ones, which do not seem coherent.

Let's see:

**larger weight** (measure) as applied to a car;

**large-small** opposition as applied to **size of animals/objects**;

**lighter** as comparison of two objects of different size and weight, a bicycle and a car, of different weight;

**light**, the ball, as opposed to **heavy weight** referring to human actions and objects.

The non-coherent confusing inferences implied are:

- non positively redundant inferences between codes (iconic and linguistic)
- erroneously related concepts (**weight** is not necessarily related to **size**, in any case):
  - elephant versus deer **yes**
  - car versus bicycle **yes**
  - dumb-bells versus ball **no**
- with the plurality/polisemy of meanings of icons and words: **larger** is referred to size (elephant) and **measure** as well (**larger weight**, namely **greater than**).

Finally, the lexical semantic dissymmetry should take into considerations *language relativity*, having to do with the mother tongue of students and the filter effect:

Italian **alto** is opposed to English **high** and **tall**

Italian **basso** is opposed to **low** and **shallow** and **short**, etc.

This analysis reveals a considerable number of problems as related to the compliance of iconic-linguistic didactic goals, whether conceptual/informative, operative and transactional and the questionable syncretism of different codes: iconic and linguistic ones (auditory and written ones) in the complex textuality of functions of the two.

## Case study 2

In another maths example of the same site, having to do with the explanation of probability, the visual and auditory presentation of the throw of dice, leading to a number of results graphically presented in a sequence, poses questions as to simultaneous application of maths operations, to be inferred by the text and to the quickness of audio-visual presentation that should require a longer latence of response.

### Case study 3

In a different maths demo, math fact fluency demo, proposing auditory and written presentation of real world scenarios, the oral narrative text is matched with a visual animation of the chosen avatar representing the student, entering a math bistro and ordering something. The bill would be the addition of  $7+3=10$ . The pleasant animation does not propose the analytical explanation of the given result, although interactively elicited.

### Case study 4

In a medicine tutorial, [www.emedsim.com](http://www.emedsim.com), the clear definition of the didactic goal and the audio-visual presentation of the diagnosis procedure is matched with a written presentation and suggested written cues to be combined with a contextual list of written diagnostic options which are not sequential.



Fig.4. Image with interactive tip (informative)

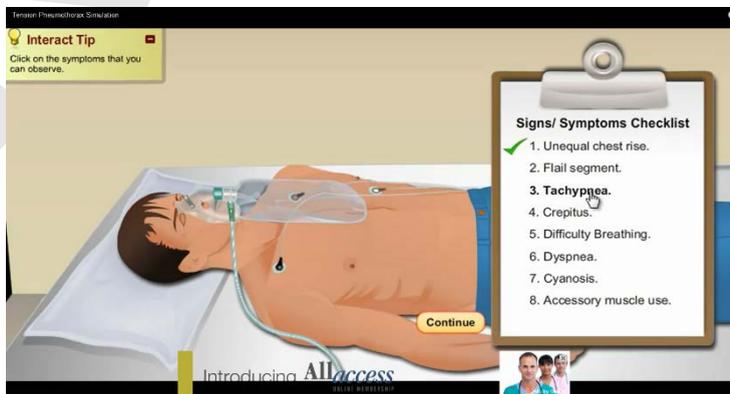


Fig.5. Image with three interactive tips

As we can see, interact tips are of three types: a wider explanation, a choice of diagnostic options, the invitation to proceed by means of the cue: “continue”. There appears to be a lack of *medicine metalanguage*, the nomenclature for different signs/symptoms, whose *background knowledge* seems a pre-condition to the choice of the diagnostic choice.

Besides, the possible interactive result would be an uncertainty as to which cues to respond in a preliminary way.

### Case study 5

In an economics demo, the linear auditory-written explanation of the notion of 'goods' is matched with a visual metaphor of a car, which implies a semantic inference of *hyponimy*: **car** is included in the *hyperonym goods*.

If we apply previous definitions to the analysis of pedagogical implications and evidenced problems in different cases as discussed above, we obtain the following scheme:

Table 2. Synoptic presentation of textuality problems in e-content multimedia digital texts

audio visual didactic texts	inadequate	too fast	wrong visual implications	language implications
Oral text narrative descriptive operative transactive	not specific for didactic purposes: -perception -comprehension -functional translation (narrative as different from directive)	not time enough for processing visual and auditory inputs	different linguistic and iconic inferences	lexical dissymmetries between different languages
Textual-iconic finalization: representative/performative	the textual explanation does not correspond to a conceptual or operative goal	+ -	flat representation of an oral explanation/error of conceptualization	visual interference
Required inferences iconic inferences language inferences	inferences for the same concept do not coincide/wrong inferences	processing time is not enough	linear cohesion of icons does not correspond to linear cohesion of words	polysemy of icons and words
Language filters lexical dissymmetries	+ connotation -	n.a	language relativism	+ -

## Conclusions

The complexity of multimedia-multimodal e-learning content development implies the analysis and integration of a number of didactic communication variables, based on a semiotic-linguistic approach to e-learning digital

texts and multimedia textuality.

The identification of problems requires specific solutions to be derived from digital communication theory.

These, in turn, should be appreciated in instructional design.

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4<sup>th</sup> International Conference on New Horizons in Education

## Elements of science in cypriot folk stories

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### Abstract

Children need literature. Literary and folk creations that enrich and beautify their limited lives and life experiences that are shaped only by their families and close surroundings, that teaches them concepts and values are very good and valuable guides to children in many other ways. Folk and fairy tales, nursery rhymes, riddles, puzzles, lullabies, proverbs are just some of these creations. Nursery rhymes in children's literature help improve language skills, riddles also help practice and improve language skills and the development of intelligence and fairy tales improve children's imagination. And children meet stories and folk tales after they have spent enough time with the heroes of the fairy tales and when it is time to meet the real world and heroes. Story's definition in a dictionary is telling an event orally or verbally and prose describing a real or imaginary event. As a part of literary, story is more realistic than a fairy tale since it describes events that have or may happen and they are shorter than a novel (Şahin and Turan,2010:148). The source of these stories date back to old India. It was claimed that the first example of stories have been "1001 Arabian Nights" (Demirel, 2010:198). Stories are narrations that are longer than fairy tales and shorter than novels. Children may find many information, ideas and comments given answers to questions like "why" and "how" they ask in order to solve the mysteries of the story (Oğuzkan, 2006).

This study tries to determine the scientific elements in few Cypriot Folk Stories selected via content analysis method. The researches have selected themes "Earth and the Cosmos, Physical Events, Matter and Change, Livings and Life" and have created list of codes related with these themes. The researches have applied content analysis method to the content of few Turkish Cypriot Folk Tales compiled by Mustafa Gökçeoğlu according to the related themes and codes. At the end of the research, the scientific elements detected in the folk tales have been indicated in tables classified according to the themes and codes and the examples have been shared. It is believed that the results of this research will help Turkish, literature, science-technology and classroom teachers who are looking for interdisciplinary integrations with regards to teaching science and will help them gain a different point of view.

Keywords: story, science elements, Cyprus Folk Stories

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## 1. INTRODUCTION

Oral literature is usually viewed as narration only aimed at entertaining. However, this type of narration has indeed been the resource for many areas from sociology, anthropology to ethnography. When examined, a story telling that there has been a famine of seven years might actually be pointing out to a draught that has lasted for longer. Therefore, folk stories told in oral form from generation to generation should be examined and it should not be forgotten that these are not solely a product of the mind and imagination, but are almost always based on the past events experienced in a society. Further, these products also transfer a lot about the ways of living, values, belief and belief systems of the society they are created in to the next generations.

Gökçeoğlu states that verbal folk literature is very effective in the common ground in societies and teaching the ethical rules and keeping the society under control. Further, the motives explained in links in stories that are told and likes most also reveal the criteria of the taste of societies (Gökçeoğlu, 1999:7).

In this study, few examples of Turkish Cypriot Folk Tales have been selected; the scientific elements in these stories have been determined and whether or not these scientific elements are suitable to be used in teaching of Science have been discussed. It is believed that the results of this research will help Turkish, literature, science-technology and classroom teachers who are looking for interdisciplinary integrations with regards to teaching science and will help them gain a different point of view.

## 2. Method

In this study, the “scanning” pattern within the “descriptive research” method has been utilized (Büyüköztürk, Kılıç-Çakmak, Akgün, Karadeniz ve Demirel 2008, 16). According to Karasar (2006, 77), in the scanning pattern, the subject forming the subject matter of the study is tried to be defined within its own conditions. In this respect, Turkish Cypriot Stories have been selected as examples.

### 2.1. Data Analysis

Scientific elements in the stories have been determined via content analysis through document examination. The analysis unit has been selected as “sentences or paragraphs”. Document examination includes examination and analysis of written materials covering the targeted concept or concepts (Yıldırım and Şimşek, 2000, 140). The main purpose of content analysis is to reach and reveal the concepts and relations that may explain the data collected. Thus, similar data shall be gathered around common concepts and teams and it will be possible to organize and interpret such data in a manner that is easily comprehensible by the readers (Yıldırım and Şimşek, 2000, 162). In this study, “coding by pre-determined concepts” method has been utilized which was defined by Strauss and Corbin (1990). The researchers have selected the “The Earth and the Cosmos, Physical Events, Matter and Change and Livings and Life” themes, which are also included in the Curriculum of (Ministry of National Education, 2013) Science and Technology Lesson and have issued code lists. The researches have analysed the contents of the Turkish Cypriot Folk Tales compiled by Mustafa Gökçeoğlu according to these teams and code lists. The scientific facts in the stories have been classified and indicated according to the teams and codes in tables and the related examples have been shared with the readers.

## 3. Findings

Mustafa Gökçeoğlu’s book “Hikâyelerimiz Tekerlemelerimiz” has thirty folk stories. The researches have analysed the contents of these stories according to the “The Earth and the Cosmos, Physical Events, Matter and Change and Livings and Life” themes that have been selected from the Science and Technology Lesson curriculum: The distribution of 68 codes of these themes are indicated in Table 1.

When table 1 is examined, you can see that many codes related with Livings and Life (f:25) and Matter and Change (f:24) have been identified. Further, there are Physical Events (f:13) and the Earth and the Universe (f:6) teams. Some of the citations from stories used for examining the teams and codes are as below:

Theme: Livings and Life

Code: (Growth and development in humans)

“...We grew up together but you couldn’t come today. You are a grown up, a spirited, reckless girl.”

Theme: Livings and Life

Code (Growth and development in plants)

“... Pomegranates were both sweet and juicy. Pomegranate seeds were blood red and beautiful.

“... Days passed by. Lady Sultan, vizier’s wife and the servant’s wife were all loaded like a ship. Nine months and ten days passed. The day and hour they have been waiting for came. The people in the palace were all in a rush. After the sound of a push or two came the cries of the babies.

Table 1: Distribution of the Teams and Codes Determined

Teams	Number of Codes (f)
The Earth and the Cosmos	6
Physical Events	13
Matter and Change	24
Livings and Life	25
<b>Total</b>	<b>68</b>

#### 4. Discussion and Suggestion

It is evident that there are many scientific elements in the samples selected amongst the Turkish Cypriot Folk Tales. These folk tales, which are one of the major products of the folk literature, are created based on few areas; therefore, there are few things that feed these tales. Some of these areas are society, the individual, nature, philosophy and the relation established with the universe.

When examined from a scientific perspective, it is revealed that these tales are not merely stories that exist in oral literature with the aim of entertainment but they also include many scientific facts. Our aim in this study was to emphasize this fact. There are many fascinating examples of this pattern especially in terms of science. Folk

tales, which sometimes describe a young girl growing up by being more spirited sometimes tell the growth and development of animals and sometimes give information about plants and animals. However, the important thing is to realize this fact, classify these information and try to contribute to interdisciplinary studies in education area.

In this research, some examples within science have also been examined Boratav (1969) has stated that Turkish fairy tales to have motives that are very similar to reality to be very distinctive. In this regards, it is a necessity to examine the scientific elements in folk stories along with fairy tales. There are few studies conducted on the scientific truth behind lullabies and proverbs in some disciplinary researches (Karaöz, 2009; Güneş, 2012, Atmaca ve Kayhan, 2013).

It is believed that the results of this research will help Turkish, literature, science-technology and classroom teachers who are looking for interdisciplinary integrations with regards to teaching science and will help them gain a different point of view.

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# Embodiment cognitive science in educational field

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## Abstract

Recent researches conducted in neuroscientific field emphasizes the hard link between the mind and the body: mental performance are incorporated. The founding fathers of this vision are Damasio, LeDoux and Edelman. In all mental experiences the body is involved, more or less directly. In this regard, Damasio observes how perceptual experience is constantly followed by changes at the physiological level.

LeDoux emphasizes how the body is essential to emotions. “The feedback of the body, is also essential for the brain to process the conscious level.”

According to the theory of Embodied cognition of Vittorio Gallese, that is the theory of embodied mind or situated, the mind dwells in a particular body. In this perspective, the cognition proves to be dependent from the experience body, a body that is characterized by its particular perceptual and motor skills. Cognition, therefore, arises from bodily interactions with the world. “The thought is on the ability of an organism to act as part of its environment”.

The prospect of embodied allows more to overcome the mind / body dualism, noting that organisms have a body and a brain and that cognitive processes are based on sensor-motor processes. In recent years the neuroscience describes cognition not as information processing (according to a cognitive approach), but as a movement and action. Cognition is not only embodied but also situated in a context that strongly determines and conditions. And our body is our first context, our first item of determination.

**Keywords:** pro-active body; mirror neurons; emotion learning; neuroscience;

## 1. Introduction

The emergence and dissemination of neuromythologies is linked to the differences and the prejudices between "hard" sciences and "soft" ones, the first characterized by the objectivity and the possibility of measuring and, then, from an experimental setting; the second, instead, characterized by an interpretive and a circumstantial approach.

An effective alternative that overcomes this dichotomy, these prejudices is the neuroscientific paradigm, which providing a common language to doctors, biologists and scientists joins human disciplines, promoting integration, dialogue and collaboration. This paradigm is perfectly suited to the needs expressed by our company, in which it is appropriate to refer to “thought that interconnects” Morin. Where we can link to the "principle of dialogue" is necessary to use the terms that seem in contrast but that actually, at different times, they are complementary (Chiosso G., 2004).

It is therefore an epistemological revolution. The research of Michael d. Gershon (1998), neurobiologist at Columbia University in New York, on the existence of a second brain, demonstrate this profound change of

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perspective. The intestine can control its behavior using an autonomous system, called enteric nervous system. The intestine, although with a few neurons, working independently, helps to secure the memories connected with emotions and plays an important role in the "visceral decisions", spontaneous and unconscious ones (Gamelli I., 2005).

The concept of mind, therefore, is much broader and includes the thought, the body and the environment (Clark, 1997). For a long time in the analysis of mind/body relationship has preferred to make a "body epochè" (Barile E., 2007) to understand the mind easier. The importance of representation or perception of the body resulted in a return to mind/body dualism.

The psychological and neurobiological literature lacks a model explaining the transition from body to mind. However, The efforts of major neurobiological, as Damasio, whose thesis contends that "the representation of the body is the primordial and is constituted through the interoception and proprioception" are noteworthy. This type of representation is presented in image format and uses another type of representations defined by Damasio "dispositional productions" (Barile E., 2007).

Piaget clarifies the relationship body/mind. HE gives great importance to the action, as a tool to enable every human being to know and interact with the surrounding environment. This action corresponds to the sensorimotoric (0-2 years): the child growing up is characterized by psychomotor gestures, to constitute his first approach. According to Piaget thought is "an internal action", since every mental act is originally derived. With Piaget begins an educational and therapeutic movement, psychomotor, defined at the Centre of the relationship and the child's cognitive activity, the body approach. From Piaget onwards we discuss action and thinking in terms of a recursive and systematic nature (Gamelli I., 2005). Since there is no comprehensive and clear model of explanation of the relationship between body and mind, we can recognize the importance of an interdisciplinary approach, which could explain the relationship between neural events (biochemical reactions, synaptic connections, neural networks etc.) and mental events (thoughts, emotions, forms of communication).

Recent research conducted in context neuroscientific underlines the close link existing between the mind and body: mental performance are "incorporated". The fathers of this vision are LeDoux and Damasio, Edelman (1999). LeDoux stressed that the body is important for the emotions. "The body's feedback is also essential because the brain should process at a conscious level" (1996).

## 2. Objective

The objective of this work is to understand if and how the theory of Embodiment Cognitive Science can be used in teaching. As mentioned in the introduction, the recent research on Neuroscience, enhancing dialogue between body and mind, suggest new interpretative keys to understand phenomena related to education.

Considering this cultural philosophical revolution, supported by Neurobiology and Biopsychology, didactic puts the study of corporeality in relation with the environment.

## 3. Method

This study started from the theory of Embodied cognition by Vittorio Gallese, considers cognition as a movement and an action, the result of interaction with the environment. The discovery of mirror neurons and how these cause within teacher-learner relationship the necessary enhancement of corporeality and the communicative function of the teacher and the learner's cognitive function is very interesting.

According to the theory of Embodied cognition, cognition depends on bodily experiences, from a body that is characterized by its particular perceptual and motor skills (1998). Therefore, cognition comes from bodily interactions with the world. "The thought is the ability of an organism to act within its environment" (Cosentino E., Vazzano S., 2007).

The prospect of embodied allows to overcome the dualism mind/body, pointing out that organisms have a body and brain and cognitive processes are based on sensory-motor processes. In recent years cognition is no longer described as information processing (according to a cognitive approach), but as a movement and action (Jeannerod M, 2007). Cognition is not only incarnate but also situated in a context. And our body is our first context, our first element of determination.

The prospect of the incarnation thinks that mental activity and the underlying brain activity can be understood only within the context of body activity. Cognition arises from interactions with the world and, to this end, it can be defined incarnate. The thinking is the result of the ability of an organism to interact with its environment. Basic movements and behaviors are required for developing cognitive abilities. Basically, when an organism is able to control his movements and actions, develops an understanding of basic perceptual skills based on motility, i.e. its capacity to change its position in relation to the environment (Cosentino E., Vazzano S., 2007).

The thesis of embodied cognition theorists is that the formation of categories and concepts is given and subject to the constraints of senso-motor experiences of the organism (Cosentino E., Vazzano S., 2007).

Therefore, the neuroscientific research offers a unified vision of man, attempting to join mind and brain. Cognitive psychology and neuroscientific research reconsider the idea that the sensory and motor areas are separate.

The recent discovery of mirror neurons enables us to understand how we perceive and understand others in a new way. This discovery has revealed a fundamental aspect of our social dimension of reciprocity that allows us to establish relationships with others.

One of the most important consequences is a possible redefinition of the learning process and, therefore, of teaching. Mirror neurons underline the importance of practical experience in the process of knowledge acquisition. Additionally, these neurons refer to a concept of intelligence as something deeply relevant to the interaction and imitative learning.

Rizzolatti writes: "the activation of mirror neurons is able to generate an internal motor representation (potential) of the act, which would depend on the ability of learning by imitation" (2006). The most fascinating experiments are related to the ability to understand another's emotional state, to perceive what we perceive each other. Recent experience shows that observing a person's face expressing an emotion, stimulates in the observer the same brain centers activated with an emotional reaction. Each of us is able to perceive the pain of the other but sharing empathetic to this pain is different from one individual to another.

Therefore, the operating mechanism of mirror neurons play a key role for the understanding of the construction of social identity: we are able to recognize each other as similar, since we share the same experiences, and that's because we share the same neural mechanisms.

Learners are no longer seen as persons to whom knowledge is transmitted, but as individuals who, in their individuality and specificity, require understanding and relational integration. It is the synergy between neuroscience and education, the sharing of knowledge and mutual collaboration in the study of common problems, even if respects the specific identity, allow us to reach a deeper understanding of the functioning of the mind. Neuroscientists "humanists" combine bio neuroscientific knowledge and experimentation with literary, historical, philosophical, psychological and pedagogical backgrounds. The knowledge of the functioning of mirror neuron determines a new vision and new ways of interactive learning, which can be obtained by units and personalized study plans based on pluri-disciplinary sharing of knowledge.

#### **4. Results**

Teacher function does not end in the formation of skills, it is not only related to the disciplinary skills, to the amount of content to be transmitted, but develops into a relationship where you need to grasp and understand the emotions, feelings, experiences that determine the learning way of the students.

Teachers are asked to approach more and more the "feel" of pupils and to "make alive and stimulate learning"(Gomez Paloma F., Nicodemo M., Sgambelluri R., Ambretti A., Di Tore S. & Sibilio M., 2010). The experience of feeling is not exclusive of the emotional dimension, constitutes just one aspect and "seems to start from the body and, more specifically from a biological body, organic in nature" (Barile E., 2007).

"Emotions involve the body, the entire body, and may be due to external (sensory) inductors as internal (memory) images and their outward expression can be modeled according to social and environmental factors. [...] The "low" plan, which involves the most primitive and subcortical areas that "high" of cortical processing, cognitive, conscious intersect constantly "(Barile E., 2007).

It is evident, therefore, the dimension of our learning conditions and cognitive processes. Biological standpoint, in fact, seat of emotion is the limbic region, which is connected to the environment via the afferent nerve pathways, which convey to the brain sensations and perceptions and is integrated into the cerebral cortex ". Affections, therefore, are the building blocks of his identity "because they dominate the subject and structure. Between emotional processes and learning there is a deep connection, because it "always develops within a emotional relationship ". The educational relationship means existential presence of the educator for the student (Goleman, D., 2000).

The educator should have an empathetic capacity, as facilitator of learning. Vittorio Gallese defines empathy the implied dimension of intersubjective capacities to transfer meanings from one person to another by using the body as a vehicle for this transfer (Gallese V., 2007).

Empathy, or *Einfühlung*, . the ability to enter another, is "a mirror that allows the learner to understand just what are the attitudes or behaviors that push him to do or say certain things or to live in certain behaviours". The purpose of teaching, then, is to give every student the tools to drive learning. These tools are in each of us, in our awareness that corporeality/learning helps us to bring them out "(Gomez Paloma f., 2009).

Laura Boella presents an interesting reflection about empathy in her book " To hear each other. To know and practice empathy". Boella, crossing the thought of Husserl, Edith Stein, defines empathy as the way which allows us to access the whole other person, as a form of access to the reality experienced by another human being with the creation of a co-shared reality.

A decisive role in the emotion of the match is represented by the body, because it is the whole body that resembles the experience of the other person, who has all the intensity of feeling, that is driven entirely by experienced, which follows the course, assumes the contents. The whole body makes possible to "put yourself in the shoes of the other" (Bollea L., 2006).

As Welsh says, one of the main goals of the research of contemporary cognitive neuroscience is the "naturalisation of cognition or social intelligence, consisting in the understanding of the nature of the neural processes that regulate interpersonal relations, intersubjectivity. The problem is to understand the neural mechanisms that allow us to communicate with our fellow, to transfer our desires, our beliefs, our intentions, and at the same time to understand what others do and why they do it. The goal of this project is to clarify the connection between the mechanisms of brain and our social cognitive skills (2013).

The methodology that is more appropriate is that of "emotional laboratory", which is characterized by two assumptions:

- Excite
- Get excited.

All those who live the learning/teaching process are placed in an "emotional affair" because a mind teaching cannot evade from a teaching from the heart, because the feel of the mind is the feeling of the heart.

Gallese believes that cognitive neuroscience are able to give an answer to the questions of Husserl's Phenomenology.

A naturalization project of phenomenological research, also in the contribution of Francisco Varela, who, by analyzing the role of body-environment interaction in cognitive processes, formulates a new approach to the study of consciousness and cognitive processes called neuro phenomenology. According to Varela, neuro

phenomenology perspective is able to combine empirical methodology of Neuroscience with the proper scan of Phenomenology. We can overcome the mind/body dualism, putting at the centre of the empirical investigation the Leib, the "live experience" (Gallese V., 2013).

A deeper dialogue between neuroscience and phenomenology is necessary and Gallese actually notes that cognitive neuroscience are starting to investigate the neural components related "embodied" the experience of the world. "We are seeing the development of a neuroscientific approach that puts at the center of their investigation the living body and its neural related sense-engines" (Gallese V., 2013).

The body is alive, "is not, therefore, an object, a thing or a fact [...]. Whether it's the body of others or of my own body, there is only one way to know the human body: living it, that is let our drama that crosses "(Merleau-Ponty m., 1945).

Using the expression of Merleau-Ponty we speak of a "body" who lived "not only the way we have actively taken upon the world, it is also our opportunity to be involved and to live" (1979).

"A teacher, an educator or a therapist becomes sensitive to bodily aspects of the report will certainly be a more attentive observer how bodies have and move in space, their" dancing "(rhythms), various relational body configurations (including his own, of course) unfold. It will isolate more individual behaviors, with the inevitable task of judges which springs from and, consequently, will use those results as operational resources. [...] A pedagogy of gestures and movements is a pedagogy of listening and presence, an attitude that legitimates a different attitude and a different placement in relation to the other, which transforms regular patterns and propose "settings" for learning. [...] Suspending judgment, the habit of wanting to immediately intervene, to hear what passes through the body opens us to a continuous stream of meanings (as I'm breathing? How my heart beats? How does my muscle tone? And my voice? Which quality express my gesture, my eyes, my face?).

"To Know what we can do through my body won't let us to figure out what the other test, but above all to generate naturally an effective tuning, and appoint emotions and feelings that inform his relationship with that particular child, teenager or adult "(Gamelli I., 2005).

The teacher should pay attention to the skills of the students, recognize them and try all strategies to enhance his learning styles.

Each educational relationship between teacher and student must meet exchange, participation and alliance. The educational relationship builds daily, starting with the mutual feeling and consolidates its position thanks to the sharing of educational experience. It is important that between teacher and pupil creates a relationship of trust and esteem, which will consolidate in a direct and personal dialogue.

The school is not only the place where you learn, but also the environment in which you enter the emotions and experiences of each participant in the educational process. The school context is the place where, thanks to the constant attendance between faculty and students, there are situations that stimulate reflection, you learn to take positions, to confront, to express opinions and judgments.

The teacher creates learning opportunities being involved firsthand in the teaching/learning process as an expert connoisseur of discipline; recognizes the intellectual, affective characteristics and interaction among students in order to offer learning opportunities according to their own peculiarities. It follows that the teacher must be an expert connoisseur of teaching methodologies to be implemented following an elaborate plan, reflecting on his own experience, confronted with the gentlemen, looking back and correcting the design a more functional aspect to learning of students.

Learning comes through a process that is at the same time, cognitive and affective and therefore only an authoritative and anti-authoritarian teacher, who has got, in addition to concepts and values, an open mind and a critical capacity, allows its learners, through active participation, to joint responsibility and cooperation, to develop interests and mental structures (knowledge, skills, beliefs).

The analysis of education, led by neuroscience, often referred to "Neuroeducation", explores some of the basic processes involved in learning processes. The results of the research show that, with the commitment of all students, teachers, parents and policymakers, the impact of this emerging discipline could be highly beneficial.

As Buber argues the use of "complementarity and contain (Gegenseitigkeit und Umfassung)" has created between teacher and pupil a profound dialogue from which stems a feeling of profound trust and commitment "to be and to continue to be for each other" (Buber M., 1993).

The student asks the teachers to be heard and understood, and not be just stressed and assessed cognitively. He also asks to take the initiative, responsibility and his real involvement in the learning process. The context in which learning takes place is the organization of meaningful activities for and to each student, ensuring the expression of all dimensions of the person: will, intelligence, operation, motricity, social morality.

## 5. Discussion/Conclusion

A good teacher should have the ability of involvement. The teacher prompted cultural and educational skills, which are essential to enable the staff of conquest by the pupils, both competences are necessary to interact successfully with peers, parents and pupils, and in particular to establish educational, significant and effective relations. In the teaching process, therefore, is crucial the relationship established between teacher and learner, which must not be confined to a "giving" and "receive".

Didactic communicative action must not neglect non-verbal signals that indicate presence, dominance, competition, testing, anger, denial, acceptance, friendship and much more. We must, therefore, do critical self-analysis effort making more aware of some metacommunicative intentions. A reflective educator should ask what is the effect of gestures, body scenarios where he works on the mental environment of the learners (Gamelli I., 2012).

The teacher must accompany the action of subject learning, respecting the stages and the goals of the other.

Every relationship is also made of unfortunate episodes, of wrong answers: the important thing is that these behaviors are chronic, which does not represent the way through which structurally we relate to another. It is essential that the teacher reflects on her answers, the attention to his behavior must also become attention to his ability to interpret situations. Unfortunately the teacher may often, for various factors, incur the error. First, the teacher's work is directed to more people and the number represents an obstacle to intersubjective action.

We must remember also the institutional tasks that a teacher is called to fulfill (audits, evaluations, performance of a program at certain times and a series of operations that represent the everyday life of a teacher).

The teacher should role without leaving stereotyped behaviors. The teacher must take into account the personal and social conditions of students and encourage their learning, through custom programming to facilitate group work. The teacher must pay great attention to the way the student relates to others and the way they work in groups.

School context still dominates a dualistic vision of psyche-body and often teachers overlook sensomotor aspects. Interesting indications are provided by neurodidactic, where the mode of transmission of knowledge uses physical education as a discipline related to the emotion and pleasure to acquire knowledge or methods in other fields of knowledge.

I fully support the ideas of my colleague Chiara D'Alessio when she writes that the most effective solution to address the development and education, in a time of crisis of values, is the use of the body, understood as organic experience significant (Leib) and not as a mere object (Körper) (2010).

More and more studies show the importance of education in the processes of learning. Nowadays Italian school spreads a "new culture of sports science, bioethics that places motor scope as a particular area of human learning. Educate the body, but above all through the body, is this the prospect of a real "neuro" activities teaching motor skills ... " (Sibilio M., Gomez Paloma F., 2003).

Learning becomes an active part of the body. The body represents "the construction of a system to know highly personal and unique that is inscribed in our hands, our legs, our eyes, our physical stamina to daily stress, in our cardiovascular system and motor coordination in our ability and mature control that participates in our act in space" (de Mennato P., 2006).

Physical education is not limited to knowledge of what and how to teach, but how especially the subject learns and what are its cerebral mechanisms that allow an adequate motor response to the same context.

The research in the field today are neuroscientific to pedagogy by promoting and supporting this value in the field of education, where the teacher's task is to foster in each student, the progressive control of motor behavior.

The physical activities to achieve objectives relating to sense-perception, visual, auditory, tactile, and kinesthetic.

The child, therefore, since the early years, must develop the skills of perception, analysis and processing of the information.

The involvement of body dimension in the construction phase of its image, in recognition of the functions of the body and its perceptual capacity, expressive and relational, allows the child to participate actively with the world around him, the perception of its limitations and especially awareness of their potential.

In learning the focus to the body, emotions, non-verbal signs not only affects the physical and functional aspects of the body, but "the ability to build their sense of self through actions, the research directions hearing on Visual, tactile, that drive the movement inside of spaces and materials of everyday life" (de Mennato P., 2006).

This perspective has strongly influenced the teaching of sciences, stressing the close relationship between body and mind. Even psychoanalysis has contributed to the development of this vision by supporting the active role of the body experience in construction of the ego. Psychoanalysis with his closes a long period characterized by the reduction of the body. Freud emphasizes the fundamental importance of bodily experiences since the early stages of life; the child through movement would send out information about his unconscious processes.

The University of Milano-Bicocca established, for over ten years, the first teaching, Pedagogy at the Faculty of education. Ivano Gamelli, teacher of such teaching, defines the pedagogy of the body "an open territory, cross, available at constitutively comparison and to contamination with other sensitive knowledge, in an authentic setting topics and game to overcome language hierarchy within the educational relationship" (2012).

It is essential to invest in training and updating courses in schools and in socio-educational services, setting educational practices related to potential physical, sensorial and emotional expression of the body.

Universities should seriously engage in the organization of curricula, instituting lessons designed to impart an education through exercise of body and movement. "Body approach to knowledge and the report calls for, in fact, to get out some academic schemes, especially with regard to the traditional form of the frontal lesson [...], to discover the University a chance to" learn moving "differently, to live classrooms, sit on the floor, lie down, relax, walk and dance barefoot." (Gamelli I., 2012).

Educators must provide educational practices to the body starting from the kindergarten, in which precisely take pedagogical value spaces, practices of care, time to play, the role of the teacher, the educational experiences of pleasure and integration between the different expressive languages (Ravelli G., 2010).

Physical education is primarily aimed at teachers of each order and degree, to educators, trainers and socio-educational workers who need to acquire skills, techniques and methodologies in the field of communication, verbal and non-verbal situations of discomfort of childhood and adolescence.

The movement represents the main vehicle with which to express themselves, communicate and understand. The need, therefore, is to develop appropriate expressive ways, through the gesture which becomes communication and game that takes action and report. So the great value and essential function of the playful expression, and motor sports. The move allows to express feelings and thoughts. We must, therefore, know how to relate to others, in accordance with the rules of civil coexistence. It is through the movement that captures the meaning of existence. In the path of understanding develops the body sense, i.e. the basic sense that allows the opening and cognitive flexibility, and emotional attention and affective relationships (Mollo G., 2004).

From these basic assumptions derive some goals, intended as guidelines for the implementation of an education to corporeality.

We need to educate the acceptance of the other, the recognition of the uniqueness and diversity, valuing personal aspects and facilitating the creation of authentic relationships.

An additional goal is to live one's body as the relational dimension. Condition of that dimension is emotional availability, intended as the opening in the presence of the other in our interiority (Mollo G., 2004).

We have to educate the liberation of sensations, always respecting and in consideration of the situation and the condition of those with whom you enter into the relationship.

The body must be experienced as a vehicle for the achievement of personal and social identity, expression of an educational paradigm that considers each person protagonist of its growth (Rossella D., 2012).

Knowledge must be translated into "embedded knowledge", which requires a body that is not only thought but also acted, live in relationship. "The body of which we speak is also the body that we live, the way we experience it personally, doing it. [...]there is a materiality of the body with which we measure constantly, through which we train, we learn to discern and articulate emotion into feelings. This dimension concerns us, touches us deeply. The body is our potential and also the awareness of our limit "(Gamelli I., 2012).

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## Employers' needs on competences, knowledge and skills for sustainable development as a reference framework for higher education in life sciences

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### Abstract

A great many people have already embraced the need for education and training as a key to moving the workforce and society in general toward a sustainable living process. Education bodies and employers are beginning to recognise this trend and know about the need for training in the manifold aspects of sustainable development (SD). Different actions are being set by higher educational bodies and employers are also becoming aware of the needs (competences, knowledge and skills for SD) of their employees. The aim of this paper is to give an indication of (1) the importance of SD competences, knowledge and skills according to professional practice, in Europe; and (2) whether there is a need for new jobs in the field of SD.

Keywords: sustainable development, education in life sciences, employment, competences, knowledge, skills

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## 1. Introduction

In response to a growing need to move the world towards sustainable development (SD) and sustainable practices within education and daily work life, a variety of research and training activities addresses problem driven and solution oriented approaches (Grunwald, 2007; Sarewitz & Kriebel, 2010; Willard, M., Wiedmeyer, C., Warren Flint, R., Weedon, J.S., Woodward, R., Feldman, I. et al., 2010). The field's development in competences, knowledge and skills is a response to existing and anticipated complex problems including climate change, desertification, shortage of resources etc. — all featuring high degrees of complexity, damage potential, and urgency, and all having no obvious optimal solution. Indeed, the challenges towards a more sustainable life are inextricably linked. Economic growth, job creation and incomes are related to — and can degrade — natural resources and systems.

Furthermore, the global agreements on sustainability and initiatives for SD can only become reality if people support them locally. This, in turn, calls for education. It is only through education that individuals are empowered to rethink their behaviour, and to consider the idea of SD within the private and occupational environment alike. Beyond that there is little agreement. People argue about the term SD and whether or not it is sufficiently prominent in education and daily work life.

Since economic activity includes ecological, social and financial risks and opportunities, the conviction that SD is an open guiding principle, or orientation target, in this perpetual process is becoming increasingly established within the economic sector. Employers around the world are becoming aware of the role of education and training as a key to moving the workforce and society in general toward a sustainable living process. For many employers, the path to a sustainable future for their employees – and citizenry in general – begins with greater access to basic higher education. Accordingly, aspects of SD are being integrated into the educational profiles expected of employees. The EU and many European countries have already embraced the need for education in achieving SD (e.g. SD strategies).

The principles of SD call for a holistic approach within the education offered by Higher Education Institutes in the field of life sciences (HEIs) and the requirements of employers, one such practical example is Green Pedagogy (Hochschule für Agrar- und Umweltpädagogik, 2013). In the long run education alone cannot ensure the full integration of SD into our professional life if insufficient progress is made regarding what competences, knowledge and skills are required at the workplace.

The implementation of SD in educational programmes in the field of life sciences presupposes that the market-relevant competences, knowledge and skills related to SD have already been identified. However, an extensive review of literature indicated that, although, there is a rich and converging debate going on, such information is not available in the European or international context. So this work researches (1) how can the needs of the labour market on competences, knowledge and skills for SD be clarified in order to adjust higher education; and (2) whether there is a need for new jobs in the field of SD.

## 2. Theoretical background

Through an extensive analysis of the international literature this chapter places the research in its contemporary context. The theoretical background clarifies the context in which this study finds itself, starting by defining SD and education for SD and outlining those competences, knowledge and skills for SD examined in the questionnaire.

### 2.1. Sustainable development

There are many definitions of SD which are influenced by people's values and culture. The most common and best known is the United Nations (UN) definition of SD, now commonly referred to as the "Brundtland definition", which states: "*Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs*". (UN 1987).

This definition contains within it (i) the concept of needs, in particular the essential needs of the world's poor, to which overriding priority should be given; and (ii) the idea of limitations, imposed by the state of technology and social organisation on the environment's capacity to meet present and future needs. Furthermore, this definition is founded on the consideration of the value 'respect' – in the sense of (i) respect for others, both present and future generations, (ii) respect for the planet and what it provides to us (e.g. resources, fauna and flora). (Quendler, van der Luit, Monteleone, Aguado, Pfeiffenschneider, Wagner et al., 2013).

In theory, development that is sustainable and not damaging to the planet is very possible. Of course though, in reality there are a lot of (man-made) issues present in our daily life (cf. Shah 2012). While there are many complex issues that influence SD, certain main key issues, which have increasingly become matters of concern over the last decade, are outlined in table 1.

## 2.2. Education for SD

The UN has declared the decade from 2005 to 2014, the Decade of Education for SD, because education has been recognized internationally as fundamentally important to addressing the critical global challenges we all face. Education for SD\* challenges us all to adopt new behaviours and practices to secure our future and emphasises the important role of education in shaping future development options and choices. If SD is about values and choices, and if SD is the 'supreme political issue of the century', then it would follow that education for SD is learning about new value orientations, new choices and new political decisions (including those we make in the home and community). Education for SD would seem to be about ethical and equitable ways of caring for, using and distributing the Earth's finite resources. (cf. UN, 2011).

Promoting SD requires that individuals and organisations acquire the competences, knowledge, skills, values, and motivation to respond to the complex SD issues (table 1) they encounter in their personal and working lives. From the perspective of the person 'learning', sustainable education, as the successful transfer of knowledge, is defined as when the learner is able to apply his/her profile of competences, knowledge and skills in a variety of situations (cf. Weinert, 1996). Through education and lifelong learning, we can achieve a lifestyle based on economic and social justice, food security, ecological integrity, sustainable livelihoods, respect for all life forms, and strong values that foster social cohesion, democracy and collective action, i.e. a more sustainable living approach and society. (cf. UNESCO, 2010).

At the UN level there is a common notion that HEIs play a key role in the awareness-raising of SD issues, mainly: "*Since Higher Education Institutions educate and train decision makers, they play a key role in building more sustainable societies and creating new paradigms. As educational institutions, they have the mission to promote development through both research and teaching, disseminating new knowledge and insight to their students and building their capabilities. Given the objectives of Rio+20†, Higher Education Institutions have a special responsibility to provide leadership on education for sustainable development.*" (UN, 2011).

\* Education for Sustainable Development (ESD), Sustainability education (ES), and Education for Sustainability (EFS) are interchangeable terms describing the teaching, disseminating new knowledge and insight to trainees for the achievement of sustainable development.

† Earth Summit Rio+20—officially named the United Nations Conference on SD from June 20<sup>th</sup> to 22<sup>nd</sup> 2012 in Rio de Janeiro, Brazil. It took place twenty years after the first historic summit in Rio de Janeiro in 1992 and ten years after the 2002 Johannesburg summit. For further info see <http://rio20.net/en/on-the-road-to-rio20>.

In the words of the UN (2011) we should highlight that promoting SD requires high level knowledge and skills in various combinations of employees resulting in a level of competence. *“Education for sustainable development aims at enabling everyone to acquire the values, competences, skills and knowledge necessary to contribute to building a more sustainable society. This implies revising teaching content to respond to global and local challenges. It should also promote teaching methods that enable students to acquire skills such as interdisciplinary thinking, integrated planning, understanding complexity, cooperating with others in decision-making processes, and participating in local, national and global processes towards sustainable development.”* (cf. Green Pedagogy).

### 2.3. Competences, knowledge and skills for SD

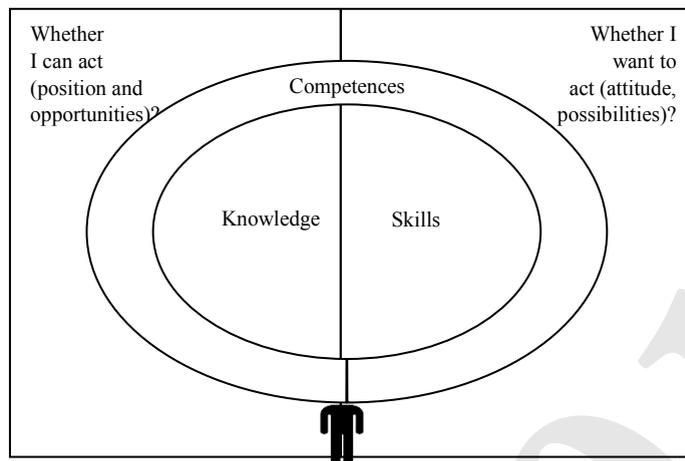
The challenge of meeting the development of human needs while protecting the earth's life support systems confronts scientists, technologists, policy makers, and communities from local to global levels. While a variety of research and training activities addresses the concepts and practise of competences, knowledge and skills for SD, much of this information is fragmented and is often not available in a form that is convenient for professionals. The definitions of the ideas of competences, knowledge and skills for SD are outlined below as they are understood in this paper.

*“Knowledge means the outcome of the assimilation of information through learning. Knowledge is the body of facts, principles, theories and practices that is related to a field of study or work. In the European Qualifications Framework, knowledge is described as theoretical and/or factual.”* (Grün, Tritscher-Archan & Weiß, 2009). Furthermore, *“SD knowledge refers to enabling the competences to be applied for SD in daily working life”* (Quendler, van der Luit, Monteleone, Aguado, Pfeiffenschneider, Wagner et al., 2013).

*“Skills mean the ability to apply knowledge and use know-how to complete tasks and solve problems. A distinction is made between cognitive and practical skills.”* (Grün, Tritscher-Archan & Weiß, 2009). This notwithstanding, *“SD skills indicate an ability to be able to do something in order to contribute to and/or achieve SD. Moreover, they are the foundation of flexibility, employability and further learning throughout life”* (Quendler, van der Luit, Monteleone, Aguado, Pfeiffenschneider, Wagner et al., 2013).

*“Competence is defined as the proven ability to use knowledge [and] skills. It is also described in terms of responsibility and autonomy.”* (Grün, Tritscher-Archan & Weiß, 2009). Precisely, *“competences for SD identify characteristics based on knowledge and skills that all employees are expected to demonstrate to carry out the mission and goals of the company under consideration of the idea of SD. Employees have the understanding, knowledge and skills they need to enable them to grasp the right opportunities and innovations for SD in their workplace in a rapidly changing and interconnected world of market-places, communications, and social and environmental challenge.”* (Quendler, van der Luit, Monteleone, Aguado, Pfeiffenschneider, Wagner et al., 2013).

It is easy to fall in love with the concept of competences, knowledge and skills for SD, to appreciate it and train it. But are we in the position to act according to our opportunities contributing to SD and do we have the attitude that we want to act using our possibilities to make our world more sustainable. Opportunities and possibility involve endeavours that not only smack of potential failure, but also require us to do something although we are not sure about the outcome. After all, we often stop surprising ourselves (and the market) not because are not skilled, but because we do not have the opportunity and do not see the possibilities. So it is not enough to keep competences, knowledge and skills for SD with us, it is also a matter of position and opportunities as well as attitude and possibilities, as shown in figure 1.



3. Figure 18 Conceptual Framework for SD performance enablers: competences, knowledge and skills.

The literature reveals a broad range of competences, knowledge and skills and their characteristics (cf. Fermilab n.d.; National Centre for Workforce Development, 2003; OECD, n.d.; OECD, 2009, Wiek, Withycombe & Redman, 2011; Willard, M., Wiedmeyer, C., Warren Flint, R., Weedon, J.S., Woodward, R., Feldman, I. et al., 2010). The issue of how company-specific human resource competences, knowledge and skills are and how competences, knowledge and skills (for SD) are considered is a controversial point. Boon & Van Klink (2001) argue that many organisations possess very fixed and rather broad listings of competences and do not engage in efforts to produce a set of company-specific descriptions or take proactive steps to develop competences, knowledge and skills for SD. Effective, comprehensive work for SD requires proficiency in several cross-disciplinary skill and knowledge areas. The selection of competences (c.f. table 2) enables a SD professional to analyse the cross-disciplinary nature of SD issues (table 1). Drawing from the key disciplines in the field of life sciences, these competences define the essential knowledge and skills of an effective SD professional and include, but are not limited to, the knowledge areas and skill sets listed below (table 3 and table 4, respectively). (Quendler, van der Luit, Monteleone, Aguado, Pfeiffenschneider, Wagner et al., 2013).

#### 4. Method and data

This research is meant to contribute to a better understanding of the complexity of competences, knowledge and skills for SD required by the labour market and to be taught at HEIs. By deepening our insights into the context of competences, knowledge and skills for SD we hope to shed light on whether new jobs for SD need to be created. As we have argued in the literature review, there is a lack of information about competences, knowledge and skills for SD (required by labour market). The following section details the data collection, statistical analysis and interpretation used to answer the research questions.

##### 4.1. Questionnaire and data collection

Selected data of a given data set from two surveys which were collected by the ISLE network partners serves as a basis for analysis. The company survey<sup>‡</sup> was launched from May 10th to June 10th 2011. The total number

<sup>‡</sup> The company survey aimed to map genuinely and comprehensively the tasks, functions and opportunities of education in SD in daily working life as already perceived by employers. (Quendler, van der Luit, Monteleone, Aguado, Pfeiffenschneider, Wagner et al., 2013).

of replies in the raw database was 2,937 students and 852 academics. The education survey<sup>§</sup> was kept active from August 1st till October 7th 2011. The total number of replies in the raw database was 959. For both surveys neither the sampling size nor the responses were checked. Readers are reminded that results indicate a trend for Europe, the accuracy of which depends, inter alia, upon the sample size and the number of collected answers.

To evaluate and compare responses obtained from the HEIs coherently (education survey: data on SD competences taught at universities or colleges) and those obtained from the employers (company survey: data on SD competences requested), the two data-bases had to be rearranged to allow a joint data-set with a good matching between the variables. The comparison of competences, knowledge and skills taught and need in daily work is based on the calculation of regression. (Quendler, van der Luit, Monteleone, Aguado, Pfeiffenschneider, Wagner et al., 2013).

#### 4.2. Statistical analysis and interpretation

The statistical analysis of ANOVA, “Chi Square” statistical test and the calculation of correlation coefficient were run, using the Statistical Package for Social Sciences (SPSS 19.0). For all analyses the level of significance was set to 0.001 \*\*\*, 0.01 \*\* and 0.05 \*.

Thus an ANOVA experimental model was carried out considering one SD “dimension” at a time (competences, knowledge and skills) and three factors (country, category and size of the company) in factorial combination. The model has the following mathematical structure (according to the “general linear model” approach),

$$Y_{ijkm} = \bar{Y} + \alpha_i + \gamma_k + \chi_m + \delta_{ij} + \phi_{ik} + \lambda_{im} + \varepsilon_{ijkm} \quad (1)$$

where

$Y_{ijkm}$  is the “score” observed;

$\bar{Y}$  is the “grand” mean score of the considered SD “dimension” (i.e. “knowledge”);

$\alpha_i$  defines the score effect of the “i” attribute related to that “dimension” (i.e. “environmental justice”, “ecological economics”, “globalisation”, “human rights”, etc.);

$\alpha_j$  is the score effect of the modality “j” of the first factor (i.e. “country”);

$\gamma_k$  is the score effect of the modality “k” of the second factor (i.e. “category of the company”);

$\chi_m$  is the score effect due to the modality “m” of the third factor (i.e. “size of the company”);

$\delta_{ij}$ ,  $\phi_{ik}$  and  $\lambda_{im}$  are the score interaction components between one of the SD dimensions (“i”) and one of the three factors (“j”, “k” and “m”, respectively), i.e. a specific combination between a SD dimension and a factor. Finally, the term

$\varepsilon_{ijkm}$  represents the experimental error (the residual variability not explained by the model); this term is essential in order to judge the statistical significance of each effect.

The degree of association or, in other words, the measure of dependence between the two quantities (scores assigned by ‘company’ and by ‘education’) was determined by calculating the correlation coefficient (also known

<sup>§</sup> The purpose of the education survey was to collect data from students, professors, staff and relevant partners in each of the network’s member institutions, in order to identify the current status in the integration of SD into the institutions and studies, related to the field of life sciences. (Quendler, van der Luit, Monteleone, Aguado, Pfeiffenschneider, Wagner et al., 2013).

as Pearson coefficient). The Pearson correlation is +1 in the case of a perfect positive (increasing) linear relationship, -1 in the case of a perfect negative (decreasing) linear relationship and some value between -1 and +1 in all other cases, indicating the degree of linear dependence between the two variables. A Pearson coefficient close to zero identifies the absence of correlation. (Quendler, van der Luit, Monteleone, Aguado, Pfeiffenschneider, Wagner et al., 2013).

## 5. Results

### 5.1. Competences, knowledge and skills required by the labour market

To make Europe's labour markets function better and to deliver the right mix of competences, knowledge and skills in HEIs the specific needs have to be known. Which competences, knowledge or skills for SD are considered to be important for their employees, are presented in this section.

The statistical analysis (ANOVA, table 5, 6 and 7) showed no significant relationship between SD response indicators (competences, knowledge or skills) with the other experimental factors (country, category and size of the company, respectively). In this way, results can be simply analysed considering one factor at a time. (Quendler, van der Luit, Monteleone, Aguado, Pfeiffenschneider, Wagner et al., 2013).

Table 5. Results of ANOVA on SD competences.

Source	DF	SS	F Ratio	Prob. > F	Sig.
COMPETENCE	6	9.55	1.94	0,0711	n.s.
COUNTRY	14	134.71	11.73	<.0001	**
CATEGORY	8	31.21	4.75	<.0001	**
SIZE	3	7.38	3.00	0.0296	*
COUNTRY*COMPETENCE	84	56.64	0.82	0.8778	n.s.
CATEGORY*COMPETENCE	48	15.29	0.39	1.0000	n.s.
SIZE*COMPETENCE	18	7.34	0.50	0.9607	n.s.

Annotation: DF degrees of freedom, SS sum of squares of all observations, Prob. Probability, Sig. significance  
Source: Quendler, van der Luit, Monteleone, Aguado, Pfeiffenschneider, Wagner et al., 2013

Table 6. Results of ANOVA on SD knowledge.

Source	DF	SS	F Ratio	Prob. > F	Sig.
KNOWLEDGE	22	227.90	9.76	<.0001	**
COUNTRY	14	390.15	26.25	<.0001	**
CATEGORY	8	129.30	15.22	<.0001	**
SIZE	3	106.20	33.34	<.0001	**
COUNTRY*KNOWLEDGE	308	341.70	1.04	0.2865	n.s.
CATEGORY*KNOWLEDGE	176	168.33	0.90	0.8208	n.s.
SIZE*KNOWLEDGE	66	51.69	0.74	0.9451	n.s.

Annotation: DF degrees of freedom, SS sum of squares of all observations, Prob. Probability, Sig. significance  
Source: Quendler, van der Luit, Monteleone, Aguado, Pfeiffenschneider, Wagner et al., 2013

Table 7. Results of ANOVA on SD skills.

Source	DF	SS	F Ratio	Prob. > F	Sig.
SKILLS	18	193.32	9.96	<.0001	**
COUNTRY	14	408.60	27.06	<.0001	**
CATEGORY	8	81.24	9.41	<.0001	**
SIZE	3	62.82	19.41	<.0001	**
COUNTRY*SKILLS	252	314.95	1.16	0.052	n.s.
CATEGORY*SKILLS	144	130.89	0.84	0.9131	n.s.
SIZE*SKILLS	54	53.34	0.92	0.6501	n.s.

Annotation: DF degrees of freedom, SS sum of squares of all observations, Prob. Probability, Sig. significance  
 Source: Quendler, van der Luit, Monteleone, Aguado, Pfeiffenschneider, Wagner et al., 2013

Considering SD knowledge, table 8 shows that highly significant positive deviations from the average score ( $P < 0.01$ ) were found for the categories of 'environment' (K3.8), 'efficiency' (K5.22), 'natural resources and biodiversity' (K2.16); while significant positive deviations ( $P < 0.05$ ) were observed for 'ecosystems' (K2.13) and 'ecological integrity' (K2.7). On the other hand, highly significant negative deviations from the average score ( $P < 0.01$ ) were found for the categories of 'gross national product' (K5.10), 'niche markets' (K5.2), 'business models' (K5.4); while significant negative deviations ( $P < 0.05$ ) were observed for 'environmental justice' (K7.11) and 'human rights' (K7.15). (Quendler, van der Luit, Monteleone, Aguado, Pfeiffenschneider, Wagner et al., 2013).

Table 8. Mean deviation in SD knowledge as a consequence of ANOVA. The values are expressed as deviations from the average score of  $3.46 \pm 0.02$ .

Code	SD knowledge description	Dev.	Sig.
K3.8	Environment	0.60	**
K5.22	Efficiency	0.58	**
K2.16	Natural resources and biodiversity	0.40	**
K2.13	Ecosystems	0.23	*
K2.7	Ecological Integrity	0.20	*
K2.3	Basic principles of natural systems	0.19	
K7.19	Social responsibility	0.17	
K4.9	Environmental Management systems	0.16	
K6.12	Ecological economics	0.11	
K5.6	Economics	0.03	
K6.21	Eco system services	0.00	
K1.1	Triple P bottom line/Brundtland report/basic knowledge of SD	-0.01	
K5.17	Supply chains	-0.04	
K5.18	Value chains	-0.05	
K5.23	Externalities	-0.07	
K5.14	Globalization	-0.12	
K3.5	Carbon footprint	-0.16	
K7.20	Social Justice	-0.17	
K7.15	Human rights	-0.22	*
K7.11	Environmental justice	-0.22	*
K5.4	Business models	-0.38	**
K5.2	Niche markets	-0.58	**
K5.10	Gross national product	-0.64	**

Annotation: Dev. deviation, Sig. significance  
 Source: Quendler, van der Luit, Monteleone, Aguado, Pfeiffenschneider, Wagner et al., 2013

Insofar as the SD skills are concerned, results from table 9 show that the most important skills (positive deviations from the average score for  $P < 0.01$ ) are: 'efficiency' (S4.15), 'leadership skills' (S7.19), 'sustainability planning' (S6.18), 'effective communication' (S5.14) and 'analysis of environmental problems' (S1.2). For  $P < 0.05$  the positive deviation is 'system thinking' (S1.6). Negative significant deviations ( $P < 0.01$ ) were found for the skills 'cap and trade' (S3.3), the '4 P's (product, price, place and promotion) of marketing' (S5.9), 'pollution prevention programme likes P2' (S2.1), 'pollution trading' (S3.5), and 'economic restructuring' (S4.13); for  $P < 0.05$  the negative deviation is that of 'socially responsible investing' (S6.4). (Quendler, van der Luit, Monteleone, Aguado, Pfeiffenschneider, Wagner et al., 2013).

Table 9. Mean deviation in SD skills as a consequence of ANOVA. The values are expressed as deviations from the average score of  $3.47 \pm 0.02$ .

Code	SD skills	Dev.	Sig.
S4.15	Efficiency	0.49	**
S7.19	Leadership skills	0.39	**
S6.18	Sustainability planning	0.39	**
S5.14	Effective communication	0.38	**
S1.2	Analysis of environmental problems	0.30	**
S1.6	Systems thinking	0.23	*
S7.17	Influencing the organisation	0.12	
S6.10	Designing a sustainable system	0.08	
S1.11	Life cycle analysis	0.07	
S1.16	Indicators and indexes	0.02	
S1.12	Ecological foot print	0.01	
S1.8	Full cost accounting	-0.04	
S4.7	Business case	-0.07	
S6.4	Socially responsible investing	-0.24	*
S4.13	Economic restructuring	-0.33	**
S2.1	Pollution prevention programme	-0.38	**
S3.5	Pollution trading	-0.39	**
S5.9	The 4 P's (product, price, place and promotion) of marketing	-0.46	**
S3.3	Cap and trade	-0.57	**

Annotation: Dev. deviation, Sig. significance

Source: Quendler, van der Luit, Monteleone, Aguado, Pfeiffenschneider, Wagner et al., 2013

## 5.2. Matching competences, knowledge and skills supply with labour market needs

Generally, HEIs need to deliver the right mix of competences, knowledge and skills both to meet student needs and to match the requirements of the labour market. By comparing competences, knowledge and skills for SD at employers' level to responses from the educational side we found out (figure 2) that companies attribute more importance to all SD competences, knowledge and skills than universities do in their education. This is substantiated by a significantly higher average score of company (3.52) compared to education (HEIs) (2.79) results. Furthermore, 'future orientation' (C3) and 'social responsibility' (C1) are considered the most important competences in general, both by education (HEIs) and companies. Companies also consider 'system orientation' (C2) and 'analysing environmental impacts' (S1) as very important. In contrast, skills like 'pollution trading' (S3) or 'reducing environmental impacts' (S2) are not considered very relevant. From the side of 'education', 'analysing environmental impact' (K3), closely followed by 'social aspect of SD' (K7) are the most important

ones; while 'general SD knowledge' (K1) and 'reducing environmental impacts' (K4) are the least relevant. (Quendler, van der Luit, Monteleone, Aguado, Pfeiffenschneider, Wagner et al., 2013).

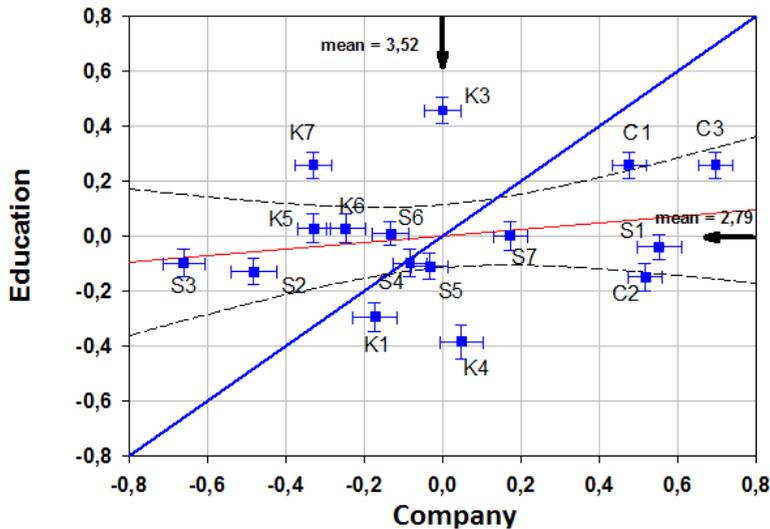


Figure 2. Comparison of the competences, knowledge and skills analysed in education (HEIs) and at employment level.

Annotation:

COMPETENCES (C): C1. SOCIAL RESPONSIBILITY, C2. SYSTEM ORIENTATION, C3. FUTURE ORIENTATION

KNOWLEDGE (K): K1. GENERAL SUSTAINABLE DEVELOPMENT KNOWLEDGE, K3. HOW TO ANALYSE ENVIRONMENTAL IMPACTS, K4. HOW TO REDUCE ENVIRONMENTAL IMPACTS, K5. ECONOMICS, K6. VALUE OF NATURE, K7. SOCIAL ASPECTS OF SUSTAINABLE DEVELOPMENT

SKILLS (S): S1. ANALYSING ENVIRONMENTAL IMPACTS, S2. REDUCING ENVIRONMENTAL IMPACTS, S3. POLLUTION TRADING, S4. ECONOMIC OPTIMIZATION, S5. COMMUNICATING, S6. IMPLEMENTING SUSTAINABILITY, S7. LEADERSHIP AND TEAMWORK

Source: Quendler, van der Luit, Monteleone, Aguado, Pfeiffenschneider, Wagner et al., 2013

Clearly employers are in a strong position to judge what mix of competences, knowledge and skills is optimal for particular occupations (like farming). The interests of employers depend on the level at which they are expressed. While locally employers may not wish their apprentices to have strong transferable skills, collectively employers have an interest in a flexible and adaptable labour force in their sector. Further on, if the principle of SD is to be implemented successfully in daily work life, there is also a need for education and training in higher education in order to be well prepared for work life. Professionals in SD will require new ways of thinking as well as certain competences, knowledge and skills to be able to contribute to the achievement of the goals of SD. This will also require changes in the training in life science of HEIs; furthermore, 'education and training' and 'work' will no longer be two separate entities. They will be much more integrated into a single lifelong learning process, open to innovation and accessible to everybody (cf. Green Pedagogy). (Quendler, van der Luit, Monteleone, Aguado, Pfeiffenschneider, Wagner et al., 2013)

### *5.3. Future job creation*

Considering the companies' expectations regarding the creation of new jobs related to SD activities or productive implementations, we have to stress that the 59 % of respondents do not believe in these kind of opportunities (table 10.A): this proportion is statistically significant ( $P < 0.01$ ) as compared with the starting hypothesis of equal partition between respondents. Italy showed a significantly higher level of trust in job creation (table 10.B) than other counties (+27 %,  $P < 0.01$ ), together with Greece (+39 % but not statistically significant due to the limited number of samples). The opposite was displayed by Estonia (-25 %,  $P < 0.01$ ) and Hungary (-41 %,  $P < 0.05$ ). The sector of 'education' (table 10.C), again, is to be considered more oriented to the opportunity that SD can contribute to job creation (deviation equal to +16 %,  $P < 0.05$ ), while 'agriculture' and 'administration' displayed the opposite character (deviations equal to -18 and -11 % respectively, with a significant P level). Finally, 'small' companies (table 10.D) were confirmed to be less confident in the creation of jobs compared to larger companies (deviation -13 %,  $P < 0.05$ ). (Quendler, van der Luit, Monteleone, Aguado, Pfeiffenschneider, Wagner et al., 2013).

Table 10. Expectations of European companies on the creation of new jobs related to SD. Responses (“Yes” or “No”) were processed by total (A), country (B), company category (C) and size of the company (D).

	OBSERVED		EXPECTED		Tot	Dev. (%)	Chi Sq.	Prob.	Sig.
	No	Yes	No	Yes					
TOTAL	256	175	215.50	215.50	431	-10.86	15.22	0.0001	**
COUNTRY	No	Yes	No	Yes	Tot	Dev. (%)	Chi Sq.	Prob.	Sig.
AUSTRIA	24	18	24.95	17.05	42	2.25	0.09	0.7661	
BELGIUM	2	0	1.19	0.81	2	-40.60	1.37	0.2423	
BULGARIA	8	7	8.91	6.09	15	6.06	0.23	0.6325	
CYPRUS	2	4	3.56	2.44	6	26.06	1.69	0.1936	
ESTONIA	21	4	14.85	10.15	25	-24.60	6.27	0.0122	**
FINLAND	0	1	0.59	0.41	1	0.00	0.00	1.0000	
FRANCE	0	2	1.19	0.81	2	59.40	2.93	0.0872	
GERMANY	8	3	6.53	4.47	11	-13.33	0.81	0.3680	
GREECE	2	8	5.94	4.06	10	39.40	6.44	0.0112	*
HUNGARY	6	0	3.56	2.44	6	-40.60	4.10	0.0428	*
IRELAND	0	2	1.19	0.81	2	59.40	2.93	0.0872	
ITALY	10	21	18.41	12.59	31	27.14	9.47	0.0021	**
LUXEMBOURG	10	4	8.32	5.68	14	-12.03	0.84	0.3593	
MALTA	0	1	0.59	0.41	1	59.40	1.46	0.2265	
NETHERLANDS (THE)	89	54	84.94	58.06	143	-2.84	0.48	0.4891	
NORWAY	2	3	2.97	2.03	5	19.40	0.78	0.3771	
POLAND	0	0	0.00	0.00	0	0.00	0.00	0.0000	
PORTUGAL	13	10	13.66	9.34	23	2.88	0.08	0.7789	
ROMANIA	8	11	11.29	7.71	19	17.29	2.36	0.1248	
SLOVAK REPUBLIC	5	2	4.16	2.84	7	-12.03	0.42	0.5168	
SLOVENIA	3	4	4.16	2.84	7	16.54	0.79	0.3729	
SPAIN	20	8	16.63	11.37	28	-12.03	1.68	0.1948	
SWEDEN	10	3	7.72	5.28	13	-17.53	1.66	0.1982	
TURKEY	2	0	1.19	0.81	2	-40.60	1.37	0.2423	
UNITED KINGDOM	11	5	9.50	6.50	16	-9.35	0.58	0.4462	
Total	256	175			431		48.81	0.0020	**
CATEGORY OF THE COMPANY	No	Yes	No	Yes	Tot	Dev (%)	Chi Sq.	Prob.	Sig.
ADMINISTRATION	24	7	18.41	12.59	31	-18.02	4.18	0.0410	*
AGRICULTURE	95	40	80.19	54.81	135	-10.97	6.74	0.0094	**
CONSULTANCY	23	19	24.95	17.05	42	4.63	0.37	0.5408	
EDUCATION	26	34	35.64	24.36	60	16.06	6.42	0.0113	*
ENVIRONMENT	24	23	27.92	19.08	47	8.33	1.35	0.2447	
NATURE	13	7	11.88	8.12	20	-5.60	0.26	0.6099	
OTHER	6	2	4.75	3.25	8	-15.60	0.81	0.3688	
SOCIAL	6	6	7.13	4.87	12	9.40	0.44	0.5074	
TECHNOLOGY	39	37	45.14	30.86	76	8.08	2.06	0.1514	
Total	256	175			431		22.63	0.0039	**
SIZE OF THE COMPANY	No	Yes	No	Yes	Tot	Dev (%)	Chi Sq.	Prob.	Sig.
BIG	44	42	51.68	34.32	86	8.93	2.86	0.0907	
MEDIUM	53	36	53.49	35.51	89	0.55	0.01	0.9163	
MICRO	86	63	89.54	59.46	149	2.38	0.35	0.5533	
SMALL	67	25	55.29	36.71	92	-12.73	6.22	0.0127	*
Total	250	166			416		9.44	0.0240	*

Annotation: Tot Total, Dev. Deviation, Chi Sq. Chi Square, Prob. Probability, Sig. significance

Source: Quendler, van der Luit, Monteleone, Aguado, Pfeiffenschneider, Wagner et al., 2013

Nevertheless, there seems to be an overall consensus that in the future, the number of new jobs created in connection with SD will only be marginal. Mostly because SD would probably be a concept included within competences, knowledge and skills already present in actual jobs. Moreover, currently only 26 % of the respondents are already looking at SD criterion when recruiting new employees. This notwithstanding 71 % of participants in the survey agreed that it is important that graduates have an excellent scientific/technological knowledge in their field of expertise. (Quendler, van der Luit, Monteleone, Aguado, Pfeiffenschneider, Wagner et al. 2013).

## 6. Conclusion

Our prosperity, today and tomorrow, depends on how many people are in work and how they handle SD issues in their daily work life. The correct competences, knowledge and skills for SD are the best guarantee of our ability to sustain our life and secure lasting prosperity.

This empirical study shows that there seems to be an overall consensus that in the future, the number of new jobs created in connection with SD, will only be marginal. Mostly because SD would probably be a concept included within competences, knowledge and skills already present in actual jobs. Nevertheless, this paper responds to the growing need for developing a converging set of key competences, knowledge and skills that reflect the requirements of employers and their staff and can be guidance for the design of courses and teaching techniques at HEIs. We can say that there is a special need for knowledge in the field of 'environment', 'efficiency', 'natural resources and biodiversity' and 'ecological integrity' and for skills in the field of 'efficiency', 'leadership skills', 'sustainability planning', 'effective communication', 'analysis of environmental problems' and 'systems thinking'. Companies attribute more importance to all SD competences than HEIs do in their education. 'Future orientation' and 'social responsibility' are considered the most important competences, both by HEIs and companies.

Nevertheless, the results also reveal that there are several opportunities for improvement. Firstly, we need thorough theoretical justifications as to why the proposed competences, knowledge and skills are instrumental for SD and problem solving in daily (working) life. Secondly, we need to support proposed competences, knowledge and skills with empirical evidence showing they enable successful real-world SD problem solving and development. Thirdly, follow-up studies are needed that spell out the specifics of the proposed competences, knowledge and skills including the kind of methodological expertise to which they aspire.

Yet, the results presented are not intended to cast key competences, knowledge and skills 'in stone'. All of the following are needed to ensure high quality education in SD: continuous monitoring of performances within and beyond the programs; experimenting with teaching and learning settings; reflection on achievements and shortcomings; adaptation of the competences, knowledge and skills taught at HEIs and required by employers. Once more, the most critical check for the adequacy of the competences, knowledge and skills is the degree to which graduates can contribute to SD in the world – not only at work. Adaptation is required as SD challenges and our insights on how to cope with them shift over time.

Accordingly, governments should make an effort to properly identify and conceptualize the set of competences, knowledge and skills required so as to incorporate them into the educational standards that every alumni should be able reach by the end of higher education study. Governments should realize that to be successful in this process there are two requirements to be met. On the one hand, participation of both economic and social institutions, ranging from companies to higher education institutions, is critical. On the other hand, this whole process risks being irrelevant to HEIs unless this set of competences, knowledge and skills becomes the very core of what professors and HEIs should care about, and this can only be done by incorporating them into the national education standards that are enforced and assessed by governments.

Finally, it must be stressed that overall educational efforts should be coordinated between the educational institutions, the authorities and companies. There should be a combination of regulation, which pushes companies

towards new initiatives, and new training possibilities, which meet the needs such regulation results in. The sustainable element must increasingly be incorporated gradually into curricula but not forced on companies. The indications are that, if the incorporation of the concept of SD in basic business decisions can be made both economically advantageous and a part of good business management, companies will take more initiatives in this direction.

## Contributions

The research reported in this paper draws on some of the results from Work Package 4 (WP4) entitled “Professionalization” and some from Work Package 2 (WP2) entitled “Information collection concerning sustainable development in life sciences in Europe” which was carried out in the context of an Erasmus Thematic Network project on Innovation in the teaching of Sustainable Development in Life Sciences in Europe (ISLE). Cristina Cunha Queda and Jannie van der Luit led the focus work group WP4 and Pedro Aguado was responsible for WP2. Massimo Monteleone prepared the statistical analysis. Manou Pfeiffenschneider prepared the data and Francesca Valente involved herself in the statistical analysis. Erika Quendler and Klaus Wagner wrote the paper.

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## Appendix E.

Table 7. SD issues.

SD issues	
<p>SD issues appear in every level of (working) life and affect the prosperity and the survival of humankind. SD issues are inter-related suggesting that approaching SD requires understanding the issues from many angles, not just from an environmentalist or economic or social perspective.</p>	
SD1	<p><b>Energy efficiency</b></p> <p><i>„Energy efficiency improvements refer to a reduction in the energy used for a given service (heating, lighting, etc.) or level of activity. The reduction in the energy consumption is usually associated with technological changes, but not always since it can also result from better organisation and management or improved economic conditions in the sector ("non-technical factors").” (World Energy Council, 2012).</i></p>
SD2	<p><b>CO<sub>2</sub> neutral operations</b></p> <p><i>“The term carbon neutral refers to a zero sum calculation of carbon emissions for any process, product, business, system, person, or even country. In other words, something that is carbon neutral, also referred to as having a net zero carbon footprint or climate neutral, offsets as many carbon emissions as it emits. Carbon neutrality doesn't refer only to carbon dioxide emissions but to any greenhouse gas emission that contributes to global warming, usually measured in carbon dioxide equivalence.” (Eco Lifestyle Network Company, 2001).</i></p>
SD3	<p><b>Sustainable procurement</b></p> <p><i>"Sustainable procurement aims to integrate environmental considerations into all stages of the purchasing process with the goal of reducing the impact on human health and the environment."(Council for Local Environmental Initiatives 1995-2008).</i></p> <p>Sustainable procurement is also called eco-procurement, green purchasing, environmentally friendly purchasing and affirmative procurement. Sustainable procurement is not only about the environment, it also requires advocacy of fundamental rights of people and labour rights and delivering progress in the economy.</p>
SD4	<p><b>Reduced water consumption and water reuse</b></p> <p>Reduction in water consumption refers to a reduction in water use accomplished by implementation of water conservation or water efficiency measures. Water reuse or waste water reuse involves recycling systems that allow for the reuse of grey water for flushing toilets or watering gardens or refers to the recycling of wastewater through purification at a water treatment facility.</p>
SD5	<p><b>Efficient use of natural resources</b></p> <p><i>“Using resources more efficiently will help us achieve many of the EU's objectives. It will be key in making progress to deal with climate change and to achieve our target of reducing EU greenhouse gas emissions by 80 to 95 % by 2050. It is needed to protect valuable ecological assets, the services they provide and the quality of life for present and future generations. It will help us ensure that the agricultural and fisheries sectors are strong and sustainable and reduce food insecurity in developing countries. By reducing reliance on increasingly scarce fuels and materials, boosting resource efficiency can also improve the security of Europe's supply of raw materials and make the EU's economy more resilient to future increases in global energy and commodity prices.” (EC, 2011).</i></p>
SD6	<p><b>Renewable resources</b></p> <p>Renewable resources are any natural resource (such as biomass or solar energy or wind) that can be replenished naturally within an acceptable period of time. Renewable resources are an important aspect of SD. (Wiema &amp; Media,2009).</p>
SD7	<p><b>Organic farming</b></p> <p><i>“Organic farming works in harmony with nature rather than against it. This involves using techniques to achieve good crop yields without harming the natural environment or the people who live and work in it.” (HDRA, 1998).</i></p>
SD8	<p><b>Scarcity of raw materials</b></p> <p>Material scarcity (or any scarcity) is controlled by only two factors: the supply of the material versus its demand. “Supply” here should be interpreted as the raw material – especially non-renewable resources – that is made available to industry. It must be noted that the recycling of raw materials would be an alternative supply stream.</p> <p>The demand for a material is ultimately determined by the end users together with the effectiveness of the supply chain.</p> <p>With a growing world population which is also getting more prosperous, the demand for products increases and therefore also the demand for resources. (cf. Wouters &amp; Bol, 2009).</p>

<b>SD issues</b>	
	SD issues appear in every level of (working) life and affect the prosperity and the survival of humankind. SD issues are inter-related suggesting that approaching SD requires understanding the issues from many angles, not just from an environmentalist or economic or social perspective.
SD9	<b>Prevention of damage to biodiversity</b> Mankind is damaging nature and biodiversity in endless ways and at increasing speed. Apart from pollution, mankind causes massive erosion, builds cities, covers increasing areas with concrete, disrupts sea floors and corals, burns forests, desertifies large areas, makes land and sea radioactive, produces new organisms or transports foreign species that may overtake local nature, etc. (Oiconmy, n.d.). In order to keep the earth we have to set prevention actions – also including a better understanding of the mechanisms and effects of our pressure on nature to assess the consequences.
SD1	<b>Waste reduction</b> The Waste Framework Directive defines waste as any substance or object which the holder discards or intends or is required to discard. (Directive 2006/12/EC). Waste affects every part of society and is not only environmentally damaging but also expensive. Businesses, local authorities, government and members of the public play a part in the creation, management and disposal of waste and it is vital that they all recognise the benefits of reducing waste and the roles they must play in doing this. (Authority of the House of Lords 2008).
SD1	<b>Emission reduction</b> The act or process of limiting or restricting the discharge of pollutants or contaminants, such as by setting emission limits or by modifying the emission source. In this way companies reduce the impact of their day-to-day operations on global climate change in the form of greenhouse gases [carbon dioxide (CO <sub>2</sub> ), methane (CH <sub>4</sub> ), nitrous oxide (N <sub>2</sub> O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulphur hexafluoride (SF <sub>6</sub> )] into the atmosphere from a specified activity or over a specified area, and a specified period of time. (Bruun, 2007).
SD1	<b>Development of SD products and services for clients</b> The development of new products and services by companies and organisations that are especially aimed at helping their clients to improve their contribution to SD.
SD1	<b>Corporate social responsibility</b> Corporate social responsibility (also called corporate conscience, corporate citizenship, social performance, or sustainable responsible business/responsible business) is a form of corporate self-regulation integrated into a business model. Corporate social responsibility policy functions as a built-in, self-regulating mechanism whereby a business monitors and ensures its active compliance with the spirit of the law, ethical standards, and international norms. The goal of Corporate social responsibility is to embrace responsibility for the company's actions and encourage a positive impact through its activities on the environment, consumers, employees, communities, stakeholders and all other members of the public sphere who may also be considered as stakeholders. (Wood, 1991).
SD1	<b>Sustainable Supply chain</b> Supply chain sustainability is a business issue affecting an organisation's supply chain or logistics network in terms of environmental, risk, and waste costs. SD in the supply chain is increasingly seen among high-level executives as essential to delivering long-term profitability and has replaced monetary cost, value, and speed as the dominant topic of discussion among purchasing and supply professionals. (N.N., 2009).
SD1	<b>Rethinking the business by using SD as a principle</b> Rethinking the business is the process of examination, analysis and alteration of the existing business principles of a company or organisation by using SD as a leading principle. The objective is to maintain the existing functionality but improve on SD goals.
SD1	<b>SD as means to improve business opportunities</b> <i>“Sustainable development strategies uncover business opportunities in issues which, in earlier stages of the journey, might be regarded as costs to be borne or risks to be mitigated. Results include new business processes with reduced external impacts, improved financial performance, and an enhanced reputation among communities and stakeholders.” (IISD, 2012).</i>

Source: Quendler, van der Luit, Monteleone, Aguado, Pfeiffenschneider, Wagner et al. 2013

Table 2. Competences for SD.

<b>Competences for SD</b>	
	Competences for SD identify characteristics based on knowledge and skills that all employers are expected to demonstrate to carry out the mission and goals of the company under consideration of the idea of SD. Employees have the understanding, knowledge and skills they need to enable them to grasp the right opportunities and innovations for SD in their workplace in a rapidly changing and interconnected world of market-places, communications, and social and environmental challenges.
G	<b>Social responsibility</b>
1	A sustainable professional takes responsibility for his/her own work: can make a stakeholder analysis, assume personal responsibility and be held accountable to society.
G	<b>System orientation</b>
2	A sustainable professional can think and work from a systemic perspective: he/she can zoom in and out, can think in details and holistically, can recognise strengths and weaknesses in systems and use their strengths.
G	<b>Future orientation</b>
3	The sustainable professional thinks and works from a future oriented perspective: he/she thinks in varying timescales, zooms in and out between a short term and long term approach, recognises and utilizes non-linear processes, thinks innovatively, and is creative outside the box, with a focus more on function than product.
G	<b>Global awareness</b>
4	The sustainable professional thinks and works from both a local and global perspective, he/she is able to take into account the global consequences of his/her local actions.
G	<b>Emotional intelligence and communication</b>
5	A sustainable professional recognises and respects his/her own values as well as those of other people and cultures, can distinguish between facts, presumptions and opinions and can collaborate in an inter- and transdisciplinary way. He/she is open-minded and able to communicate and network with internal and external stakeholders effectively. He/she works from the principle of social equity.
G	<b>Personal involvement</b>
6	A sustainable professional dedicates him/herself personally to SD: he/she can consistently involve SD in his/her own work as a professional, can work with passion on dreams and ideals, applying their own conscience as an ultimate standard.
G	<b>Action and practical skills</b>
7	A sustainable professional acts decisively and competently: He/she can weigh “unweighable” aspects and makes choices, deals with uncertainties and acts when the time is ripe. He is focused on solving problems, and can work systematically.

Source: Roorda, 2012

Table 3. SD knowledge: concepts, theories, ideas, processes.

<b>SD knowledge</b>	
SD knowledge refers to enabling the competences to be applied for SD in daily work life.	
<b>K1 GENERAL KNOWLEDGE</b>	
<b>K1.</b>	<b>Triple P bottom line/ Brundtland report /basic knowledge of SD</b>
1	Knowledge on the triple bottom line (abbreviated as TBL or 3BL, and also known as people, planet, profit or the three pillars) which captures an expanded spectrum of values and criteria for measuring organisational (and societal) success: economic, ecological, and social. With the ratification of the UN and ICLEI TBL standard for urban and community accounting in early 2007, this became the dominant approach to public sector full cost accounting. Similar UN standards apply to natural capital and human capital measurement to assist in the measurements required by TBL, e.g. the EcoBudget standard for reporting ecological footprint.
<b>K2 ECOLOGY</b>	
<b>K2.</b>	<b>Basic principle of natural systems</b>
3	Knowledge on basic principles of a system of biological classification based upon morphological and anatomical relationships and affinities considered in the light of phylogeny and embryology.
<b>K2.</b>	<b>Ecological integrity</b>
7	The quality of being honest and having strong moral principles that you refuse to change with regards to ecology.
<b>K2.</b>	<b>Ecosystem</b>
13	Knowledge on all the living things in an area and the way they affect each other and the environment.
<b>K2.</b>	<b>Natural resources and biodiversity</b>
16	Knowledge on natural resources, which are all the land, forests, energy sources and minerals existing naturally in a place that can be used by people. Biodiversity is the existence of a wide variety of plants and animal species living in their natural environment.
<b>K3 ANALYSING ENVIRONMENTAL IMPACTS</b>	
<b>K3.</b>	<b>Carbon footprint</b>
5	Knowledge on someone's carbon footprint which is a measurement of the amount of carbon dioxide that their activities generate.
<b>K3.</b>	<b>Environment</b>
8	Knowledge on the air, water and land in or on which people, animals and plants live and how people's behaviour effects natural cycles.
<b>K4 REDUCING ENVIRONMENTAL IMPACTS</b>	
<b>K4.</b>	<b>Environmental management systems</b>
9	Knowledge on the system that a company uses for making certain that it does everything possible to protect the environment and obeys all laws relating to the environment.
<b>K5 ECONOMICS</b>	
<b>K5.</b>	<b>Economics</b>
6	Knowledge on the way trade, industry or the flow of money is organized.
<b>K5.</b>	<b>Gross national product</b>
10	Knowledge on the total value of goods and services produced by a country in one year, including profits made in foreign countries.

<b>SD knowledge</b>	
SD knowledge refers to enabling the competences to be applied for SD in daily working life.	
K5 ECONOMICS	
22	K5. <b>Efficiency</b> Knowledge on how to use time, resources and energy well, without wasting any.
23	K5. <b>Externalities</b> Knowledge on the concept of externality, or transaction spillover, as a cost or benefit that is not transmitted through price and is incurred by a party who was not involved as either a buyer or seller of the goods or services causing the cost or benefit. The cost of an externality is a negative externality, or external cost, while the benefit of an externality is a positive externality, or external benefit.
2	K5. <b>Niche market</b> Knowledge on how you can position your products in a niche market. A niche market is the subset of the market on which a specific product is focusing. So the market niche defines the specific product features aimed at satisfying specific market needs, as well as the price range, production quality and the demographics that is intended to impact. It is also a small market segment.
4	K5. <b>Business model</b> A description of the different parts of a business or organisation showing how they will work together successfully to make money.
17	K5. <b>Supply chain</b> Knowledge on the system of people and things that are involved in getting a product from the place where it is made to the person who buys it.
18	K5. <b>Value chain</b> Knowledge on the series of companies involved in the different stages of producing a product or service that is sold to consumers, with each stage adding to its value.
14	K5. <b>Globalization</b> Knowledge on the increase of trade around the world, especially by large companies producing and trading goods in many different countries.
K6 VALUE OF NATURE	
12	K6. <b>Ecological economics</b> Knowledge on the way in which trade, industry or money is organized in relation to ecology.
21	K6. <b>Ecosystem services</b> Knowledge on how humankind benefits from a great many of the resources and processes that are supplied by natural ecosystems. Collectively, these benefits are known as ecosystem services and include products like clean drinking water and processes such as the decomposition of wastes. While scientists and environmentalists have discussed ecosystem services for decades, these services were popularized and their definitions formalized by the UN 2005 Millennium Ecosystem Assessment (MEA).
K7 SOCIAL ASPECTS OF SUSTAINABLE DEVELOPMENT	
15	K7. <b>Human rights</b> Knowledge on rights regarded as belonging fundamentally to all persons as described in the Universal Declaration of Human Rights (UN, 1945).
19	K7. <b>Social responsibility</b> Knowledge on the practice of producing goods and services in a way that is not harmful to society or the environment.
20	K7. <b>Social justice</b> Knowledge on social justice as an underlying principle for peaceful and prosperous coexistence within and among nations. We uphold the principles of social justice when we promote gender equality or the rights of indigenous peoples and migrants. Social justice is advanced when we remove barriers that people face because of gender, age, race, ethnicity, religion, culture or disability. (UN 2012).
11	K7. <b>Environmental justice</b> Knowledge on how inequitable distributions of environmental burdens (such as pollution, industrial facilities, and crime) can be redressed under the general view of the environment as encompassing 'where we live, work, and play' (some definitions also include 'pray' and 'learn').

Source: Quendler, van der Luit, Monteleone, Aguado, Pfeiffenschneider, Wagner et al., 2013

Table 4. SD skills (process dynamics, tools, and methodologies).

<b>SD skills</b>	
SD skills indicate an ability to be able to do something in order to contribute to and/or enhance SD. Moreover, they are the foundation of flexibility, employability and further learning throughout life.	
S1	<b>ANALYSING ENVIRONMENTAL IMPACTS</b>
S1.2	<b>Analysis of environmental problems</b> The ability to analyse problems relating to the environment. The environment is the air, water and land in or on which people, animals and plants live.
S1.6	<b>Systems thinking</b> The ability to understand how things influence each another within a whole. In nature, systems thinking examples include ecosystems in which various elements such as air, water, soil, plants and animals interact. In organisations, systems consist of people, structures, and processes that work together to make an organisation healthy or unhealthy. Systems thinking has been defined as an approach to problem solving, by viewing 'problems' as parts of an overall system, rather than relating to specific parts, outcomes or events and potentially contributing to the further development of unintended consequences. Systems thinking is not one thing but a set of habits or practices within a framework that is based on the belief that the component parts of a system can best be understood in the context of relationships with each other and with other systems, rather than in isolation. Systems thinking focuses on cyclical rather than linear cause and effect. (Aronson, 1996).
<b>SD skills</b>	
SD skills indicate an ability to be able to do something in order to contribute to and/or enhance SD. Moreover, they are the foundation of flexibility, employability and further learning throughout life.	
S1	<b>ANALYSING ENVIRONMENTAL IMPACTS</b>
S1.8	<b>Full cost accounting</b> The ability to carry out accounting which recognises the economic, environmental and social costs of an action or decision. (BD, www.Businessdictionary.com).
S1.1	<b>Life cycle analysis</b> 1 The ability to compile and evaluate inputs, outputs and the potential environmental impacts of a product system throughout its life cycle. Life cycle covers the consecutive and interlinked stages of a product system, from raw material acquisition or generation of natural resources to final disposal (ISO, 2006).
S1.1	<b>Ecological foot print</b> 2 The ability to calculate ecological footprint/appropriated carrying capacity (EF/ACC) and interpret the results. EF/ACC is a simple yet effective tool which provides an accounting framework for the biophysical services that a given economy requires from nature. It is calculated by estimating the land area, in various categories, necessary to sustain the current level of consumption by the people in that economy, using prevailing technology. An economy's full ecological footprint would include all the land whose services this economy needs to provide necessary resource inputs and to assimilate corresponding waste outputs. The EF/ACC concept thereby demonstrates the ecological dependence of economic systems. It is both an analytic and heuristic device for understanding the sustainability implications of different kinds of human activities, and serves as an awareness tool and action-oriented planning tool for decision making towards SD. (Wackernagel, 1994).
S1.1	<b>Indicators and indexes</b> 6 The ability to calculate and interpret indicators and indexes in order to assess SD.
S2	<b>REDUCING ENVIRONMENTAL IMPACTS</b>
S2.1	<b>Pollution prevention programme</b> The ability to deal with the Pollution Prevention Act (PPA). PPA establishes a bold national objective for environmental protection: "[T]hat pollution should be prevented or reduced at the source whenever feasible."(Browner, 1993).

<b>SD skills</b>	
SD skills indicate an ability to be able to do something in order to contribute to and/or enhance SD. Moreover, they are the foundation of flexibility, employability and further learning throughout life.	
S3	POLLUTION TRADING
S3.3	<p><b>Cap and trade</b></p> <p>The ability to understand and implement ‘cap and trade’ principle. This means there is a ‘cap’, or limit, on the total amount of certain greenhouse gases or other pollutants that can be emitted by the factories, power plants and other installations in the system. Within this cap, companies receive emission allowances which they can sell to or buy from one another as needed. The limit on the total number of allowances available ensures that they have a value. (EC, 2011).</p>
S3.5	<p><b>Pollution trading</b></p> <p>The ability to understand and to be able to do pollution trading, cf. cap and trade.</p>
S4	ECONOMIC SENSE
7	<p>S4. <b>Business case</b></p> <p>The ability to create a business case. An explanation or set of reasons describing how a business decision will improve a business, product, etc. and how it will affect costs and profits and attract investments.</p>
13	<p>S4. <b>Economic restructuring</b></p> <p>The ability to be able to deal with and understand economic restructuring.</p> <p>Economic restructuring refers to the development of the economy in a country or around the world. There is an on-going process shifting from the primary sector to the secondary and tertiary one but also further on to experiences and transformation services (cf. Pine &amp; Gilmore, 1999). This development has affected demographics including income distribution, employment, social hierarchy and institutional arrangements (cf. Sassen, 1990; Noyelle &amp; Stanback, 1984; Logan &amp; Swanstrom, 1990; Musterd &amp; Ostendorf, 1998; Kalleberg 2000 &amp; Katz, 1997).</p>
5	<p>S4.1 <b>Efficiency</b></p> <p>The quality of being able to do a task successfully without wasting time or energy. It has an effect on the</p> <ul style="list-style-type: none"> <li>• <i>productive efficiency</i> which occurs when the economy is utilizing all of its resources efficiently (Fried, Schmidt &amp; Lovell, 1993);</li> <li>• <i>allocative efficiency</i>, which occurs when goods and services are distributed according to consumer preferences (Markovits 1998);</li> <li>• <i>efficiency of scale</i>, which occurs when the firms produces on the lowest point of its long run average cost and therefore benefits fully from economies of scale (Sullivan &amp; Sheffrin, 2003);</li> <li>• <i>social efficiency</i>, which occurs when externalities are taken into consideration and occurs at an output where the social cost of production (SMC) is equal to the social benefit (SMB) (cf. Lefebvre &amp; Vietorisz, 2007);</li> <li>• <i>technical efficiency</i>, which deals with the optimum combination of factor inputs to produce a good: related to productive efficiency (Kalirajan &amp; Shand, 1999);</li> <li>• <i>pareto efficiency</i>, which is a situation where resources are distributed in the most efficient way. It is defined as a situation where it is not possible to make one party better off without making another party worse off (cf. Sen 1993); and</li> <li>• <i>distributive efficiency</i>, which is concerned with allocating goods and services according to who needs them most. Therefore, requires an equitable distribution (cf. Lerner, 1944).</li> </ul>
S5	COMMUNICATION
S5.9	<p><b>The 4 P's (product, price, place and promotion) of marketing</b></p> <p>The ability to understand and work with the four major controllable factors of a marketing mix: product, price, place (distribution) and promotion.</p>
S5.14	<p><b>Effective communication</b></p> <p>The ability and quality of an information sharing process which involves one party sending a message that is easily understood by the receiving party.</p>

<b>SD skills</b>	
SD skills indicate an ability to be able to do something in order to contribute to and/or enhance SD. Moreover, they are the foundation of flexibility, employability and further learning throughout life.	
S6	<b>IMPLEMENTING SUSTAINABILITY</b>
S6.10	<b>Designing a sustainable system</b> The ability to design systems that are capable of operating continuously while meeting today's (global) economic, environmental, and social needs without compromising the opportunity for future generations.
S6.18	<b>Sustainability planning</b> The ability to plan through a process of thinking about and organizing the activities required to achieve a desired goal in SD.
S6.4	<b>Socially responsible investing</b> The ability to invest under consideration of sustainable, socially conscious, 'green' or ethical aspects. Socially responsible investing is the practice of making investment decisions on the basis of both financial return and social good (Hutton & Johnsen, 1998).
S7	<b>LEADERSHIP AND TEAMWORK</b>
S7.17	<b>Influencing the organisation</b> The ability to bring in your educational profile to influence the development of your organisation in a sustainable way.
S7.19	<b>Leadership skills</b> The ability to motivate a group of people toward a common goal.

Source: Quendler, van der Luit, Monteleone, Aguado, Pfeiffenschneider, Wagner et al., 2013

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# Environmental worldviews in higher education: a case study of Turkish college students

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## Abstract

This study was designed to explore the nature of Turkish college students' environmental worldviews and test hypothesized relations on environmental views, environmental course status, gender, school status and socio-economic status. A sample of 1295 undergraduate students from four Turkish universities was selected for the study and their views were measured on 25 statements. A self-administered survey questionnaire was used to collect the data. Study findings indicated that 56.5 % of students hold pro-environmental views while 24.6 % embrace views associated with the dominant social paradigm and 18.8 % have ambivalent views. Results provided partial support for the hypothesized relationships. Female students, students with low socio-economic status and first-year students have higher pro-environmental orientations. Taking a course on environment makes only slight difference in opinions. It was concluded that students' environmental orientations change varying extent according to gender, socio-economic status and education which are probably determined by the historical and cultural context and characteristics of the population under study. Results suggest that there exists a reasonable level of environmental awareness; however university policies and practices on the environmental education and issues need to be reassessed and geared toward cultivating environmental sensitivity.

*Keywords:* Environmental worldview; environmental education; New Ecological Paradigm; environmental culture

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## 1. Introduction

Theory and research interests in environmental issues have been steadily increasing since 1970s, because it was realized that nobody is immune from the outcomes of ecological devastations and the well-being of future generations are in jeopardy (Vlek & Steg, 2007; Whitmarsh, 2011). Many researchers think that there are set of basic beliefs and values, called Dominant Social Paradigm (DSP), behind the problem of the ecological crisis (Martinez, Alonso, & Martin, 2008). It entails the belief that (a) humans are superior over nature, (b) humans are exempt from ecological constraints (c) Humans, by virtue of possessing culture and technology, are able to adapt nature to human ends, rather than adapt to the natural environment, (d) natural resources are abundant, progress is continuous and the laissez-faire economic growth is necessary, (e) science and technology can solve our problems, and (f) private property rights are sacred increasing sensitivity toward and concern for the environment have brought about a shift from the anthropocentric DSP to the ecocentric view which is based on (a) high valuation of nature, (b) generalized compassion toward other species, other people and other generations, (c) careful planning and acting to avoid risks to humans and nature, (d) recognition that there are limits to growth to

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which humans must adapt, (e) new society with cooperation, openness and participation, and (f) consultative and participatory new politics emphasizing on foresight and planning.

Concurrently, environmental studies have emerged and proliferated. Using the general assumption that the nature of environmental condition depends on the prevailing character of mental and material production of daily life, studies have concerned mostly with the existing environmental conditions, environmental use, and people's dispositions toward environment (De Groot & Steg, 2007; Nooney et al., 2003), the socio-psychological and cultural aspects (DeGroot & Steg, 2007; Schultz et al., 2005). Majority of studies (Aytülkasapoglu & Ecevit, 2002; Johnson, Bowker, & Cordell, 2004; Poortinga, Steg, & Vlek, 2004; Talay, Gündüz, & Akpınar, 2004; Bodur & Sarigollu, 2005) have been based on cross-sectional analyses using various socio-demographic, educational, cultural, attitudinal and behavioral variables. Numbers of them (Bamberg, 2003; Kemmelmeier, Krol, & Kim, 2002; Davis, Green & Reed, 2009; Choi & Fielding, 2013) have focused on the differences due to the diverse structure of concerns, worldviews, values, beliefs and attitudes or on causal relationships among the various variables. Increasing number of studies (De Groot & Steg, 2007; Leung & Rice, 2002; Rauwald & Moore, 2002; Fairbrother, 2012) have been interested in cross-national or cross-cultural comparisons.

One of the commonly studied population groups in environmental studies has been college students. Students comprise of important segment of society and warrant attention in terms of studying environmental culture, opinions, attitudes and behaviors. They will be working in various sectors of society in the near future and performing important works such as managers, teachers, businessmen, industrialists and the like. The future quality and stability of life on our planet depends on youngsters developing the worldview necessary for making informed and sensitive decisions about the environment and becoming active participant in the creation of sustainable world. Students also have been the leading crusaders in the modern environmental activities and movements (Gough, 2008; Jenkins & Pell, 2006; Thapa, 2001; Rappaport, 2008). Understanding students' worldviews on environmental issues are also functional for the design of policies to enhance the environmental awareness and sensitivity and support development and use of sustainable practices, methods and products.

Environmental studies focusing on students generally are interested providing cross-sectional information on the psychological and/or socio-demographic variables and the nature of environmental concerns, behaviors, worldviews and orientations of students. Such studies (Aytülkasapoglu & Ecevit, 2002; Johnson, Bowker & Cordell, 2004; Poortinga, Steg, & Vlek, 2004; Talay, Gündüz, & Akpınar, 2004) wanted to know the nature of students' knowledge, opinions and attitudes toward environment and environmental issues. Studying undergraduate students in the United States, Thapa (2001) found that students seemed to express the importance towards environmental issues, but they lacked awareness. Some studies found significant relationship between environmental knowledge and environmental behaviors (Ridener, 1999), while others found no significant relationship (Shean & Shei, 1995). Regarding Turkish case, the 1990s and 2000s represent important changes in environmental consciousness, attitudes and behavior of Turkish people (Oğuz, Çakıcı, & Kavas, 2011; Erdogan & Baris, 2007; Talay, Gunduz, & Akpınar, 2004). It is an unquestionable fact that there is increasing need to conduct academic and administrative studies in Turkey. Thus, this article was designed to examine the environmental worldviews of Turkish university students. The primary objective of the study was to examine the nature of students' environmental worldviews and test five hypothesized relations in order to contribute to the accumulated knowledge on the issue for academicians, policy makers, field workers, organizations and other interested parties.

Studies on environmental orientation/worldviews of various sections of Turkish population generally state that people have rather conservative values (Taskin, 2009). However, the nature of Turkish population has been changing especially since 1980s. They have been watching, listening and reading a lot about the environmental issues and problems. Thus, their environmental awareness is expected to rise. College students represent the educated and advance section of society. Due to amounting information and discussion on environmental problems and felt need for environmental protection, we expect that majority of students hold pro-environmental views. Based on the above rationale, the following hypothesis was put forward:

H<sub>1</sub>: Although more students are expected to have pro-environmental views, they are not expected to embrace high level of pro-environmental orientation.

It is generally believed that education can increase an individual's ability to appreciate complex and integrative large scale problems, and thus serves to heighten environmental awareness and concern (Ewert & Baker 2001; Ruff & Olson, 2009). Environmental literacy are connected with students' sensitivity, awareness, and understanding of changing environmental issues and asserted that increased and responsible environmental action skills are developed as a result of environmental education (Bradley et al. 1999; Magtorn, & Hellden, 2007; Moseley, 2000; Woodworth, Steen-Adams & Mittal, 2011). Some researchers (Leeming et al. 1997; Tikka et al., 2000) indicate that students' participation in environmental activities is an important parameter in acquiring environmental attitudes. Hence, it is expected that taking a course on environment can make some difference, however extent of effect of taking a course in environment is expected to vary according to socio-cultural environment and personality traits:

H<sub>2</sub>: Students who took a course in environment and students who did not take any will differ in their environmental worldviews.

Generally, people gain environmental sensitivity through formal and lifelong education in society. The extent of environmental sensitivity depends on the extent of circulation of information and discussions about environment in daily agendas set by social institutions like mass media, family and school in a society. Given the fact that there is inadequate, yet somewhat increasing level of such informational environment and adaptation of environmental culture in Turkey, years spent at school is expected to influence students' existing opinions about environment and environmental issues. However, studies provide conflicting results. Some of the previous studies have found positive relationship between school grade (years passed at school) and environmental opinions/attitudes. Others found negative relations. Some studies suggest that young children had more positive attitudes toward environmental issues than did older students (Malkus and Musser, 1997; Musser and Diamond (1999). Based on these facts, the following hypothesis was extracted:

H<sub>3</sub>: First year students and fourth year students will differ in their environmental views.

Several studies found that females have more positive opinions and attitudes and greater concern toward environmental issues than do males (Tikka, Kuitunen & Tynys, 2000; Yilmaz et al., 2004; Taskin, 2009). Paradoxically, some studies found males to be more sensitive to environmental issues than females (MacDonald & Hara, 1994). Yet some others found no significant gender differences (Yilmaz et al, 2004). Females are acculturated in Turkish society in such a way that they become more sensitive to their social, cultural and physical environments. Thus, it is expected that more females hold pro-environmental views than males. Despite the conflicting finding on gender differences, it is safe to assume that Turkish female students are more environmental oriented in their worldviews as compared to males, because Turkish society is changing, but still reproduces traditional values about the gender differences:

H<sub>4</sub>: There is a gender difference in environmental views: more female than male students have pro-environmental views, while more male than female students have pro-DSP view.

Some studies have found positive relations between socio-economic status (SES) and environmental opinions/attitudes and behaviors (Yilmaz et al. 2004), while some others came up with the contrary results (Taskin, 2009; Uyeki & Holland, 2000). It is generally assumed that Turkish university students mainly come from a particular socio-economic sector of society, therefore, there is certain homogeneity of environmental orientation, awareness, opinions and attitudes among them (Talay, Gündüz & Akpınar 2004). Socio-economic-status is still expected to make some significant differences in environmental orientation, because there is high probability that they expose to differing information and activity on environmental protection in their daily life. The existing research suggests that direction of difference is dependent upon variety of cultural and personal factors like the way students evaluates the information they receive. This means that the difference is expected, but the direction cannot be predicted. Thus, the following hypothesis was put forward:

H<sub>5</sub>: There is relationship between socio-economic status and environmental views.

This article was designed to examine the environmental worldviews of Turkish university students. The primary objective of the study was to examine the nature of students' environmental views and test five hypothesized relations in order to contribute to the accumulated knowledge on the relationship between some socio-demographic variables and environmental orientations.

## 2. Method

The study population of this survey research included students from Baskent University, Ankara University, Mustafa Kemal University and Karadeniz Technical University. A sample of 145 students from Mustafa Kemal University, 107 from Karadeniz Technical University, 102 from Ankara University, and 941 from Baskent University were selected for the study. Study sample included 1295 students.

A 25 item questionnaire was developed by using the related studies and the revised NEP scale which was constructed by Dunlap, Van Liere, Mertig & Jones in 2000 and considered one of the most widely used and scrutinized methods to measure environmental orientation, attitudes and behavior (Dunlap, 2008). Socio-demographic variables included gender, school status, environmental course and socio-economic status. School status was defined as years at school and categorized under first-year, second-year, third-year and fourth-year students. Environmental course was defined any environmental related course and measured by asking if a student has taken any course on environment, and coded as "yes" (course-taker) and "no" (non-taker). SES was measured by family income and grouped as "low", "medium" and "high". Mean scores for central tendency and frequency analysis for evaluation of single item distributions were used. Besides providing the univariate distributions for every item on the study scale, summary-indexes were developed in order to determine the overall environmental orientation: Two types of summary-indexes were constructed in order to obtain average distributions from the 25 items: (1) An overall environmental orientation index was calculated by averaging the mean scores of 25 items. (2) Frequency distribution indexes for each column were calculated by averaging the column scores. These summary-indexes were calculated in order to provide (a) a general central tendency score of students on the mean distributions of the 25 items, and (b) general frequency distribution scores on each level of 5 scale ordinal measurement. This is not done in order to test the scale, but to summarize the responses of students further. Chi-square test was utilized in order to test the hypotheses. The value of Pearson's  $\chi^2$  and its probability value (p) are reported to indicate the statistical significance. Adjusted standardized residuals (R) were used to decide which levels/cells of the variables are the major contributors, but were not reported in tables. The 25 item scale theoretically included five dimensions with two major factorial orientations (the pro-environmental and DSP orientations). The principal components analysis and varimax factor rotation were carried out in order to find out the existence of (1) general dimensional structure and (2) two dimensional structure of the scale, and thus, to validate the scale by demonstrating that its constituent items load on the same two factors assigned as the pro-environmental and pro-DSP statements. Each item were measured on a scale ranging from 1 (strongly disagree) to 5 (strongly agree). All pro-environmental responses were expected to be relatively high scores and all DSP responses were expected to be relatively low score. Agreement with the first 15 items indicates pro-environmental orientation. Agreement with the remaining 10 items indicates pro-DSP orientation. Therefore, the scores were reversed for these 10 items.

## 3. Findings

### 3.1. Students' environmental worldviews

The environmental worldviews and orientations of the students were determined by providing percentage distribution, mean scores and indexes of the students' scores (Table 1). The first hypothesis indicated that more

students have pro-environmental worldviews, however they will not show high level of pro-environmental orientation. Findings supported this hypothesis: Frequency distributions of the overall orientation index (Table 1) show that 30.3% students strongly agree and 26.2% agree (56.5% overall agreement), whereas 11.5% strongly disagree and 13.1% disagree (24.6% overall disagreement). 18.8% have ambivalent views about the issues studied.

Distributions on the Pro-environmental items (items 1-15) show that three thirds of students (75.3%) agree on these statements, whereas only 10.5% disagree and 14.1% are undecided. In terms of overall mean index of pro-environmental items, general orientation of students is at 4.05 (mildly agree) level. Conversely, distributions on the pro-DSP items (items 16-25) reveal that 28.5% agree with the statements, while there are considerable numbers of disagreeing (45.7%) and undecided (25.8%) students. Regarding overall mean index of pro-DSP items, general orientation of students is at 3.31 (middle) point.

### *3.2. Difference between the environmental course-takers and non-takers*

The second hypothesis stating differences between the students who took an environment related course and those who did not take any was partially confirmed: Chi-square test results showed only six significant results at 0.05 levels. These six statements are related with environmental abuse, fast economical growth, trust in human ingenuity, nature's ability to overcome impact of modern industries, human's rule over nature and limitless usability of nature.

Agreements on items by course-takers range from 61.8 to 81.0% for pro-environmental items and 17.4 to 40.6% for the pro-DSP items. Agreements by non-takers range from 49.7 to 84.6% for the pro-environmental items and 23.2 to 39.9% for the pro-DSP items. Item 4 has an undecided percentage of 6.6 for course-takers and 6.5% for non-takers. The remaining undecided responses range from 11.5 to 39.6% for course-takers and 20.7 to 32.9% for non-takers. Distribution of agreement with the statement that humans are severely abusing the environment is 81.0% for the course-takers and 84.6 % for non-takers. 12.5% of course takers and 8.9% of non-takers disagree with the same statement. Similarly, 61.8 % of course-takers and 49.7 % of non-takers agree with the statement of "fast economical growth mostly engenders more harm than benefit." Disagreement is relatively low: It is 14.0% for course-takers and 20.3% for non-takers. More non-takers (30.0%) than course-takers (24.2 %) are undecided. Those who think that human ingenuity will insure that we do not make the earth unlivable comprise 39.9% of non-takers and 40.6% course-takers. Contrary to the expectation that there would be more anti-exemptionalist view among course-takers than non-takers, more non-takers (27.2%) than course-takers (19.8 %) do not agree with the statement. There are 32.9 % non-takers and 39.6 % course-takers that are undecided.

Disagreement between the non-takers and course-takers on the statement that the balance of nature is strong enough to cope with the impacts of modern industries are slight (46.9% and 43.9% respectively). Similarly, 24.8 % of non-takers and 25.3% of course-takers agree with the statement. There is a considerable difference between the two groups in the idea that humans were meant to rule over the rest of nature. 63.3% of course-takers and 50.3% of non-takers do not agree with the idea. Correspondingly, 17.4 % of course-takers and 30.0% of non-takers agree with it. Likewise, 68.5% of course-takers and 55.1% non-takers do not agree with the idea that resources can be used limitlessly for the development of tourism, and more undecided (20.7%) and disagreeing students 23.2%) are found among non-takers than course-takers (11.5% and 20.0% respectively).

Table 1. Frequency and mean distributions, and overall orientation index <sup>a</sup>

Item #	Statements	% Distribution					N	Mean <sup>b</sup>	Sd
		SD	D	U	A	SA			
	We are approaching the limit of number of people the earth can support	7.5	8.5	22.0	33.5	28.5	1273	3.67	1.190
	When humans interfere with nature it often produces disastrous consequences	5.2	9.3	13.9	35.4	36.2	1286	3.88	1.152
	Plants and animals have as much right as humans to exist	2.4	2.4	4.2	16.5	74.5	1291	4.58	.872
	Humans are severely abusing the environment	3.6	6.0	6.4	35.3	48.7	1288	4.19	1.043
	Despite our special abilities humans are still subject to the laws of nature	4.7	7.6	20.6	37.9	29.2	1289	3.79	1.088
	Balance of nature is very delicate and easily upset	3.1	12.0	14.6	35.7	34.6	1289	3.87	1.111
	If things continue on their present course, we will soon experience a major ecological catastrophe.	2.9	4.8	19.9	36.8	35.6	1290	3.97	1.003
	Science cause harm as much as benefit	9.4	10.9	21.7	31.2	26.8	1284	3.55	1.252
	Technological development cause harm as much as benefit	4.7	8.1	14.2	38.8	34.2	1291	3.90	1.105
	Human should live in harmony with the nature in order to survive	1.4	2.4	9.4	29.7	57.1	1290	4.39	.859
	Fast economical growth engenders more harm than benefit most of time	4.1	14.6	28.5	32.7	20.1	1293	3.50	1.091
	Environmental laws should be enforced vigorously	2.0	5.1	9.1	28.9	54.9	1291	4.30	.965
	We should take strong measures to protect resources of our country	1.4	3.1	6.9	21.0	67.6	1289	4.50	.862
	There should be control over the industry in order to prevent environmental problems	1.9	4.0	11.8	35.1	47.2	1283	4.22	.937
	Tourism should meet its responsibility to protect the environment	1.9	3.2	8.6	18.5	67.8	1292	4.47	.919
	Humans have the right to modify natural environment to suit their needs	38.6	26.5	15.1	13.6	6.2	1289	3.78	1.261
	Human ingenuity will insure that we do not make the earth unliveable	8.6	16.7	34.6	25.2	14.9	1278	2.79	1.147
	Balance of nature is strong enough to cope with the impacts of modern industries	18.3	27.9	28.8	16.6	8.4	1286	3.31	1.190
	The so-called "ecological crisis" facing humankind has been greatly exaggerated	29.3	30.0	25.5	11.1	4.1	1292	3.69	1.127
	Humans were meant to rule over the rest of nature	31.3	22.2	19.6	18.7	8.2	1283	3.50	1.320
	Humans will eventually learn enough about how nature works to be able to control it	6.4	10.2	30.0	32.1	21.3	1279	2.48	1.125
	Most problems can be solved by technological development	6.9	20.1	32.9	31.6	8.5	1291	2.85	1.055
	Environmental protection laws got too strict in recent years	28.5	26.0	22.8	13.0	9.7	1286	3.51	1.290
	Environmental laws put unfair burden on industry	26.3	23.8	30.6	13.5	5.8	1283	3.51	1.180
	Resources can be used limitlessly for the development of tourism	37.5	21.7	18.4	13.8	8.6	1286	3.66	1.330
<b>Overall Orientation Index</b>		<b>11.5</b>	<b>13.1</b>	<b>18.8</b>	<b>26.2</b>	<b>30.3</b>	<b>1286</b>	<b>3.75</b>	<b>1.100</b>

<sup>a</sup> SD = Strongly disagree, MD= Mildly disagree, U= Unsure, MA= Mildly agree, SA= Strongly agree

<sup>b</sup> Mean Likert scores after adjustment for direction. Higher score indicates pro-environmental view.

### 3.3. School status

The respondents comprised of 37.6% first year, 32.3% second year, 16.8% third year and 13.4% fourth year students. The chi-square tests provided no support on 22 items for the hypothesis (H3). There were significant differences of opinion on only three statements at .05 level (items 9, 19, 25). Frequency distributions on the three items show that there are considerable differences between first year students and fourth year students: 76.3% of the first year and 62.8 % of last year students agree with the statement that technological development cause harm as much as benefit, whereas 10.7% of first years students and 17.2% of last year students do not agree with it ( $\chi^2 = 17.3$ ,  $df = 4$ ,  $p = .002$ ). Regarding the statement "humans were meant to rule over rest of nature", 28.8% of first year students agree, while 23.1% of fourth year students agree. Undecided first year students are much more than fourth year students (22.2% and 13.6 %, respectively). Similarly, less first year students (49.0%) than fourth year students (63.3%) disagree with this statement ( $\chi^2 = 11.1$ ,  $df = 4$ ,  $p = .02$ ). Similar results were found regarding the statement that resources can be used limitlessly for the tourism development: 24.0 % of first year students and 18.5% of fourth year students agree with the statement, whereas 58.1% first year and 69.9% of the fourth year students disagree ( $\chi^2 = 17.3$ ,  $df = 4$ ,  $p = .002$ ).

### 3.4. Gender differences

Majority of students (54.7%) were females. Chi square test results showed that females and males significantly differ in 20 out of 25 items. More females than males agree with all 13 significant pro-environmental statements. On the other hand, more males than females agree with all significant pro-DSP statements. These results overwhelmingly support the hypothesis stating existence of gender difference on environmental worldviews (H4). Range on the agreement responses of females on the pro-environmental items is higher than males (55.4 to 93.5% and 49.5 to 88.0%, respectively). Disagreements on the same items range from 2.7 to 16.9% for the females and 4.9 to 24.5% for males. Similarly, there are no striking gender differences in the pro-DSP items: Agreements range from 11.9 to 52.9% for females and 19.3 to 53.9% for males, whereas disagreements range from 14.8 to 69.2% for females and 18.9 to 60.3% for males. A large majority of both female and male students agree on all pro-environment statements (statements 1-15). However, more girls agree than boys with all these statements. There is also no particularly marked difference in worldviews of males and females on pro-DSP statements. Majority of both sexes disagree that humans have the right to modify the natural environment to suit their needs, however more females (69.2%) than males (60.3%) show disagreement. Similar ranges of differences are found in their answers to statements 19, 20 and 23. The range of differences in undecided responses between females and males are also not enormous: maximum difference is 6.6%. It seems that little over one-third of both sexes have ambivalent views on the human ingenuity that we do not make the earth unlivable place (statement 17).

### 3.5. Socio-economic status

Of 1295 students, 504 (% 38.9%) declined to answer to this question. The test results showed 16 significant and 9 insignificant correlations at .05 level. These results provide partial support for the hypothesis (H5) on the existence of relationship between socio-economic status (SES) and environmental orientation. Regarding the significant relations, low SES students agree with all pro-environmental statements more than medium SES and high SES students. Expectedly, low SES students agree less with pro-DSP statements. Similar results were found in most statements between the medium SES and high SES students. Agreement responses on the pro-environmental items were in the range of 65.4% - 96.1% for low SES group, 69.0- 90.6% for the medium SES group and 59.9% - 88.2% for the high SES group. Agreement on the pro-DSP items were in the range of 12.8% - 27.1% for low SES group, 18.7% - 29.1% for the medium SES group and 20.7 % - 26.5% for the high SES

group. Findings also show that there are considerable differences in undecided responses: The lower SES group has less undecided responses than the other two groups on all items. Furthermore, there are more undecided responses to the pro-DSP items than to the pro-environmental items.

#### 4. Conclusion and discussion

The study results show that majority of students (56.5%) hold pro-environmental views. However, about one fourth of students (24.6%) have pro-DSP oriented ideas. Furthermore, there is considerably high percentage of undecided responses (18.8%). Human exemptionalist views are rather low, whereas anti-exemptionalist ones are comparably high among students (Items 17, 21, 5). Anthropocentric beliefs are slightly low (between 20-25%), while anti-anthro beliefs are quite high (Items 3, 16, 20). Only one-fourth place faith in the Earth's ability to rebound from the industrial impacts. There is a mixed opinion on the harm/benefit of the science and technological development. In the same way, majority are either skeptical (34.6%) or disagree (25.3%) on the idea that human ingenuity will ensure to solve environmental problems. These findings suggest that the students' environmental worldviews do not reflect a widespread adoption of the pro-environmental orientation.

Students' responses to some items that show higher environmentally sensitive views partially support the Bryan Norton's convergence hypothesis that both anthropocentric and non-anthropocentric ethics will recommend the same environmentally responsible behaviors and policies. Yet, the present findings and accumulated knowledge on the subject show that anthropocentric ethics legitimately raises questions about how to feel, not just about which actions to take or which policies to adopt, and undermines some of the common attitudes like love, respect and awe toward the natural world (McShane, 2007). The previous studies mostly indicate positive relationship between environmental knowledge and pro-environmental behaviors (Magntorn & Hellden, 2007; Tikka, Kuitunen, & Tynys, 2000). Finding only 6 significant relations out of 25 correlations implies at least two inhibiting conditions: (1) the nature of the courses in environment is not adequate in cultivating environmental knowledge, awareness, sensitivity and pro-environmental orientation, and (2) there is a lack of necessary supportive social, cultural and political atmosphere/practices. The findings on the relationship between the school status and environmental views can be considered as an additional indicator confirming these two conditions: It was found that first year students are more concerned about the environment than last-year students. This also supports previous studies (Malkus & Musser, 1997; Musser & Diamond 1999) that found that younger students had more positive attitudes toward environmental issues than older ones. Some studies provide conflicting results about the relationship between environmental knowledge/education and environmental opinions, attitudes, and behavior (Bradley et al., 1999; Hsu, 2004; McMillan et al., 2004; Yilmaz et al., 2004). The differences between first-year and fourth-year students in the present study lead us to question the value/nature of the knowledge obtained in and time spent at the university. All these results also suggest we should pay close attention to strong intervening variables like willingness to take proper action and environmental behavior. Furthermore, environmental policies and designs should pay closer attention to the issues such as motivational, affective and cognitive issues, content of curriculum, method of teaching, instructional design and nature of daily social practices. A proper policy and design also mean an evolution from conservational type of environmental education to education for sustainable development characterized by an awareness of the need for self-determination, democratic processes, a sense of involvement, ownership and empowerment, and of the complex relationship between environment and social equity (Gough, 2008; Van Weelie & Wals, 2002). Empirical findings about gender differences in environmental concern/view are inconsistent and inconclusive. Some studies found little if any gender differences while others found significant high level of support among females of the pro-environmental orientation (Ekici, 2005; Fernandez-Manzanal et al., 2007; Schreiner & Sjberg, 2003; Taskin, 2009; Tuncer et al., 2005; Uitto et al., 2004; Yilmaz et al., 2004). Finding of the current study implies that gender differences in environmental worldviews could have resulted from differences in students' upbringing as being "girl/woman" and "boy/man" in a society that produces

differences in gender sensitivities. Future studies should focus on factors that create gender differences in environmental views, attitudes, motivation and behaviors.

The present study found inverse relations between SES and environmental opinions/attitudes, indicating that respondents with lower socio-economic status are more pro-environment than ones with higher status. Some studies came up with the similar findings (Taskin, 2009; Uyeki & Holland, 2000; Yilmaz et al., 2004), but others (Schultz, Zelezny, and Dalrymple, 2000) found that SES are not significantly related to ecocentric environmental concerns. These inconsistent findings suggest that the future studies should try to question, at least, (1) differences within the same SES across cultures in different countries and (2) the justifications low and high SES respondents provide for their own views, attitudes, concerns and/or behaviors.

Findings of this study suggest that there is still a long way to go in creating socially and environmentally responsible worldviews, behaviors, landscape and architectural designs, product designs and uses, and capacity building in industrial relations. Although this study provides fresh information on the subject studied, additional research in different settings is needed before definite conclusions can be made about environmental worldviews and related variables.

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# Esq education for children character building based on phylosophy of Javaness in Indonesia

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## Abstract

IESQ (Intelegence, Emotional and Spiritual Quotient ) development are needed by all people in the world. Education at an early age is one factor that determines the quality of a person. One way that can be used to form basic character is to approach cultural values, because the value of culture will always be inherent in human beings whenever and wherever they are. Culture that values one can meet those needs is the Javanese culture. Javanese culture is an ancient culture steeped in cultural values. Thus the philosophy is suitable to be applied in the formation of character IESQ in children. In this paper, the authors also classified the philosophy of Javanese culture in the formation of IESQ to better facilitate to inculcate its values to children. The concept of development in children IESQ by phylosophy of Javaness hopes to be a solution to the social problems in Indonesia.

*Keyword: Development, Character Building, IESQ, Java Cultural, Philosophies of Java*

## 1. Main Text

Early age is an age of highly strategic for shaping the personality of children. Because an early age is the age of a person learning to recognize the start of a life around, find out who he was and so on. Education at an early age to be a factor that determines the quality of a person when he was growing up. Bad Education in early childhood will have an impact on a person's personality and poor quality. Therefore we need a balanced pattern between education education emotional, spiritual and intellectual personality and to improve the quality of children. In addition to strengthening the basic character of the child need to be instilled the values of local culture-based education. Cultural values of the area are very strong and dominant in shaping a person's character. Cultural values will be reflected in every word, action and will be ingrained in humans, including in thinking and making decisions. so the existence of cultural values inherent in human beings will form a strong foundation of character and inherent to any time.

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## 2. Javaness Culture

Javanese culture is a culture that has an important role in Indonesian culture. Javanese culture has a very rich local wisdom. Local wisdom contained in all aspects of Javanese cultural life. Haryati Soebadio argues that local knowledge is an identity / personality that led to the nation's culture it is able to absorb and process is appropriate for the nature and culture of their own abilities (Ayatrohaedi, 1986). According Rahyono (2009) local knowledge is human intelligence that is owned by a particular ethnic group society gained through experience. These values will be very strongly attached to the community and has been proven through a long course of time, all the existence of the society. Javanese cultural values can be viewed through ethics or mores Spoken, folklore, Javanese folk songs, myths, traditions, ancient scriptures were believed to the truth and many other things embodied therein cultural values. In the context of child development IESQ, cultural values can support the child's development and well established IESQ personality of the child in accordance with the values of Javanese culture. So planting Javanese cultural values would be easier to be embedded in their personality.

## 3. IESQ Building in Phylosophy of Javaness

IESQ development is a necessity for all human beings. Especially those who are at an early age. IESQ the balanced development will be able to shape a person's character is ideal. If in one of these elements is not met it will be influential in the formation of one's personality. One way to develop IESQ in early childhood is through the approach of cultural values Javanese philosophy. Sedyawati (2003) said that philosophy is the foundation of life and gives meaning to life attitude a society that is usually reflected in the variety of expressions that are known in the community. In the context of the values of cultural philosophy Java Java regulate people's lives ranging from ethics, behavior, words, customs and many other rules. At its core values has a goal to create an ideal of human character as required by the community. Javanese culture has a lot of philosophy, each written in the books of the ancient Javanese who believed were correct, through folklore, myths, customs, information through elders and so on. In order to establish IESQ in early childhood according to the philosophy of Javanese culture, the author divides it into 3 categories: Emotional, Spiritual and Intellegence. Authors further explain in the description below:

### 3.1. Emotional

#### - *Alon-Alon Waton klakon (Mouthful slowly reached)*

This phylosophy means that to doing the work do not be hasty, full of patience. Another meaning of this phylosophy is hinting about vigilance, caution, constancy. Way of implementing these values to children is through experiential learning methods. That children are given the authority to gain experience in their environment by applying the values of phylosophy *Alon-Alon Waton kelakon*. For example, in studying school materials, performance goals, and wanted something more.

#### - *Tepa Slira (Introspection)*

This phylosophy means that every human being should always be introspective, fix errors that never happen again. Another meaning is always considerate to others. Do not always blame others if we do not want to find our own fault. Do not be hurt if you do not want to be hurt. Implementation of these

values is through experiential learning methods to the child. That is when the child is facing problems in the social environment, children are taught to be introspective about the events that occurred and provide guidance to not be looking for his problem maker. In this case the parents also give examples of behaviors that are associated with it.

- ***Mangan ra mangan sing penting kumpul (Togetherness)***

Literally the meaning of philosophy is not important to eat some meal but the important one is being together. But really meaning in the philosophy is about togetherness, feel the pain of others and participate happy when others are happy. In the social problems that occur at this time, the values of togetherness is indispensable for understanding the conditions that occur. So planting shared values in a child will help create a culture of togetherness and hope can help solve social problems exist. Implementation of the above philosophy is setting the example through the behavior of the parents in the child's social life and engage in these activities, although only witness. For example, when a friend congratulated're happy, so sorry if your friends are getting disaster and many more. Through which children are more likely to do the same thing in his social life as an implementation of the value of philosophy of *mangan ra mangan sing penting kumpul*.

- ***Andhap Asor (Humility)***

The significance of this philosophy is to be humble, not ostentatious, not arrogant and never segregate between people according to race, culture, religion, ethnicity, and so on. Implementation of the values that the parent gives advice and examples of behavior in the form of social life. For example, when parents are getting achievements or sustenance, it teaches parents to always be humble and not show off. Later in the mix never segregate our friends according to race, religion, ethnicity.

- ***Mikul Dhuwur Mendhem Jero (Remembering the kindness of others and forget the ugliness)***

The significance of this philosophy is to always remember the kindness of others people, the services they provide, share them with others. Philosophy also taught to forget all the ill of others, forget about it and do not tell it to others. To implementation through the advice and also the behavior of older people in social life. By instilling the values contained in the above philosophy to children at an early age then the expectation is that philosophy will stick and be able to change according to the current state of the the philosophy.

- ***Urip Iku Urup (Life is Flash)***

It is Mean that literally to life the flame, actually meaning is instilled in every human being to always beneficial for others, inspiring others of what we do, so that others will be moved to do so. To implementation through the advice and also the behavior of older people in social life. Parents provide useful and how to inspire others. Besides parental figures illustrate useful and inspiring. For example, someone who disabilities but he could provide benefits to the people in the world.

### 3.2. *Spiritual*

- ***Nrimo ing Pandum (The attitude of receiving)***

The meaning of this philosophy is sincerely accept any results of the efforts that have been done, never be complained. Endraswara (2003) said that the basic character of the Javanese is the attitude of receiving. attitude of receiving is receiving everything with the psycho-spiritual awareness, without feeling *nggrundel* (grumble of disappointment in the back). Implementation of those values is the experiential learning approach. For example, when a child receives in school exam results, the values obtained child is the result of an effort that has been made. That way parents instill the value of philosophy *nrimo ing pandum* that if you want to get maximum results then have to do business in accordance with the desired results and targets are not appropriate when the child's parents menagjarkan not to be disappointed over the outcome, but accept the sincere. By applying the philosophy of the children is expected to have a positive impact on children. Expected the child is able to become a person who only submit to God Almighty. Given these properties, it is a child who simply believe in God and not rely on other than God that will form an independent person and brave and have faith that good.

- ***Adoh tanpa wangenan cedhak datan senggolan (feel that God is so far, but the real God was in the hearth of each person)***

This philosophy in the Java community is usually used to describe the existence of God. Sometimes people feel that God is so far away, as if it is above the seven heavens into the distance can not be measured. But also so close to the real God was in the hearts of each person. Yet man can not hold it (Widayat, Afendy. 2005). Implementation of the philosophy is by giving examples such as the actions of the parents. In a state of happy or sad, parents teach children to always pray and give thanks through worship according to their religion. This is a proof that it is God who gives happy and also sad to man. So with worship God then people will feel that God is near. Above proverb teaches that God is very close to us. The first thing we have to remember where, any time is a good God in a state of happy or in sorrow. Moreover the meaning of this proverb is Javanese man must always menyuadari that God is everything - else in Nature, because she who creates, he was the almighty power over all whole hog.

- ***Sapa gawe bakal nganggo (who makes, he will responsible it)***

The adage broadly means that anyone who makes something he himself would wear. That is, that whatever a person does, he himself will be responsible. If someone is doing well, then he also who will wear the goodness. Similarly, if he did the opposite. This adage is actually a representation of belief in the law of karma or law of the balance of nature. Implementation that parents always teach children about responsibility. What is the meaning of responsibility, the benefits of responsibility and impact when not responsible. Parents also gave an example of a creative story about the implementation of the above philosophy. Above proverb teaches that one's actions will come back to the person that they do not look good or bad. Therefore it is very important maxim applied to children, so that children are accustomed to do good in his life, knowing that the impact will be and has been done.

### 3.3. Intelligence

- ***Kaya kodhok ketutupan bathok (like a frog trapped inside a coconut shell)***

Javanese proverb above literally like a frog in a shell. What is seen, known, and felt frog in the world in the shell of course only in the shell. Frog will not notice the atmosphere or the world outside the shell. This maxim widely want to say that people who thought, reference, knowledge, and experience not many would not know a lot of things. People who do not broaden his experience will only speak of things that narrow, limited to what he knew. Implementation of such values that the parents give authority to the child to seek knowledge widely through constructivist methods that children construct knowledge based sendri fact, activity, experience and theory. So that children can be summed into a new knowledge. Additionally a child is given the freedom to seek knowledge as far as possible or in other words is thus wander horizon of knowledge a child will become more widespread and certainly has the experience very much.

- ***Adigang, adigung, adiguna, adiwicara (like to show all things that owned)***

Javanese proverb can be translated as proudness or body or facial beauty boasting, bragging or insolence offspring body size, boasting science or knowledge, and boasted acumen or melodious voice talk. Implementation is advising parents not to brag child whatever he had. People who feel themselves to have something, whatever it is, indeed sometimes be forgotten that it was all a surrogate of the Almighty. Arrogance because they feel themselves more than anyone else this very often results in the person concerned applies arbitrarily to others.

- ***Tuna satak bathi sanak (friends is more meaningful than wealth)***

The Javanese proverb literally means loss of one is not (a measure of money / wad) profit brothers. This adage would like to teach the world that even the main consideration is trading for profit and profit, for the Javanese losses so money is not why the origin (still) can get sedulur 'relatives' or friends. On the other side of this proverb also teaches that sedulur (relatives) are much more profitable than the size of the money in kesesaatan. If stretched out, then friends or sedulur it in the future to provide benefits far greater than the size of the money at the time of sale and purchase transactions occur (Zulfikar, 2008). Implementation of the value above which a parent teaches that whatever we have is not worth more than a friend or relative. For example, at the time at school, When a friend who does not have the money then the child is taught to bought him a snack even though the money is mediocre.

- ***Kaya ngenteni thukule jamur ing mangsa ketiga (like waiting the mushrooms growing in the broad kemarau)***

Javanese proverb above literally growing like mushrooms after waiting broad kemarau. Secara saying if we have a hope that never materialized anticipated but it's like waiting

for the growth of fungi in the dry season. This adage can also be used for activities that wait for a very long time like waiting for something that is not clear or not lucky. Implementation is when the child has a dream, the dream is to be achieved through hard work and prayer, instead of waiting for the dream to come alone.

- ***Menang meneng nggembol kreneng (Keep silent toward bad things)***

Javanese proverb above literally means secretly pocketed Kreneng. Javanese proverb above broadly to describe the behavior of someone who on the surface (physical, outwardly) seem quiet, do not talk much but in his mind and in his heart he is actually preparing or storing something (which is generally not good). Whether it's in the form of plans or goals are not noble. Whether it's engineering manipulation, lies, and so on. Implementation that parents teach children to do no good, no good plan. Parents also describes the consequences that obtained when doing so.

- ***Ing ngarsa sung tuladha, ing madya mangun karsa, tut wuri handayani***

This is the meaning of the motto and *ing ngarsa sung tuladha* (in the front, an educator should set an example or examples of good practice). *ing madya mangun karsa* (in the middle or in between pupils, teachers should create initiatives and ideas) *tut wuri handayani* (from the back of a teacher should be able to provide encouragement and direction). Implementation in a child's life are when in school, when the child becomes class president or chairman of the group, the child must provide examples of good practice, and then when the child is between kela friends and groups of friends, children exchange ideas to solve a given problem or task . And children also contribute in giving encouragement to his friends who are lazy or lazy learning tasks.

#### 4. Conclusion

Javanese culture is the culture of old and steeped in cultural values. Javanese culture has a strategic role in developing community resources. Javanese cultural values is inherent in human beings who will be brought up whenever and wherever human beings are. The existence of Javanese cultural values can be seen from every word, ethics, behavior and way of thinking of people of Java. Planting Javanese cultural values to children early through implementation in everyday in our life to help shape the personality of the child in accordance with the needs of human resource development in today's era. Through experiential learning methods and models of a constructivist approach that transformed the values phylosophy of Javaness, it will help facilitate the formation of the character of the child and easier inherent in the child.

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## Essentials of the education on democracy

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### Abstract

Nowadays, the discussions on reconstruction of the education have improved. Organizing of education system and determining it according to demands of the industry and knowledge society are criticized. In that persons have overloaded multiple technical knowledge, it gives rise to awry mental development and cognitive dissonances in their daily lives. Thus, people could not correlate a healthy relationships with the others.

In recent years, values education does not thoroughly discussed. But cultural identities and localities come to the forefront. Every society and community refers to its particular values and existence. According to it, the values education must provide generalize and support to its values and identity. In this process, globalization has a major role in provoking localities.

Education policy does not have to ignore localities and particular values, as well. But it must not submit the conflicts of identities which is rising in the recent period. It is most important that the education considers individual, cultural values and interactions among other cultures.

In this paper I will discuss on how must be educational policy in plural and democratic societies. It will be focused on state-individual relations, pluralism, multi culturalism, risks of identity policy and ghettoization, identity and truth and values education. It will be offered suggestions on the social tolerance and culture of living together.

Keywords: Democracy Education, Ethics, Cultural Identities, Pluralism, Ghettoization, Freedom, Living together

### 1. INTRODUCTION: DEMOCRACY EDUCATION AND VALUES

Education on democracy requires comprehensive process. It is strengthened and developed through materialistic, intellectual and civil participation. Democratic initiative should be civilly dimensioned leaving aside the resolutions of the political power thus it should be transformed into a democratic mobilization. In this context, the initiation activated by the political power should be socialized. Otherwise, such steps will never be permanent and tend to be nostalgia in our political and social lives. Democracy basically relates with methods and processes. In case of any resolution, democracy does not deal with the nature of the resolution but the way the resolutions are taken. It attaches great importance on communication and dialogue. Some raise rejections against the democratic requirements making an emphasis on the conditions specific to our country and against the full implementation of the democracy based on the fact that our country is not yet mature in view of democratic and universal rights whereas democracy is the method for solving the problems. If there exists any problem, we

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need democracy more than ever. The idea that “we first sort out the problems and get rid of the crisis” makes the democracy difficult.

Putting democracy into practice in any society requires intensive challenge. The solidarity between efficient parties and institutions in any society and the production of constructive discussions are deemed to be a must. The steps taken solely by the political power are not sufficient. The large social segments should believe in this specific goal and make every effort to realize it (Gleaser& Ponzetto; 77-99.).

It is settled on the piers such as democracy performance, stability performance, material performance and citizenship performance. The politics within democratic perspective aims at strengthening the individual and widening the self-determination space of the individual. Autonomy is both an aim and the tool of such aim. Therefore no category wise error should be made. The individual should be attached much more importance. The future and happiness of the individuals should be targeted instead of the future of the institutions. As a consequence the institutions exist for the people not for their own selves (Heywood, 1997: 110).

Today's globe believes in the requirements for joint solutions against the common problems. The international community and numerous organizations have long been abolished the borders of the countries in political, cultural, economic and religious views. The globalization truth impelled the Muslim states to establish intense relations among each other. This sudden change has led to unearth the problems dating back to Islam history and yet not solved. It is not difficult to estimate the reflections of such a specific case on the religion. The obligatory religious education paying respect to pluralism should be incorporated in the rainbow with religions and beliefs distinct from culture and geography (Toros, Emre, 2010: 260).

Living on earth is something to load a meaning on it. Defining the problems is a part of understanding the world. Updating the language used in defining the problems forms a part of the democracy project. Democratic development is not only a matter of method but also a style. Defining the problems late and in an insufficient manner is organizational wide and intellectual wise Achilles heel. It is not only linked with lack of knowledge but also with looseness and frailty. Culture, understanding and values of the self-enclosed social structures are of course specific and fail to meet the requirements of liberal societies. Furthermore such a structure forms an obstacle in the front.

The phenomenon of globalization made everybody familiar with unexpected truths. Relations and interactions among the religions speeded up. The new conceptions and hierarchies emerged in the world of values and beliefs should be discerned and the prevalent religious trends in the world should be recognized. There currently exists a comprehensive information gap in this particular matter.

As societies develop and communication tends to increase, the relationship between the government, society and individual also changes. The people have started to watch their own selves through a relatively distinct and liberal window. In traditional societies, the ruler has always been regarded as the sacred being on earth or representative of the sacred being or implementator. The relationship between the government and the society has always been considered to be an unequal relationship between the celestial and non-celestial. In this understanding, the idea that the managing powers give account before the public would never emerge. In the world established on the societies and notions rather than individuals, the struggle for ruling power is based on many concepts. In the harsh and insecure world in which the rulers tend to change very often, it is to the share of the public to submit to the rulers. Based on this fact, conformity has always been regarded as the primary virtue. It is because the ruling parties maintained their power through the public obedience (Evkuran, 2009: pp. 53-67).

However, the suppressed and repressed individual in our contemporary world will never work and will be considered to be a problem at the very initial point. Such a model would only be a fiasco in case the state is limited and the civil societies are driven up to the front. Raising the individuals who may compete with their global competitors will be to the benefit of the states and the societies.

The developments experienced in the world make a deep impact on the relationship between the society and the state as well as the political institutions. Now what is called to be “ruler” is no longer an intense, rigid and tough phenomena fixed on a seat. Rulership is a kind of relationship. This was the nature of the rulers from the very beginning. However, this may be comprehended better today. The recent definition of the rulership is that: Ruling power is nothing overlapping us but something inside us. It is nothing repressing the people but stimulating and exciting them. The ruling powers which fail to create any sense of satisfaction and consent in the people will experience legitimacy crisis.

One of the issues which should be addressed is the attitude against the new social and global problems. Two examples shall be emphasized: The first is the environmental issues on which global concern is raised and international awareness has been aroused. We are far behind the intellectual fund of knowledge regarding the environmental issues in the world. We are not yet aware of the environmental literature already compiled in the world and the critics of the environmental activists on the societies, politics, religion and technology. It is incorrect and not true to make emphasis on the evils, destructiveness and extremities of the human nature. It is not likely to be included in the discussions concerning the environmental issues without making any reference to the suggestions of the environmentalist philosophers for the re-structuring of the society, moral and re-considerations about the environment, traditional sovereignty understanding and radical objections raised against the monotheistic religions.

Moral indifference is deemed to be an important problem. Nihilism and moral indifference are the most widespread and most common problems of the present societies. On the contrary, fanaticism never abolishes the nihilism problem but it makes it reversely evident and feeds it. The egotist structure refined from values of all type, immune, cold and locked on to personal pleasures and sorrows is one of the substantial problems not only in view of religion, morality and education but also of politics and culture.

Currently the common problems of the religions on earth are the problem of moral indifference fed through the popular culture. The thinkers who concentrate on this specific issue specify that the nihilism trend that we face and qualified as moral indifference is a kind of illiteracy (Jackson, 2007: 92).

It is essential to protect the individual rights and freedoms on one hand while the values should be protected against moral and material corruption on the other hand. It is inevitable for anybody who is willing to take part in favor of welfare and virtue to challenge against evils and judge and evaluate for this particular case (Evkuran, 2010: 47).

Moral agnosticism makes any culture extinct at the final point. Because, it obliterates the ground for values which makes the human beings stand still and makes it possible to share the things of all kind among the human beings. An irrational society is the one in which the morally neutral or coward people are included. Such societies have lost their susceptibility due to the fact that they have already been deprived of moral criteria, principles and targets. Hence, human beings should move to keep on their living and find the most appropriate direction for their spiritual life. If the individual fails to do this, then such individual is likely to be guided by others. Moral susceptibility is not only an affair of spiritual nature but also a matter of existentialism through which the individual assumes responsibility and initiative concerning his/her own life.

None of the social power may monopolize the truth. It should be adopted that democracy for the sake of which we praise tends to remain indifferent against the truth consciously. It is due to its nature to remain indifferent and insensible against the truths. The political theoreticians examining the relationship between rationality and democracy defend the idea that democratic action perspective require pragmatic attacks to establish a more comprehensible community not that of reality theorem or concepts such definitiveness and universal validity. In brief, democracy finds its existence through emotions and sympathy not through the rationality and universal ethical discourses. Therefore, the efforts to be made by the people from different faiths and ideologies to understand their sorrows, problems and pains will be the basis for social consensus of the coexistence culture.

Democracy has first emerged in the West in the form of a contemporary political thought. Thanks to its emergence and nature, it relies on indifference towards religions to some degree and therefore democracy it is not

taken as the basis in any other belief system. Democracy does not make any effort to socialize any reality and does not mind and require legalization any partial reality. However there is one point here which should not be omitted. Is the indifference of democracy or the conscious indifference of democracy against religion, philosophy and ideological realities in conflict with the principle of “politics for human beings”? For example, what is the meaning of justification of democracy by any social party through its world of values?

The boundaries of the conscious indifference / jaunties against realities should be well drawn. Otherwise, it may lead to public ethical codes are employed in lieu of individual (civil ethics. Ideological state may be criticized just at that specific point. In case the ruling power depend on individual rights and liberties rather than any ideology / truth when dealing with any social issue , this then points out to be democracy. However, on the other hand the individual’s personal world is filled with values and beliefs. The fact that these are fully related with the conscience and inner self is the product of aggressive secularism and out-of-fashion substantive understanding.

Ideologies / truths can not act as an audience to end up the social welfare and freedom dye to the excessive requirements. On the other hand, the preferences of the individuals and groups within civil – social stage should be experienced freely and this must be secured. Contemporary West excluded the religious objects within public area to get rid of fanatics and let it be experienced in one’s private life. In this regard, the social ideologies focused on the exclusions of the transcendences and values. The problems arising from being an absolute faithful individual and being faithful intermingled with each other. Thus doubts and disparagement developed against faith. A widely and frequently used metaphor is the following: The West removed the water in the container (Middle Age institutions and orders) and thrown the child in the same container (transcendence).

The truth is nothing a state affair. Searching the truth is a problem which relates with social area such as ideology, theology or philosophy (Enginer, 1995: 2722) The opinions, philosophies and beliefs compete with each other. The State is indifferent to these until any violation against basic human right. Since this is a legal issue, it should be the point of interest of the state. This is where the answer to the question “Should we give up the truths in order to defend the democracy?” is given.

The humanistic existence depends all the time on valuation and evaluation. Valuations, seeking for values, leading life as per such values etc are the inevitable humanistic preferences. Without valuation, social life becomes more and more impossible. Producing common values and making every effort to protect such values have always been the most evident case throughout the history while religion has been the most basic reference when dealing with such questions and problem all through the history. The anticipations of the positivist thinkers that the religion will not find a way in human life after developments in science have never been true. Even today

in which time the scientific and technological advances reach to a climax point, religion keeps its power. Therefore, the religion and the pheromones of beliefs and values in the broadest sense will continue to be the reality of our individualistic and social life.

What precludes politics in any society is the exclusion of the subjects and the auto decision for passivism in the absence of others' intervention. In this case, political, cultural and ethical relations are interrupted. If politics is a kind of social relationship, what makes it possible is the relationship and communication among the people and social layers. If we reverse and re-think the case, politics will be precluded on slippery slopes where the people turn into atoms and are confined with their individualistic world upon being insentient to each other. What primarily leads to this process is the problem of ethical agnosticism.

This is not only validated for politics but also ethics. The basic condition for ethics in any society is the free will of the individuals. Could politics be related with the idealistic thinking e.g. attaining to the ethical targets and building a virtuous society? If so, what shall be the level of cooperation and the nature of consensus? Then, will there be any conflict between political intervention and the principles of volunteerism and free will which form the nucleus of the ethical action? It is evident that several (religious, moral and political etc.) values will be in use in the future as in the present case to adopt such values to the society as long as politics exist as a social structure and regulating element. So, we should discuss the relationship between politics and ideology (McLellan, 1986: 15). The assumption that politics relate with public and political area while morality concerns with free will and private sphere and there exists a gap between these two, is somewhat an old way of thinking dating back to early modernist period in which time the distinction between phenomena and value is exaggerated. The new political trends have proven the fact that politics and ethics as a form of action and existentialism have never been segregated from each other.

Politics is resulted from ethics. Normative principles lie on the basis of ethics and this survives through judgment. In principle, culture is an integral part of ethics. Culture never exists in the absence of evaluation. The individuals make judgment about the events and persons included in his/her life and making an impact in his / her life and such individuals should not avoid making judgments in such cases in accordance with their rationale, values and targeted aims. There is no any other behavioral rule which destroys or exterminates any culture or human character other than ethical agnosticism.

## **2. RELATIONSHIP BETWEEN DEMOCRACY AND SECULARISM**

Failure to sort out the problem of secularism has led to syndromes in many fields in our country e.g. religious education is on the forefront. In our country secularism has developed in the form of an ideology not through the social and obligatory cases. Since it emerged in the form of a modernizing and developing ideology,

its integral aim has always been supposed to be the transformation of the society. The elite managers supporting this ideology had do shelter in secularism to protect and perpetuate their life styles and political practices. The elite managing powers who feel doubts about the beliefs, culture and life styles of the majority of the society felt worried and unsafe at all times. Therefore, the secularist approach in our country has always been aggressive, susceptible and intolerant.

Secularism should not be deemed to be a matter of dispute and problem. To do this, the first step is to define this concept clearly. Failure to make a precise definition creates double sided difficulty. The first is that, as we are all aware, the concept which has not yet been defined but deemed to be included in the basic qualifications of the state always tends to be abused or arbitrarily treated. On the other hand, in response to the elitist understanding which deems that secularism is a detailed life style and scorns the remaining part of the society, it is likely that secularism is insufficiently expressed with sole definition of freedom of religion.

Secularism depends on the principle of coexistence. For this specific purpose, it repudiates dominations focused on beliefs and religious comments. In this regard, it can be considered that secularism is the root of democracy. However, in case secularism is perceived to be belief or religion and replaces the religion, it is condemned to be perished by the beliefs it challenged. Repression or suppression on the beliefs cannot be implemented for a long time. Secularism which guarantees peace then becomes the reason for quarrels and disintegration (Urban, 2008: 25).

The perception of reality develops in line with the perception for time and location in the individuals. The perception of values stems from this particular case. History should be taught in the manner to include civilizations, philosophy, culture, art and literature rather than historical terms, wars, agreements, establishment and demolition of the states. The disputes among the civilizations should be accompanied with communications and interactions among such civilizations. Thus, the student envisages the concept of civilization and universal cultural perception in general terms.

It is evident and justified by observations by everybody that prayerfulness is now on the rise. However, this specific case is not good news per se. If we do not wish to experience another version of Medieval Ages, we should take the religion affair seriously. Illumination in the field of religion has always been a priority. Efficient and qualified education on religion with historic, social, traditional and existentialist dimensions is a must within the process of piety in all through the world. The discourse mannered to exclude the references of the religion will fail to maintain the required illumination and consciousness. Needless to say, not only the content but also the style is the nucleus of education. Leaving aside the traditional methods used in religion education

fully is not a realist approach at all. However, new methods should absolutely be developed in the world of visualization with different individualistic perceptions and images.

The globalization process has increased the depressions driven by the difficulties led by the hushed up and not seriously taken problems. Besides, these should be raised courageously and the requirement to sort out such problems should be voiced. The cynical and passive individual and efficient and ruling government formulated as per the political requirements of the past fail to provide any benefit both to the government and the society. The traditional authorities fed by the obedient citizens do no longer work. Today, the institutions retreat while the models encouraging the individuals and civil initiatives remain to be on the agenda. We should study and study to create competitive, highly poised individuals and formations for completion purposes with the global competitors. The education system should be re-structured in line with the logic of this process and discover the individual which has always been lost in our history. The intellectual synergy which includes civil contribution should be caught in order to systemize the education focused on individual not on ideologies and realities in view of language, tone, contents, attainments and methods.

### **3. RESULTS AND SUGGESTIONS**

**1-** We should re-discover the individual and read our culture both theologically and politically. The repressive approach which narrows the life and activation area of the individual and the political methods legalized by such repressive approach should be queried.

**2-** The idea that the public and social things of all type surround everything tightly makes the civil society understanding difficult ontologically. Civil society is the source of the fractional will. The fractional will shows itself at any location and space reserved for it. The larger the said space is and the wider and the most developed the civil society understanding is.

**3-** The opinion that the Islam religion is excessively interruptive should be queried in non-defensive manner. In this context, the relationship between the social and individualistic demands of the people in Islam and the communitarian and communal understanding in the historical period of Islam should be criticized while the individualistic freedom space should be encouraged and strengthened.

**4-** The traditional discourse regarding the status of the mankind is proven to be insufficient in view of following up and protection of the individual rights. Discourse prioritizing the human rights and dignity and value of the human being should be brought to the fore in lieu of the discourse emphasizing the superiority of the human being among the species and the difference of human being from the other living creatures in the nature. The ontological honor and dignity concepts used in the previous ages should be integrated with the contemporary civil rights and individual dignity.

**5-** Further to the individual rights, women and children rights, environmental susceptibility, respectfulness to the distinct ethnical, cultural and theological preferences should be provided with sound base theologically. The theological validity and value of the former restrictive terms such as freedom of worshipping or vice versa of the apostate, public rights of the women etc should be queried and the problems arising in connection with the social, political and cultural structure should be brought to the attention.

**6-** The negative consequences of the political submissiveness supported and promoted by traditional abidance culture and the cultural reflections of the same should be evaluated. In particular, the relationship between the political submissiveness and the ethical indifference should be queried. The behaviors such as obedience, auto suppression, repression and patience as frequently emphasized in political sciences eliminate the bases on which the ethics provide support. The obstructed ethical consciousness gets worsened and intensified on particular areas (virtue, sexuality, chastity). This unguided case is the result of the political obedience culture. The individuals thus obstructed to be the subject cannot develop free and responsible ethical actions.

**7-** The intellectuals should discover the individual lost in our history due to political and cultural priorities. In particular, it is of great importance for the Muslim theologians to develop susceptibility against the individual in the manner not to sacrifice the individual when questioning the relationship between society-religion and individual within the context of contemporary religion understanding. It will be the correct action to focus comprehensively on the society, values and culture in lieu of focusing on the continuity and re-structuring the ruler scheme acting as if it were the theoretician of the authority. The authority, regimes and rulers come up from the behind but the perceptions forming the basis of the political culture are continuous.

**8-** Tolerance and coexistence culture should be discussed, strengthened and settled in all dimensions. Whatever the belief and ideology is, it is evident that the absolute believers do not enjoy the concept of tolerance. For them tolerance is a sort of relaxation, concession or waiver from the principles whereas, tolerance is a requisite stemming from philosophical, religious and social reality.

**9-** There are 196 states at the present time. 46 of such states is managed through monarchy while 150 of such states is through republic. The concept of democracy takes precedence over republic due to its emphasis on individual rights and freedoms. Strengthening the democratic culture is not the thing to do only with the political power. Society should participate in this process in an active manner.

**10-** The developments experienced in the fields of religion education and religion and conscience are to mean an indispensable value for the sake of the strength of the democracy. Freedom for religion is a must in order to reflect and protect the religious plurality in our geography apart from the correct narration of the Islam religion.

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# Evaluating the effectiveness of students' active learning in chemistry

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## Abstract

The paper presents an evaluation of the effectiveness – from the perspective of both knowledge and motivation – of an active learning approach to 8<sup>th</sup> grade chemistry. The effectiveness of the learning approach has been evaluated using a chemistry content knowledge pre/post test protocol and the Motivational Learning Environment (MoLE) instrument. A total of 171 students from four Slovenian primary schools participated in the investigation, divided into a control group (regular chemistry classes) and an intervention group (our treatment courses with PROFILES modules). PROFILES modules, as used in the treatment group, promote inquiry-based science education in the socio-scientific context and support science teachers in developing more effective ways to teach students. The results obtained underline the advantages of the treatment courses in comparison to regular chemistry classes, but indicate that students need some time to adapt to an innovative teaching-learning strategy.

*Keywords:* Continuous Professional Development (CPD), Inquiry-Based Science Education (IBSE), chemistry teaching, student gain

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## 1. Introduction

Classroom practice in many countries still seems to be dominated by teacher-centered teaching, with low student activity in both minds and hands. In many countries over the last decade, a great deal of effort has therefore been invested in making science education more interesting for students and more effective in terms of the context of subject matter learning, while also increasing the potential of such education for the promotion of a broad range of cognitive and non-cognitive skills. The PROFILES project – “Professional Reflection-Oriented Focus on Inquiry-Based Learning and Education through Science” – is one such attempt. It is a European FP7-funded project in the field of “Science in Society” that aims to promote IBSE through raising the self-efficacy of science teachers to take ownership of more student-relevant ways of teaching, supported by stakeholders' views. Slovenia is one of the participating countries (PROFILES in Slovenia, 2010). The present paper focuses on the preliminary results of 171 8<sup>th</sup> grade students from four Slovenian primary schools, evaluating the effectiveness of learning using a chemistry content knowledge pre/post test protocol and the Motivational Learning Environment (MoLE) instrument.

PROFILES evaluation focuses on students' cognitive and affective learning, as well as on the teaching methods, approaches and materials used within PROFILES intervention lessons (Bolte et al., 2011). PROFILES project evaluation is designed as a pre-post-intervention-and-control-group study. Before the start of long-term professional development intervention, data should be collected from the participating teachers' classes (pre-test;

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intervention group) and from classes of teachers who are not participating in the PROFILES teachers' continuous professional development program (control group). At the end of the school term, both groups should be retested with the same instruments (post-test; in the intervention group and the control group classes) (Bolte, 2006; Streller, 2009).

PROFILES pays a great deal of attention to student motivation for the learning of science, both in terms of intrinsic motivation (relevance, meaningfulness, as considered by the students) and extrinsic motivation (teacher encouragement and reinforcement), in an attempt to make school science teaching more meaningful. While IBSE has already been introduced as a major feature of PROFILES, this project goes further, recounting the need for IBSE to be 'student-motivationally' driven (*involving the student population as a whole*). Thus, while IBSE is student-centered (both in terms of the *thinking involved* by the students, as well as the *carrying out of the processes*), major additional components ensure that students appreciate why IBSE is being undertaken, and that they feel they want to be involved. Stimulating the '*wanting to*', as opposed to '*doing it because it is in the curriculum*', is a unique feature of PROFILES, and is effected by an introductory scenario illustrating a familiar need for learning, and by guiding students towards wanting to learn science so as to better understand the situation posed by the scenario. The scenario is further described under the section on the three-stage model (Bolte and Streller, 2011).

## 2. Method

### 2.1. The context of the study and the research questions

The research was undertaken from October 2011 to July 2012 by a group of chemistry teachers in collaboration with the PROFILES team at the University of Ljubljana. The modules were implemented in school practice with a pre-post-intervention-and-control-group study, accompanied by completing MoLE questionnaires throughout the learning process.

The following research questions were posed:

1. Will 8<sup>th</sup> grade Slovenian primary school students attending regular chemistry classes attain significantly higher achievements in chemistry than those who have taken part in our treatment courses?
2. Do 8<sup>th</sup> grade Slovenian primary school students attending regular chemistry classes assess their lessons in general in a significantly different way to those who have taken part in our treatment courses?
3. Does student perception (in the treatment and non-treatment groups) of the aspects of the Motivational Learning Environment change significantly during the school year?

### 2.2. Sample

A total of 171 8<sup>th</sup> grade Slovenian primary school students (13-14 years) participated in the research. The students' achievements during the implementation the PROFILES modules were monitored using a pre-test and post-test protocol with the control group (regular chemistry classes; CC) and the intervention group (our treatment courses with PROFILES modules; TC), whereby 88 pupils participated in the control group and 85 in the intervention group.

### 2.3. Instruments

#### 2.3.1. Motivational Learning Environment Instrument - MoLE (Bolte 2008; 2011, 2012)

The MoLE questionnaire consists of two parts: the MoLE REAL version and the MoLE IDEAL version. The MoLE in the REAL version collects data by focusing on the students' perceptions and assessment of the learning environment in their science classes in general. In the IDEAL version, the students are asked to think about their expectations in terms of how they would like the motivational learning environment in their science lessons to be. Both versions of the MoLE questionnaire allow data collection regarding the following seven "dimensions of the motivational learning environment" (Bolte 2006): (1) satisfaction, (2) comprehensibility/requirements, (3) subject orientation, (4) relevance of the topics, (5) students' opportunities to participate, (6) class cooperation, and (7) individual students' willingness to participate.

Every dimension of the questionnaire contains only two items, which are evaluated using a seven-point rating scale. The statements that correspond to our ideas about a "good" science lesson are coded with high numerical values ("7" to "5"), negative statements receive low numerical values (between "1" and "3"), while the scale value "4" corresponds to a "neither-nor estimation"; for example: "The topics in chemistry lessons are... very difficult for me to understand / very easy for me to understand" (REAL version) and "I would like the topics in chemistry lessons to be... very difficult for me to understand / very easy for me to understand" (IDEAL version).

#### 2.3.2. Pre- and post-knowledge tests

The paper-and-pencil pre- and post-knowledge tests (Pre-Test of Chemical Knowledge 1, Test of Chemical Knowledge 1, Pre-Test of Chemical Knowledge 2, Test of Chemical Knowledge 2) comprise 13–20 items on different topics.

In the *Pre-Test of Chemical Knowledge 1*, four items were multiple-choice answers, and eleven items required reading and writing in solving the chemistry problems. The test included three different content areas: physical and chemical changes (8 items), chemical reactions (5 items) and chemical nomenclature (2 items). The test showed satisfactory internal consistency (Cronbach  $\alpha = 0.66$ ). Discriminate indexes for every item vary between 0.20 and 0.61; all statistically significant.

In the *Test of Chemical Knowledge 1*, eight items were multiple choose, eleven items required reading and writing, and one item required drawing figures in solving chemistry problems. The test included four different content areas: pure substances and mixtures (2 items), physical and chemical changes (5 items), chemical reactions (6 items) and energy changes in chemical reactions (7 items). The test showed satisfactory internal consistency (Cronbach  $\alpha = 0.77$ ). Discriminate indexes for every item vary between 0.27 and 0.56; all statistically significant.

In the *Pre-test of Chemical Knowledge 2*, two items were multiple-choice answers, and eleven items required reading and writing in solving the chemistry problems. The test included four different content areas: metal and non-metal oxides (1 item), chemical reactions (1 item), water solutions (4 items), and acids and bases in our environment (7 items). The test showed satisfactory internal consistency (Cronbach  $\alpha = 0.78$ ). Discriminate indexes for every item vary between 0.14 and 0.68; all statistically significant.

In the *Test of Chemical Knowledge 2*, three items were multiple-choice answers, and sixteen items required reading and writing (mostly filling in the blank) in solving the chemistry problems. The test included six content areas: metal and non-metal oxides (1 item), chemical reactions (1 item), water solutions (2 items), acids and bases in our environment (8 items), acids and bases chemistry (6 items), and chemical nomenclature (1 item).

The test showed satisfactory internal consistency (Cronbach  $\alpha = 0.53$ ). Discriminate indexes for every item vary between 0.16 and 0.68; all statistically significant.

### 2.3.3. PROFILES modules used in teaching with the treatment group

In the present paper, the evaluation of two PROFILES modules is presented: “Will it Cool Down or Heat Up?” (topic: Chemical Reactions), and “Indicators - Chemical Detectives” (topic: Acids, Bases and Salts).

Table 1: Brief description of the PROFILES modules evaluated (Šket et al., 2012)

Module 1: “Will it Cool Down or Heat Up?”	Module 2: “Indicators - Chemical Detectives”
<i>Topic:</i> Chemical Reactions of the National Curriculum	<i>Topic:</i> Acids, Bases and Salts of the National Curriculum.
<i>Duration:</i> 4 lessons	<i>Duration:</i> 4 lessons
<ul style="list-style-type: none"> <li>- 2 lessons experimental work,</li> <li>- 2 lessons pupils’ work with sources and educational materials.</li> </ul>	<ul style="list-style-type: none"> <li>- 2 lessons experimental work,</li> <li>- 2 lessons pupils’ work with sources and educational materials.</li> </ul>

Front page of Module 1: “Will it Cool Down or Heat Up?”

PROFILES učno gradivo, navodila za učitelje  
Oblikovali so ga člani projektne skupine PROFILES Univerze v Ljubljani

**SE SEGREJE ALI OHLADI?**

Modul za poučevanja KEMIJE – B. RAZRED

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Kontakt: Vesna Perš ([vesna.perš@uest.arnes.si](mailto:vesna.perš@uest.arnes.si)) UL-PROFILES projektna skupina (2011) na osnovi priporočil PROFILES konzorcija – [www.profiles-projects.eu](http://www.profiles-projects.eu)

Section from Module 2: “Indicators - Chemical Detectives”

kislota      nevtralno      bazično

Indikator iz rdečega zleže: pri tem indikatorju se indikator pri viski pH vrednosti obarva drugače. Glej spodnje slike.

pH 1 2 3 4 5 6 7 8 9 10 11 12 13 14

PHLESTVICA

pH vrednosti naraščajo od 0 do 14. Za raztopine, ki imajo pH od 0 do 7, rečemo, da so kisline. Za raztopine, ki imajo pH od 7 do 14, rečemo, da so bazične. Čim manjša je pH vrednost, bolj je raztopina kislota. Čim večja je pH vrednost, bolj je raztopina bazična. Če imajo raztopine pH vrednost 7, pravimo, da je nevtralna.

KISLO OBRNOČJE      NEVTRALNO OBRNOČJE      BAZIČNO OBRNOČJE

## 3. Results

The research results are presented with regard to the research questions posed.

### 1<sup>st</sup> research question

*Will 8<sup>th</sup> grade Slovenian primary school students attending regular chemistry classes attain significantly higher achievements in chemistry than those who have taken part in our treatment*

*courses?*

After Module 1, there was no significant difference in the test scores for the control group ( $M = 14.20$ ,  $SD = 4.87$ ) and the intervention group ( $M = 15.54$ ,  $SD = 4.88$ );  $t(171) = 1.803$ ,  $p > 0.05$ . However, after Module 2, a significant difference in test scores was obtained between the control group ( $M = 11.05$ ,  $SD = 3.67$ ) and the intervention group ( $M = 13.68$ ,  $SD = 4.05$ );  $t(168) = 4.448$ ,  $p < 0.05$ . The results indicate that students needed some time to get used to the innovative PROFILES approach, which then – when the PROFILES module was implemented for the second time – contributed to students' higher achievement scores in chemistry.

## 2<sup>nd</sup> research question

*Do 8<sup>th</sup> grade Slovenian primary school students attending regular chemistry classes assess their lessons in general in a significantly different way to those who have taken part in our treatment courses?*

Figure 1 provides an insight into the overall assessment of the Motivational Learning Environment in chemistry classes, showing how students assessed the MoLE items regarding the PROFILES approach after the implementation of Module 1. It is obvious that students assess their chemistry lessons positively overall. The mean scores of all seven dimensions of the learning environment are in part clearly above the theoretical mean value, i.e., the “neither-nor estimation” (theoretical mean: 4.0 proposed by Bolte and Streller, 2012). The following dimensions of the learning environment are assessed particularly favorably by the students: “opportunities to participate” ( $mean_{CC} = 5.4$ ;  $mean_{TC} = 4.8$ ), their “own willingness to participate” ( $mean_{CC} = 4.8$ ;  $mean_{TC} = 5.0$ ), “class co-operation” ( $mean_{CC} = 4.8$ ;  $mean_{TC} = 4.8$ ), “relevance” of the lessons ( $mean_{CC} = 4.7$ ;  $mean_{TC} = 5.0$ ), “comprehensibility of the topics” ( $mean_{CC} = 4.7$ ;  $mean_{TC} = 4.6$ ) and “satisfaction” ( $mean_{CC} = 4.5$ ;  $mean_{TC} = 5.0$ ). The differences in students' perception of aspects of the Motivational Learning Environment between the treatment classes and conventional classes after Module 1 are not statistically significant ( $t(171) =$  from 0.054 to 1.021,  $p > 0.05$ ).

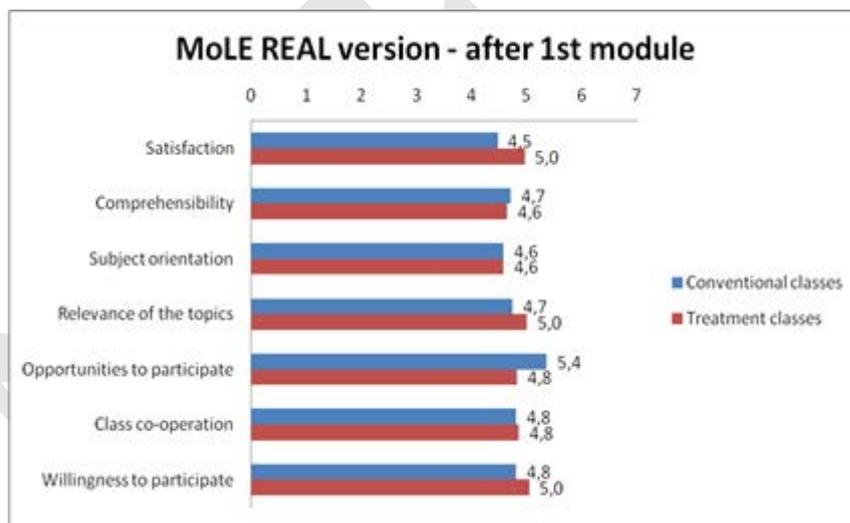


Fig. 1. Mean scores of the students' MoLE assessments (MoLE REAL version, after the 1<sup>st</sup> module)

## 3<sup>rd</sup> research question

*Does student perception (in the treatment and non-treatment groups) of the aspects of the Motivational Learning Environment change significantly during the school year?*

A comparison of Figures 1 and 2 indicates that some changes did occur in the students' perception of various aspects of the Motivational Learning Environment, both for the treatment classes and the conventional classes. The mean scores of all seven dimensions of the learning environment remain in part above the theoretical mean value. However, changes were observed in the following dimensions of the learning environment: "opportunities to participate" (mean<sub>CC</sub>: 5.4 to 5.2; mean<sub>TC</sub>: 4.8 to 5.4), their "own willingness to participate" (mean<sub>CC</sub>: 4.8 - same; mean<sub>TC</sub>: 5.0 to 5.5), "class co-operation" (mean<sub>CC</sub>: 4.8 to 4.0; mean<sub>TC</sub>: 4.8 to 4.0), "relevance" of the lessons (mean<sub>CC</sub>: 4.7 to 4.8; mean<sub>TC</sub>: 5.0 to 5.8), "comprehensibility of the topics" (mean<sub>CC</sub>: 4.7 - same; mean<sub>TC</sub>: 4.6 to 5.4) and "satisfaction" (mean<sub>CC</sub>: 4.5 to 4.3; mean<sub>TC</sub>: 5.0 to 5.6). In comparison to Module 1, the change in perception of "class co-operation" is statistically significant ( $t(171)=3.531$ ;  $p<0.05$ ), whereas other changes are not statistically significant ( $t(171)$ : from 0.060 to 1.663,  $p>0.05$ ).

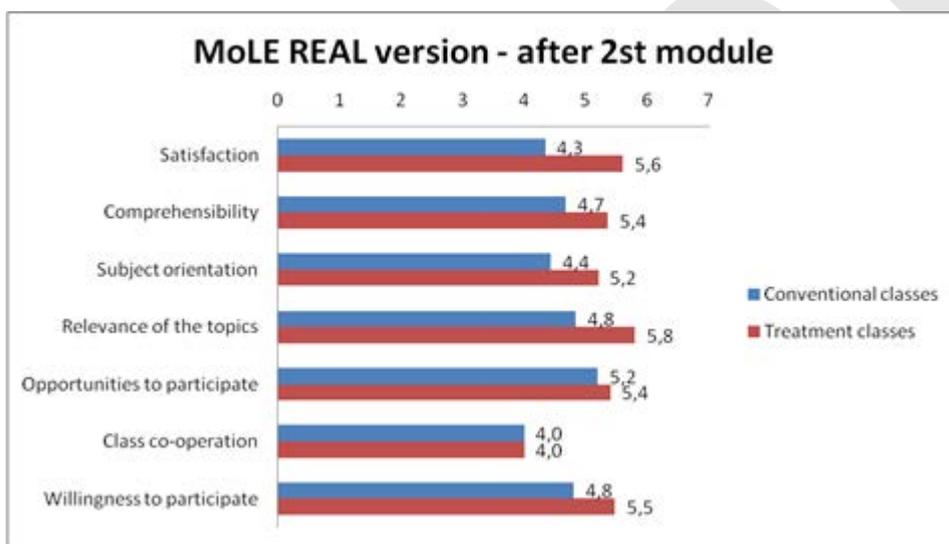


Fig. 2. Mean scores of the students' MoLE assessments (MoLE REAL version, after the 2<sup>nd</sup> module)

The differences in the perception of aspects of the Motivational Learning Environment between the treatment classes and conventional classes after Module 2 are again not statistically significant ( $t(171)$  = from 0.139 to 2.623;  $p>0.05$ ). However, Figure 2 indicates that students from the treatment group assessed six out of seven aspects more favorably than their peers in conventional classes.

#### 4. Conclusions

Preliminary results indicate that there were significant differences in achievements in chemistry between the control and treatment groups of students after the completion of Module 2, whereas significant differences were not observed after Module 1.

Students of both groups (treatment and control group) assess their chemistry lessons positively overall. The mean scores of all seven dimensions of the learning environment after Module 1 and Module 2 were above the theoretical mean value, i.e., the “neither-nor estimation”. Despite the fact that differences in perception of aspects of the Motivational Learning Environment between the treatment classes and the conventional classes after Module 1 and Module 2 were not statistically significant, it can be observed that after Module 2 students from the treatment group assessed six out of seven aspects more favorably than their peers in conventional classes.

The results from cognitive and motivational aspects indicate that the pupils needed some time to adjust to the PROFILES approach, which then eventually contributed to their better achievements in chemistry. However, it is likely that the students’ better achievements were also due to the teachers’ adaption to the PROFILES approach, as reported in their reflections.

The project is currently approaching the end of the second cycle and further results will confirm whether or not our assumptions are correct.

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4<sup>th</sup> International Conference on New Horizons in Education

# Evaluation of scientific process skills of teacher candidates

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## Abstract

The purpose of this study is to determine the scientific process skills of teacher candidates who will be teaching Science, and to define how their skills vary depending on the level of their classes and branch. The participants of the research are 125 teacher candidates currently studying at Dokuz Eylül University Faculty of Buca Education. Survey model is applied and the data is obtained via the "scientific process skills test". According to the data obtained it is concluded that the scientific process skills of teacher candidates are found to be at a medium level, and that there is not a meaningful difference amongst branches in terms of scientific processes. It is also noted that the scientific process skills of senior students are significantly higher than that of new recruits.

Keywords: scientific process skills, teacher candidates, branches, class levels

## 1. INTRODUCTION

The development of science and technology along with the data acquired in our age has reached a massive scale. Today human beings are facing the reality that they cannot learn everything that exists (Cambazoğlu, 1984). Due to the availability of this massive array of data, the concept of Education should not be about delivering the data but about getting the students to learn the method of attaining this data, which is possible through the development of scientific process skills (Şahbaz, 2010: 5). These skills according to Gagne (1965) are the bases of scientific questioning. Meanwhile Ostlund (1992) describes these skills as the strongest material necessary to produce and organize data about our world.

When related literature is studied, a variety of different classifications on scientific processes by a huge number of researchers are observed. It is also noted upon a study on Science curriculum of countries that they utilize these skills in their curricula starting from pre-school period. In SAPA (Science-A Process Approach) curriculum developed between the years of 1963 and 1974, these skills are divided into two groups as basic (observing, classification, measuring, communicating, predicting and inferring) and integrated (formulating hypotheses, interpreting data, formulating models, experimenting, operationally defining and identifying and controlling variables). These skills and their functioning are presented in Table 1 by compiling from studies of Padilla (1990), Martin (1997) and Bagci-Kilic (2006).

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Table 1. Classification of scientific process skills

<b>Scientific process skills</b>
<b>Basic process skills</b>
<i>Observing:</i> Observation of the environment by use of sense organs
<i>Classification:</i> grouping events, objects and opinions by certain characteristics
<i>Measuring:</i> Expressing the characteristics of objects or materials numerically
<i>Communicating:</i> Expressing a motion, object or event with oral, written and visual communication tools
<i>Predicting:</i> Coming to a conclusion relating to the event or situation analyzed before experimentation
<i>Inferring:</i> Coming to a conclusion relating to an event or situation
<b>Integrated process skills</b>
<i>Formulating Hypotheses:</i> Making an assumption about the event or situation analyzed based on pre-observation and tests
<i>Interpreting Data:</i> Interpreting about data grouped or tabulated
<i>Formulating Models:</i> Achieving mathematical expressions and designs based on available data
<i>Experimenting:</i> Examining hypothesis by studying effects of independent variables on dependent variables
<i>Operationally Defining:</i> Measuring variables which cannot be measured directly by use of observable variables
<i>Identifying and Controlling Variables:</i> Determining all variables affecting an event or situation and determining the effect on the results by changing one of these variables and keeping the others fixed

(Padilla, 1990; Martin, 1997 and Bagci -Kilic, 2006)

According to Arthur (1993) the significant thing for science education is how the knowledge is obtained rather than learning the subject. Because, scientific knowledge is true with only facts, it can develop and change as a result of putting forward new opinions and testing them (Çepni, Ayas, Johnson and Turgut, 1997). The science involves trial-and-error-failure and trying again. It advises to the individual being doubtful about what is done,

changing the model if necessary in line with the findings obtained or setting new models, in other words, having a perspective for the scientist man and using scientific process skills (Arthur, 1993).

Having the perspective of scientist of the students means that they are curious like him, ask questions, develop positive attitude towards science, question events critically and by thinking in a versatile way and produce solutions for the problems via scientific methods (NRC, 1996). Gagne (1965) thinks that subjects which are taught to students should be similar to the acts of a scientist. Because scientific thinking and researching is not specific to the scientists (Harlen, 1999). Students use scientific processes for obtaining knowledge by asking questions, observing and measuring, collecting data, interpreting them, predicting the effects of a variable, hypothesizing and testing them and experimenting (Renner and Marek, 1990). The purpose is to make every student think like a scientist rather than bringing him up as a scientist (Monhardt and Monhardt, 2006: 68).

The most significant aim of the education should be teaching students how the knowledge will be acquired and processed. Teaching the scientific process skills is emphasized to achieve this aim. These skills should be used at every stage of daily life to increase life quality and standard by every individual. Development of scientific process skills is really important for education and business lives of the individuals in other words, for the entire life (Rillero, 1998). Students these skills of whom are developed can have the characteristics of a) presenting the research question, b) developing a hypothesis and testing it, c) designing researches, e) experimenting, g) collecting, analyzing and interpreting data, h) coming to the conclusion via available data, i) expressing findings orally or reporting (Burns, Okey and Wise, 1985; Carey, Evans, Honda, Jay and Unger, 1989; NRC, 1996). For this reason, teacher candidates at faculties of education should acquire these skills by themselves and should be qualified enough to guide students. Especially, laboratory classes are very significant for teacher candidates to serve in sciences (physics, chemistry, biology and science teacher) to develop the proficiency in this sense. Because these skills are known as the laboratory skills at the same time (Burns, Okey and Wise, 1985). While students perform experimentations in laboratory environment, they definitely use these skills. While following the steps of an experiment for a certain purpose, they use the scientific skills. For this reason, it is thought that process skills of teacher candidates studying in the final year will be higher than the teacher candidates having enrolled in the university recently because of the laboratory experiences gained at the university.

Determination of scientific process skills of teacher candidates to serve in the sciences and how these skills vary by the level of class and branch is aimed in this study carried out in the light of this information.

### *1.1. Participants*

Participants of the study are 125 teacher candidates studying at Dokuz Eylul University, Faculty of Buca Education. Distribution of teacher candidates by the branches is presented in Table 2.

Table 2. Distribution of teacher candidates by branches

Branches	<i>N</i>
Physics teaching	32
Science teaching	31
Chemistry teaching	30
Biology teaching	32
Total	125

### 1.2. Assessment Tool

“Scientific process skills test” (SPST) developed by the researcher was used in the study. This test comprises of multiple-choice 35 items assessing the integrated process skills of the students at the university level. Validity, reliability and item analysis of the test was carried out by use of data collected from 407 teacher candidates studying at Dokuz Eylül University, Faculty of Buca Education. Cronbach’s Alpha reliability coefficient of SPST is .797. Mean difficulty of the test is .604 and it comprises of items the discrimination indices of which varies between .311 and .776.

Moreover, criterion validity of the SPST content and face validity of which were determined with specification table and expert opinions was established with the test original name of which is “The Test of Integrated Science Process Skills II (TIPS II) developed by Burns, Okey and Wise (1985) and adopted in Turkish by Geban, Askar and Ozkan (1991). TIPS II comprises of multiple-choice 36 items assessing the integrated process skills of students at the level of university. Correlation coefficients between the scores of SPST and TIPS II applied to 76 teacher candidates in two-week interval are presented in Table 3.

Table 3. Correlation between SPST and TIPS II scores

Test	Integrated process skills	Number of item	M	SD	r
SPST	Formulating Hypotheses	7	3.42	.64	.79*
TIPS II		9	6.21	1.31	
SPST	Interpreting Data	5	1.64	.84	.75*
TIPS II		3	2.64	.63	
SPST	Formulating Models	3	1.35	.63	.66*
TIPS II		3	1.92	.61	
SPST	Experimenting	4	2.71	.82	.70*
TIPS II		3	2.42	.75	
SPST	Operationally Defining	4	2.21	.69	.79*
TIPS II		6	3.64	1.39	
SPST	Identifying and Controlling Variables	12	1.12	2.78	.80*
TIPS II		12	2.12	6.28	

## 2. FINDINGS

Mean and standard deviation values of the scores of SPST were calculated to determine the scientific process skills of the participant teacher candidates (Table 4). Considering that maximum score is 35, it can be said that process skills of teacher candidates at all branches are at medium level.

Table 4. SPST results of teacher candidates by their branches

Branches	N	M	SD
Physics teaching	32	24.41	3.99
Science teaching	31	25.00	4.23
Chemistry teaching	30	24.36	3.97
Biology teaching	32	23.83	4.43

Variance analysis was carried out to determine whether the difference between arithmetic averages of scores of SPST of teacher candidates was statistically significant by the branches or not. Results are presented in Table 5.

Table 5. Results of Anova test by the branches of teacher candidates

Source of variance	Sum of Squares	df	Mean Square	<i>F</i>	<i>p</i>
Between Groups	22.86	3	7.62	.40	.74
Within Groups	2267.93	121	18.74		
Total	2290.80	124			

It was determined that there was no significant difference by the branches between SPST scores of teacher candidates to serve in science education upon examining Table 5 [ $F_{(121)} = .40$   $p > .05$ ]. Accordingly, there is not a significant difference between the scientific process skills of teacher candidates studying at four different branches.

Teacher candidates were grouped by the classes to solve another sub-problem of the study, and arithmetic averages and standard deviation values of the scores of SPST were determined. However, departments of physics, chemistry and biology education are 5-year undergraduate programs and department of science education is four-year undergraduate program. For this reason, teacher candidates of science at grade 4 are included in the group of grade 5.

Table 6. Distribution of teacher candidates by the level of grade

Level of Grade	N	M	SD
Grade 1	23	22.08	4.14
Grade 2	27	24.11	4.00
Grade 3	23	24.17	4.02
Grade 4	24	25.37	3.90
Grade 5	28	26.08	4.72
Total	125	24.36	4.29

In Table 6, it is seen that scores of SPST of teacher candidates increase as the level of grade increases. Accordingly, while grade 1 candidate teachers have the lowest average, averages of candidate teachers at the final grade are the highest averages. ANOVA was conducted to determine whether the difference between arithmetic averages of SPST scores of the participants was a significant difference by the grades or not. Analysis results are presented in table 7.

Table 7. ANOVA test results by the level of grade of teacher candidates

Source of Variance	Sum of Squares	df	Mean Square	F	p	Significant difference
Between Groups	214.74	4	53.68	3.10	.018	
Within Groups	2076.05	120	17.30			1-5
Total	2290.80	124				

It was found out that the difference between teacher candidates of grade 1 and 5 was statistically significant in the analysis. Accordingly, final year teacher candidates have higher scientific process skill levels than the grade 1 teacher candidates.

### 3. CONCLUSION

It was determined that the scientific process skills of teacher candidates to serve in the branch of science were at the medium level. When studies in the relevant literature are examined, it is seen that different researches obtained the similar result. Türkmen, Ercan and Süren (2006) and Yıldırım, Yalçın, Şengören, Tanel, Sağlam and Kavcar (2011) determined that scientific process skills of final class teacher candidates were at the medium level and Korucuoglu determined that scientific process skills of physics teacher candidates were at the medium level. Similarly, in a study conducted by Ozgelen and Tuzun (2006) it was found out that science teacher candidates at grade 4 did not have sufficient knowledge about the scientific process skills in the new curriculum and they did not include these skills in the teaching plan they prepared adequately. Cecen (2012) determined in his study that scientific process skills of university students did not develop adequately.

According to German, Haskins and Auls (1996), the most significant way to develop scientific process skills of students in science education is the experimentation. While steps necessary for the experimentation are followed in line with a certain purpose, scientific skills are used. However, the point to be noted here is that research-based experiments should be used. Research-based experiments require the students to define the problem and develop hypothesis for the solution, collect data to test them, to determine variables and to come to the result by assessing data collected (Büyükkaragöz and Çivi, 1999; Domin, 1999). By this means, students use and develop scientific process skills. The reason of the fact that scientific process skills of the teacher candidates in this study is at the medium level is thought to arise from non-inclusion of research-based experiments in the laboratory classes throughout the university education.

Another finding of the study is that scientific process skills of teacher candidates do not vary by the branches. Yıldırım, Yalçın, Sengoren, Tanel, Sağlam and Kavcar (2011) compared scientific process skills of teacher candidates at final class of departments of physics, science, chemistry and biology education and determined a significant difference between process skills in favour of students of department of physics education in their study. However, similar to this study, a statistically significant difference was not found out between the teacher candidates at other branches.

The last finding of the study is that teacher candidates at grade 5 have higher scientific process levels than teacher candidates at grade 1. When related literature is studied, it is seen that similar results are obtained in a study conducted by Turkmen (2006). In the study conducted by Aydođdu, Yıldız, Akpınar and Ergin (2007), it was found out that skills of hypothesizing and determining the variables of science teacher candidates were lower at grade 1 and 2 and higher at grade 3 and 4.

Scientific process skills are the laboratory skills. While students experiment at laboratory, they use these skills and develop them in time. For this reason, it is thought that scientific process skills of the teacher candidates receiving laboratory class throughout their university education are higher than teacher candidates at grade 1.

This study is limited to data collected from 125 teacher candidates at departments of physics, chemistry, biology and science education. Studies to be carried out with data collected from teacher candidates being high in number are very significant for generalizability of the findings. Moreover, reaching teacher candidates studying at the same branches of different universities will allow us to reveal the general situation of the faculties of education relating to the subject.

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4<sup>th</sup> International Conference on New Horizons in Education

# Evaluation of Student Surveys Based on Lectures

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**Abstract**

The most important component of innovation and accreditation in education and training is participation of the students who are the stakeholders in the process. This participation increases the options in education and training and directs the operation of the course. Participation of the students in the course and the quality of the course direction which is provided by a faculty member can be determined using course and student surveys. For this reason, student surveys should be done regularly and these surveys must have questions about the content of the course, the laboratory work and the function of the lecturer as well the knowledge, perception and values of the professional ethics gained by the student. But more important than this surveys are the objective responses of students. In this study, to understand the relationship between survey responses and success rate, surveys were carried out in different course groups between the years 2005-2012 in the Civil Engineering Department of the Yıldız Faculty of Civil Engineering at Yıldız Technical University. Finally, the objectivity of the students was determined by evaluating the survey responses from different perspectives.

Keywords: renewal, survey, objectivity

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**1. INTRODUCTION**

The information era is accelerating the collection of and access to information. Providing information and knowledge are needed to produce and remodel. The nature of knowledge and learning has become the fundamental basis of constructivism (Brooks ve Brooks, 1993). Constructivism is a theory about knowledge and learning, not about teaching. This theory is based on establishing knowledge from the start (Demirel, 2000). In essence, the learned knowledge should be structured and put into practice (Perkins, 1999).

Nowadays, producing information is expected from individuals, rather than consuming resources. Individuals who are accepted by the modern world are effective participants in the process of creating meaning from information; not people who accept every piece of information that is given (Yildirim ve Simsek, 1999). Constructivist learning is a process that occurs by the learner's own abilities, motivations, beliefs, attitudes and experiences. Individuals are selective, constructive and effective in the learning process (Ulgen, 1994; Şaşan, 2002).

Constructivist views of students with the lecturer are important for correction of the deficiencies in education and training in order to provide better quality in education. The most effective methods in the stating of students' views are interviews, assessment of observations and surveys.

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The survey method was used to obtain the views of the students in the Department of Civil Engineering, Faculty of Civil Engineering at Yıldız Technical University. Yıldız Technical University, which is one of the oldest institutions of higher education in our country, Turkey, was founded in 1911 initially with the name Kondüktör Mektebi Alisi. Then it took other names: Nafia Fen Mektebi, Teknik Okul, İstanbul Devlet Mühendislik Mimarlık Akademisi and finally Yıldız Üniversitesi. The Department of Civil Engineering is one of the two oldest departments in the university, and since 1911 a large number of the students have been trained as engineers (Aköz at al. 2004).

The Department of Civil Engineering is divided into six major areas of science which are Construction, Building Materials, Hydraulics, Geotechnical, Transportation, and Construction Management. In this study, in seven different courses (based on these six major areas of the science course selected), the percentages of students passing and students' survey responses are compared to determine the objectivity of the student surveys.

## **2. Method**

### *2.1. Sample of the universe*

The research population consisted of 9,897 students who were in seven different courses, in different groups, in the Civil Engineering Department, Faculty of Civil Engineering at Yıldız Technical University, during the 2005-2012 academic years. The research sample was taken as the whole universe, as this universe could be reached.

### *2.2. Collection of Data*

In the data collection phase of this study, a survey form was created with reference to the literature and expert opinion, to investigate the objectivity of students which were designed to improve the quality of 7 different lectures for students

The questionnaire used in the study has two main parts: one about the lecture and the other about the faculty member. There are 24 different questions in total. The number of students that make up the sample of 14 academic terms is 9,897. All of the students agreed to participate on a voluntary basis.

### *2.3. Preparation of attitude phrases*

The sentences about the faculty members and courses were prepared to determine positive or negative behaviour. The first item pool has 24 sentences about behaviour with the options: definitely agreed, agreed, undecided, disagreed, or definitely disagreed, which are like a rating sample.

## 2.4. Analysis of Data

It is known that simple statistics are used for analysis of surveys by the frequency found and percentages. In this study, student responses were graded and averaged.

## 3. Results

There were 14 different academic terms, fall or spring, between 2005 and 2012. The average of the responses to the applied surveys for each academic term is given in Table 1. The general average of all responses according to this table is 78.9. This shows that generally, the decisions of students were between *agree* and *undecided*. The highest score of 87% is given to the question “Knowledge and skills in the course of the faculty member is sufficient”. The lowest score of %75 is given to the question “Lecture contributes to abilities of mine like as identifying and problem-solving”. Generally, high scores are given to the faculty members who concerned about course. Students are undecided about the provision of courses. For a more detailed evaluation of the students' attitudes towards classes, the survey results were compared with the passing scores of seven different courses.

Table 1. The distribution of answers given by students

Q. NO	Question	1	2	3	4	5	Average*	Average**
Questions about faculty member	1	The lecturer processed the course in accordance with the course description form declared at the beginning of the semester.					4.24	84.8
	2	Resources proposed by the faculty member related to the course are sufficient.					4.11	82.2
	3	The course instructor entered the lectures on a regular basis.					4.30	86.0
	4	The knowledge and skills of the lecture's instructor is sufficient.					4.35	87.0
	5	The instructor came to lectures prepared.					4.31	86.2
	6	Communication between students and faculty member was positive.					4.21	84.2
	7	The instructor told lessons in a clear and understandable manner.					4.09	81.8
	8	The instructor used board and other visual tools effectively.					4.13	82.6
	9	Instructor encouraged students to participate in the course.					3.94	78.8
	10	Instructor encouraged students to conduct research (library, internet, etc. ).					3.75	75.0
	11	Instructor's assessment is fair.					3.92	78.4
	12	I would like to take the course again with the same faculty member.					3.98	79.6
Q. NO	Question	1	2	3	4	5	Average*	Average**
Questions about lecture	13	The course has enabled students to use basic science and engineering.					3.92	78.4
	14	The course contributed to abilities of design and to conduct experiments, analyze and interpret.					3.93	78.6
	15	The course has improved my ability to design.					3.84	76.8
	16	The course has contributed to teamwork skills.					3.75	75.0
	17	The course contributed to ability of problem-solving.					3.67	73.4
	18	The course has improved me professionally and ethically.					3.76	75.2
	19	The course has improved my ability to communicate effectively.					3.76	75.2
	20	Course enabled me to learn about the global and social effects of this					3.69	73.8

	profession.		
21	The course helped awareness of lifelong education.	3.70	74.0
22	The course provided opportunities to learn topics of contemporary professions.	3.83	76.6
23	The course provided opportunities to choose modern engineering tools and methods.	3.69	73.8
24	Course gave a chance to learn a large amount of information about application areas of the department and how to implement information in these areas.	3.81	76.2

\* Average of the student answers, which were given in 14 academic terms

\*\* Percentage of Average of the student answers which were given in 14 academic terms

1-Definitely Disagree

2- Disagree

3-Undecided

4-Agree

5- Definitely Agree

### 3.1. Evaluation of Courses

Seven different courses were determined for each department between the 2005-2012 academic years and these courses are coded as “I, II, III, IV, V, VI and VII”. Each term courses are opened in different groups according to student numbers. Each group is coded as a different letter (A1, B1, C1 etc.). Passing scores between 1 and 5 are converted to percentages to compare with the results of the surveys. Results of the surveys are coded by course codes A, B, C and also passing percentages are coded as AA, BB, CC etc.

### 3.1.1. Course I

Course I was opened by 4 different faculty members (AA, BB, CC and DD) in 7 terms between the years 2005-2012. The average score of the survey results is 79% and the average percentage of success on the course is 69%. As can be seen from Fig. 1, for group A, while the average success is 67%, the average score of the survey is 79%; for group B, while the average success is 76%, the average score of the survey is 79%; for group C while the average success is 65%, the average score of the survey is 81%; and for Group D while the average success is 56%, the average score of the survey is 83% (Table 2).

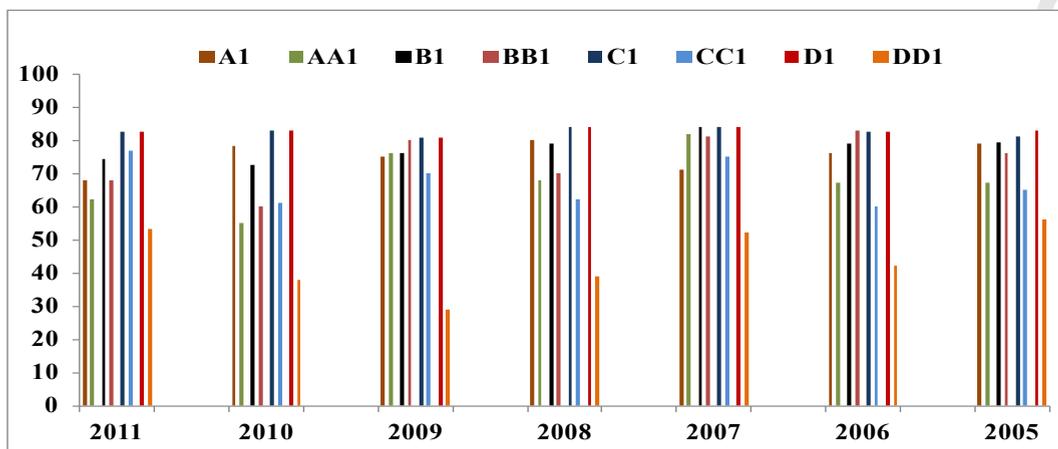


Fig. 1. Survey results and course success percentages for Course I for 7 years.

Table 2. Success percentages and average of survey results for Course I

Terms	A%	G%	A%	G%	A%	G%	A%	G%
	A1	AA1	B1	BB1	C1	CC1	D1	DD1
2011	67.8	62.0	74.2	68.0	82.4	76.7	82.4	53.4
2010	78.2	55.0	72.6	60.0	83.0	61.0	83.0	38.0
2009	75.0	76.0	76.0	80.0	80.6	70.0	80.6	29.0
2008	80.2	68.0	79.0	70.0	84.0	62.0	84.0	39.0
2007	71.0	82.0	84.0	81.0	84.0	75.0	84.0	52.0
2006	76.0	67.0	78.8	83.0	82.4	60.0	82.4	42.0
2005	79.0	67.0	79.4	76.0	81.0	65.0	83.0	56.0
A%; survey percentage, G% passing percentage					A, B, C, D group of lecturer			

Group D has the lowest success rate but it is still above the average percentage of the survey results. Group B has the highest success rate but the average score which is given in the survey is the average.

### 3.1.2. Course II

Course II was opened by 2 different faculty members (A2 and B2) in 6 terms between the years 2005-2012. The average score of the survey results is 77% and the success average on the course is 69%. As can be seen from Fig. 2, for group A2, while the average success is 67%, the average score of the survey is 77%; and for group B2, while the average success is 71%, the average score of the survey is 78% (Table 3).

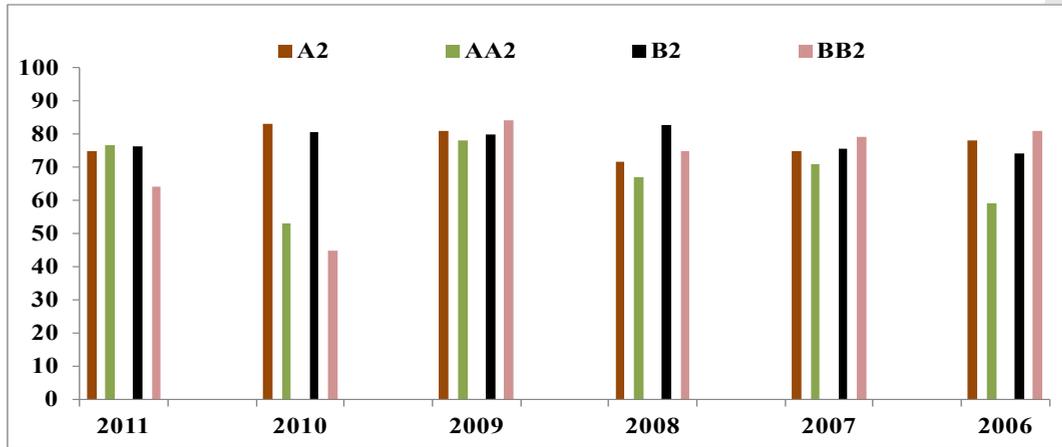


Fig. 2. Survey results and course success percentages for Course II for 6 years.

Table 3. Success percentages and average of survey results for Course II

Terms	A%		G%	
	A2	AA2	B2	BB2
2011	75.0	76.7	76.2	64.0
2010	83.0	53.0	80.4	45.0
2009	81.0	78.0	79.8	84.0
2008	71.6	67.0	82.6	75.0
2007	75.0	71.0	75.6	79.0
2006	78.0	59.0	74.0	81.0

A%; survey percentage, G% passing percentage  
A, B group of lecturer

Group A2 has a low success rate and its survey results are close to the average score, but group B2 has the highest scores for both the success rate and survey results.

### 3.1.3. Course III

Course III was opened by 3 different faculty members (A3, B3 and C3) in 9 terms between the years 2005-2012. The average score of the survey results is 83% and the average success on the course is 64%. As can be seen from Fig. 3, for group A3, while the average success is 52%, the average score of the survey is 71%; for group B3, while the average success is 69%, the average score of the survey is 94%; and for group C3, while the average success is 71%, the average score of the survey is 84% (Table 4).

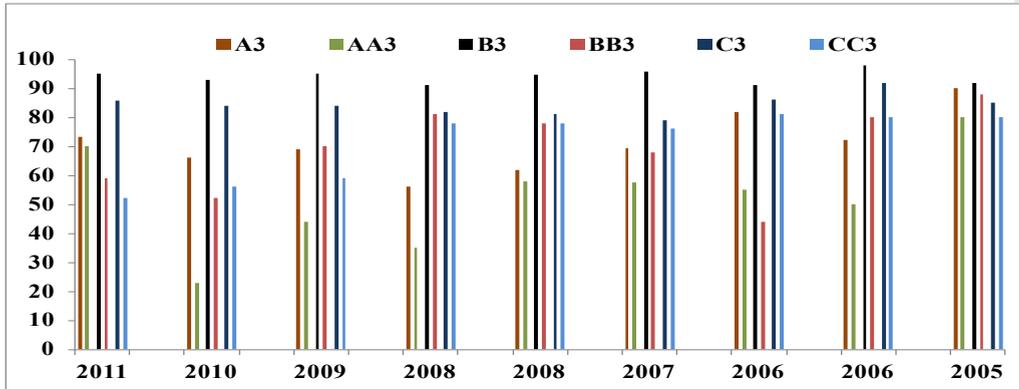


Fig. 3. Survey results and course success percentages for Course III for 9 years.

Table 4. Success percentages and average of survey results for Course III

	A%	G%	A%	G%	A%	G%
Terms	A3	AA3	B3	BB3	C3	CC3
2011	73.2	70.0	95.2	59.0	85.6	52.0
2010	66.0	23.0	92.8	52.0	84.0	56.0
2009	69.0	44.0	95.0	70.0	84.0	59.0
2008	56.0	35.0	91.2	81.0	82.0	78.0
2008	61.8	58.0	94.6	78.0	81.2	78.0
2007	69.2	57.5	95.6	68.0	79.0	76.0
2006	82.0	55.0	91.2	44.0	86.0	81.0
2006	72.2	50.0	98.0	80.0	92.0	80.0
2005	90.0	80.0	92.0	88.0	85.0	80.0

A%; survey percentage, G% passing percentage

A, B, C: group of lecturer

A3 group has the lowest success rate and the lowest percentage of success. B3 group has the highest success rate and the highest survey success results.

3.1.4. Course IV

Course IV was opened by 4 different faculty members (A4, B4, C4 and D4) in 9 terms between the years 2005-2012. The average score of the survey results is 78% and the average success on the course is 76%. As can be seen from Fig. 4, for group A4, while the average success on the course is 73%, the average score of the survey is 75%; for group B4, while the average success is 68%, the average score of the survey is 70%; for group C4, while the average success is 82%, the average score of the survey is 88%; and for Group D4, while the average success is 80%, the average score of the survey is 78% (Table 5).

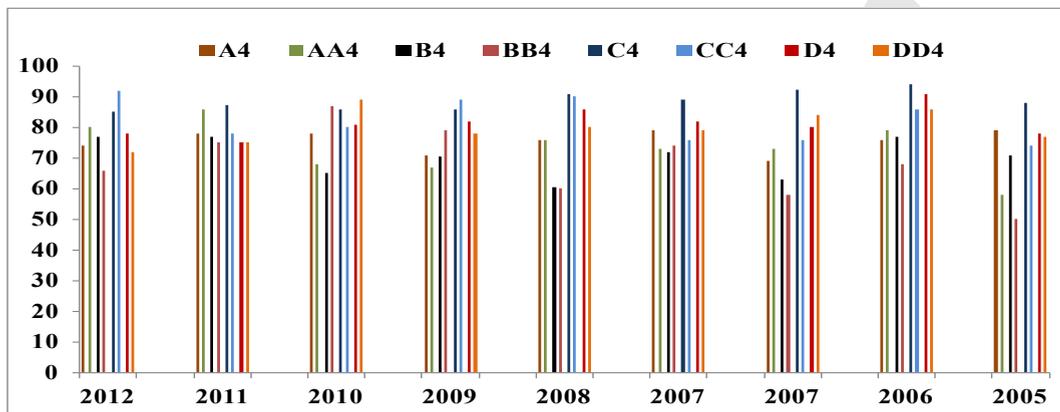


Fig. 4. Survey results and course success percentages for Course IV for 9 years.

Table 5. Success percentages and average of survey results for Course IV

Terms	A4	AA4	B4	BB4	C4	CC4	D4	DD4
2012	74.0	80.0	77.0	66.0	85.0	92.0	78.0	72.0
2011	78.0	86.0	77.0	75.0	87.2	78.0	75.2	75.0
2010	78.0	68.0	65.0	87.0	86.0	80.0	80.8	89.0
2009	71.0	67.0	70.6	79.0	86.0	89.0	82.0	78.0
2008	76.0	76.0	60.6	60.0	91.0	90.0	86.0	80.0
2007	79.0	73.0	72.0	74.0	89.0	76.0	82.0	79.0
2007	69.0	73.0	62.8	58.0	92.2	76.0	80.0	84.0
2006	76.0	79.0	77.0	68.0	94.0	86.0	91.0	86.0
2005	79.0	58.0	71.0	50.0	88.0	74.0	78.0	77.0

A%; survey percentage, G% passing percentage

A, B, C, D : group of lecturer

B4 group has the lowest success rate and lowest survey results while the other groups are close to the average.

### 3.1.5. Course V

Course V was opened by 3 different faculty members (A5, B5 and C5) in 7 terms between the years 2005-2012. The average score of the survey results is 79% and the average success on the course is 65%. As can be seen from Fig. 5, for group A5, while the average success is 59%, the average score of the survey is 75%; for group B5, while the average success is 77%, the average score of the survey is 80%; and for group C5, while the average success is 60%, the average score of the survey is 80% (Table 6).

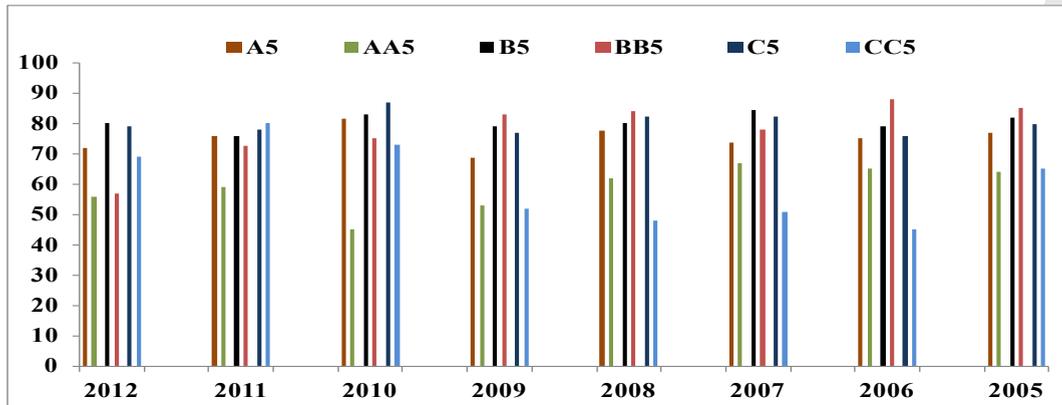


Fig. 5. Survey results and course success percentages for Course V for 8 years.

Table 6. Success percentages and average of survey results for Course V

Terms	A%	G%	A%	G%	A%	G%
	A5	AA5	B5	BB5	C5	CC5
2012	72.0	56.0	80.0	57.0	79.0	69.0
2011	76.0	59.0	76.0	72.5	78.0	80.0
2010	81.4	45.0	83.0	75.0	86.8	73.0
2009	68.8	53.0	79.0	83.0	77.0	52.0
2008	77.6	62.0	80.0	84.0	82.2	48.0
2007	73.6	67.0	84.4	78.0	82.4	51.0
2006	75.0	65.0	79.0	88.0	76.0	45.0
2005	77.0	64.0	82.0	85.0	79.6	65.0

A%; survey percentage, G% passing percentage

A, B, C, D: group of lecturer

A5 group has the lowest success rate and the lowest score of the survey. In Group C5, the success rate is below the average but the score of the survey is higher than the average. Group B5 gave positive points for survey and also had high success rate on the course.

### 3.1.6. Course VI

Course VI was opened by 3 different faculty members (A6, B6 and C6) in 7 terms between the years 2005-2012. The average score of the survey results is 81% and the average success on the course is 93%. As can be seen from Fig. 6, for group A6, while the average success is 96%, the average score of the survey is 81%; for group B6, while the average success is 87%, the average score of the survey is 70%; and for group C6, while the average success is 96%, the average score of the survey is 91% (Table 7).

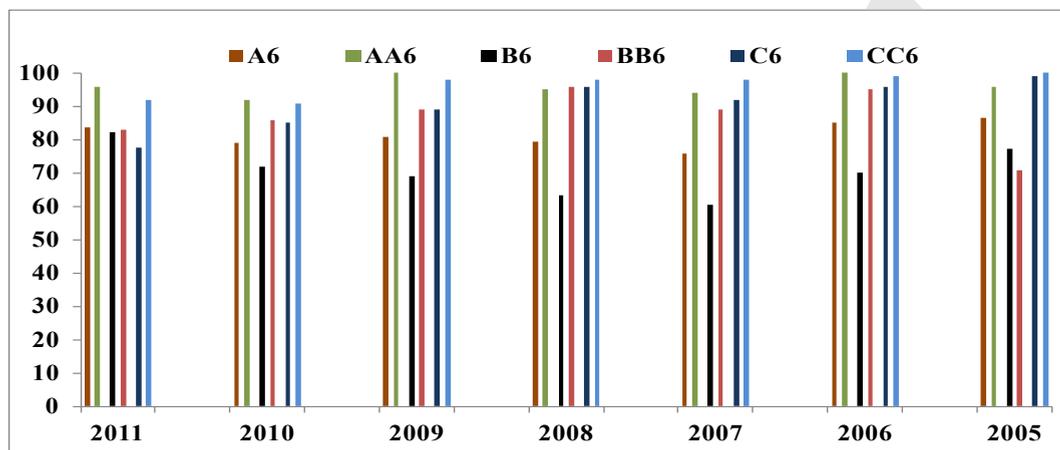


Fig. 6. Survey results and course success percentages for Course VI for 7 years.

Table 7. Success percentages and average of survey results for Course VI

	A%	G%	A%	G%	A%	G%
Terms	A6	AA6	B6	BB6	C6	CC6
2011	83.8	96.0	82.2	83.0	77.8	92.0
2010	79.0	92.0	71.8	86.0	85.0	91.0
2009	81.0	100.0	69.0	89.0	89.0	98.0
2008	79.4	95.0	63.2	96.0	95.8	98.0
2007	76.0	94.0	60.6	89.0	91.8	98.0
2006	85.0	100.0	70.0	95.0	96.0	99.0
2005	86.6	96.0	77.2	71.0	99.0	100.0

A%; survey percentage, G% passing percentage

A, B, C, D: group of lecturer

Despite the high pass rates in the course, three survey groups score low. B6 has the lowest score which belongs to a group survey.

### 3.1.7. Course VII

Course VII was opened by 3 different faculty members (A7, B7 and C7) in 6 terms between the years 2005-2012. The average score of the survey results is 82% and the average success on the course is 87%. As can be seen from Figure 7, for group A7, while the average success is 86%, the average score of the survey is 78%; for group B7, while the average success is 93%, the average score of the survey is 85%; and for group C7, while the average success is %92, the average score of the survey is 85% (Table 8).

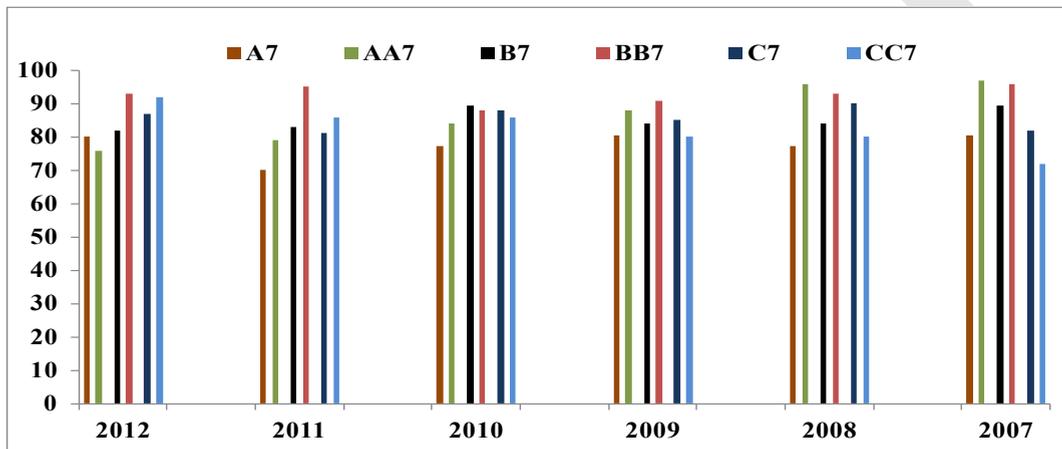


Fig. 7. Survey results and course success percentages of Course VII for 7 years.

Table 8. Success percentages and average of survey results for Course VII

	A%	G%	A%	G%	A%	G%
Terms	A7	AA7	B7	BB7	C7	CC7
2012	80.0	76.0	82.0	93.0	86.8	92.0
2011	70.2	79.0	83.0	95.0	81.2	86.0
2010	77.2	84.0	89.4	88.0	88.0	86.0
2009	80.6	88.0	84.0	91.0	85.0	80.0
2008	77.2	96.0	84.0	93.0	90.0	80.0
2007	80.6	97.0	89.4	96.0	82.0	72.0

A%; survey percentage, G% passing percentage

A, B, C, D : group of lecturer

The success percentage of the course in group C7 is lower than the percentage for the result of the surveys. Also the success percentages of the course for Groups A7 and B7 are higher than those for the survey results.

#### 4. Conclusion and Recommendations

##### 4.1. Conclusion

The success rate of the course and the survey results, based on an assessment of the faculty member and the course, are compared for 7 different courses and departments between the 2005-2012 academic years.

According to these results;

- Course I: The success rate of Course I is 69% and the result of the survey is 79%. The passing percentages and survey results are close together. Only Group D has a remarkably high survey percentage and low passing percentage. According to these course results, students think about the relationship between them and the faculty member of the course while they are filling in the survey.
- Course II: There are two faculty members who give this course. Despite the fact that the average of the success for 2010 is low, the survey results are close to each other. Generally the success rate and the survey results are close to each other for two faculty members.
- Course III: This course has the lowest success percentage of all course results (64%) but still, the highest survey results were achieved in this course too (94%). At the same time the survey results and success percentages are evaluated in parallel manner.
- Course IV: There were four groups in this course and the results of the survey (78%) and success percentage (76%) are close to each other. While the success percentage (80%) of group D4 is higher than the survey results (78%), other groups have higher survey results than success percentages.
- Course V: General survey results are higher than success percentages of the course. It is observed that the students didn't complete the survey due to the course grades that they achieved.
- Course VI: The course VI success results are the highest compared with the others (93%). Group B6 has the lowest survey results. It can be said that students didn't complete the surveys due to their lack of success on the course.
- Course VII: The survey results (82%) and success rates (87%) of the course are high and close to each other. The survey results are lower than the success rates so the survey results have been affected by the success rates.

As a result,

- Despite students participating in the survey voluntarily, the survey results are higher than the success percentages which means that the students moved away from objectivity while filling in the forms.

- While the results about faculty members are high, the results about the courses are average. It can be concluded that the courses couldn't help students properly because most of the answers are *undecided* or *agree*.
- Students give high scores to faculty members who they could communicate with directly.
- According to the survey there are no problems about course content and lecture capability of the faculty members. Students' expectations of faculty members led them to do research and practice how they will use the course information in real life.

#### 4.2. Recommendations

In constructivist education, it is important to form and reshape information. Teaching is just not enough. Students should contribute to education, not only participate in information transfer. The survey results show that students favour constructivist education. Students give higher survey results to the teacher who is concerned about their success even when their success is low. According to the results, all percentages are high but most of the students also rate favorably. Even though students completed these surveys voluntarily, the surveys should not be taken into account when these courses are organized in future.

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4<sup>th</sup> International Conference on New Horizons in Education

# Evaluation of the new secondary school curriculum in Turkey from the point of mathematical models and mathematical modeling

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## Abstract

This study aims to evaluate the secondary school mathematics curriculum renewed in 2013-2014 education year in Turkey from the point of mathematical models and mathematical modeling. The old and new mathematics curriculum were compared for all class levels by researches and discussed the changes within the group. The report of researchers shows that the following is stated in the 2009 curriculum vision: "Mathematical concepts are abstract in nature. Given the developmental level of children, these concepts are hard to conceive directly. Hence, mathematical concepts are addressed using concrete and finite life models." Whereas in the general purposes section of the new curriculum, it's emphasized that information and communication technologies should be effectively used in mathematics education, such technologies should be implemented to create the environment for children to improve their skills such as problem solving by modeling, communicating, and reasoning. Moreover, the addition of improvement of problem solving skills by modeling into the program objectives shows that the new curriculum considers modeling important. Considered in general, the new curriculum is found to be simplified, subjects and gains are reduced, and course hours are increased. As it stands, this curriculum is more beneficial and flexible both for students and teachers.

Keywords: model, mathematics, mathematical modeling, education and training

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## 1. INTRODUCTION

Mathematics is an important part of our daily lives just like it plays a great role in the scientific world, and it constitutes the basis for various fields such as physics, chemistry, astronomy and engineering. Therefore, in modern life, as science and science-related technology changes rapidly to the point of being re-shaped, the value of mathematics has become an unquestionable subject. In today's world, it will not be hard to say that the rapidly changing technology transforms the whole living style of society from culture to economy, and also influences learning habits. We discover many unknown events as we continue to make researches, and we move towards different horizons as we share our knowledge. So, educational institutions are also obliged to change their conditions in order to adapt to the ongoing knowledge revolution. The aim is to teach students knowledge, skills

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and behaviors they may need throughout the rest of their lives. One of the most significant changes in mathematics education has been on curriculums.

Curriculums foster students' conceptual learning, fluency in operations and communication through their mathematical knowledge stressing the development of their problem solving skills and orienting them to value mathematics. Moreover, curriculums also consider it important that students generate mathematical meanings by means of concrete experiences, and perform abstraction and association. That's why it is a requirement to create learning environments enabling students to consider mathematics as "perceivable, functional, and a field worth the effort" and helping them to study "with diligence and perseverance". On the other hand, learning mathematics also covers mathematical thinking, apprehension of problem solving strategies, and recognition that mathematics is an important tool in real life along with acquiring basic concepts and skills. (Ministry of National Education, [MEB] 2013). Within this context, mathematical models and mathematical modeling play a significant role in creating such environments.

In mathematics courses, delivering a concept directly makes it hard for students to learn and internalize the concept (Van de Walle, 1998). Concepts should be taught to students with mathematical models instead. According to Blum and Niss (1989), mathematical model is a type of real model created by means of mathematics. Which means, mathematical model is an act of transforming real world events into mathematical objects or operations, and real objects are included in this process. According to a study by Lesh, Carmona, Hjalmarson and Mason (2006), models are conceptual and visual tools helping students, teachers, researchers and instructors to learn, explain and grasp subjects better in applications related to mathematical concepts (Lesh and Doerr, 2003; Lesh, Doerr, Carmona and Hjalmarson, 2003). According to Olkun and Ucar (2007), mathematical concept model is an image, a drawing, a symbol or a concrete tool containing the relation within the concept. Modeling is defined as the whole of actions to clarify a target by use of current sources, and resulting products are known as models (Harrison, 2001; Treagust, 2002).

Van Driel and Verloop (1999) have described the common characteristics of models as follows:

- A model is always related to the target or targets represented by itself. The target can be a system, an object, a phenomenon or a process.
- A model is a research tool used to obtain information about a target that is not directly observable or measurable. Hence, a different scale copy of an object (such as house, and bridge models) is not accepted as a scientific model.
- A model does not directly interact with the target it represents. Therefore, a photograph or a spectrum cannot be considered as a model.
- A model always shows distinct characteristics compared to the target. Generally, models are simplified as much as possible.
- While creating a model, similarities and differences between the target and the model should help researchers in making predictions about things represented by the model.
- A model is developed as a result of interactive processes.

Mathematical modeling is the process of dealing with daily life problems (Keskin, 2008). In general terms, problems related to every part of mathematics under daily life conditions can be called as daily life problems (Blum and Niss, 1989). According to Kapur (1998), mathematical modeling covers models that act as an interpreter to daily life problems, and turn mathematical problems to real life problems. Which means, expressing a situation with a mathematical form such as a formula, an equation, a graph, a table or a figure is called a mathematical model, and the process applied to develop this model and the process of interpreting the problem solution are known as mathematical modeling.

Models can help us in recognizing how an object is structured or how a process occurs. A model is not a real thing and it can change (Harrison, 2001). It can be used to facilitate greater understanding of the subject in the learning environment and to test concepts. Harrison (2001) emphasizes that use of models in learning environments facilitate envisioning complex abstract concepts, objects and processes, and make it easier to understand complicated abstract subjects with a deeper grasp. According to Yildiz (2006), models are not real and they don't reflect reality. However, they are guiding in development of ideas and transfer of knowledge to a higher step. It should be kept in mind that no model represent a target hundred percent accurately. Otherwise, the model becomes the target itself, and there would be no need for a model (Sagirli, 2010).

As stated by Blum and Kaiser (1997), different sub-skills are important for mathematical modeling studies. According to Maab (2004), modeling skills consist of the following:

- Ability to understand daily life problems and create models according with reality.
- Ability to create mathematical models out of real models.
- Ability to solve mathematical problems featured in the mathematical model.
- Ability to interpret mathematical results in line with daily life.
- Ability to confirm the solution.

Given the general objectives of education, mathematics plays a significant role in helping students to develop themselves under the light of their skills, acquire knowledge and skills in their fields, and contributes to their creative thinking (Ciltas 2012). Mathematics education aims to train individuals who could generate effective solutions to real problems, use mathematical effectively in their daily lives, recognize the close relation between mathematics and the real world, and therefore love and enjoy mathematics rather than being afraid of it (Doruk and Umay, 2011). In the secondary school mathematics curriculum developed and revised by the Ministry of National Education in 2013, the aim is to teach mathematical thinking system, and develop basic mathematical skills and abilities related to such skills. The program was reviewed and updated in order to realize this aim. This study aims to analyze the secondary school mathematics curriculum renewed in the 2013-2014 academic year in terms of mathematical models and mathematical modeling. Moreover, the old and the new mathematics curriculums are separately compared among different class levels by researchers and the changes are discussed within the group.

## **2. Method**

### *2.1. Research group*

The research group consists of three teachers and three academicians totaling six people.

### *2.2. Data collection*

Research data consists of reports written after reviewing the secondary school curriculum updated in the 2013-2014 academic year.

### *2.3. Data analysis*

Qualitative descriptive analysis method is employed to analyze the research data.

### 3. Findings

The updated secondary school mathematics curriculum is evaluated under two stages. First, the curriculum was subjected to a general assessment. Another assessment was performed to evaluate the curriculum on class-basis.

Upon performing a general assessment on the curriculum, the following findings are found as a result of the reports of researchers. The 2009 curriculum vision reads: "Mathematical concepts are abstract in nature. Given the development levels of children, it is hard for them to apprehend these concepts directly. Therefore, mathematical concepts are discussed using concrete and finite life models. In the general objectives of the new curriculum, there is an emphasis on effective use of information and communication technologies in mathematics education, it is stated that proper environment should be created to develop the problem solving, communicating, and reasoning skills of students through modeling. Moreover, addition of developing the problem solving skills by means of modeling to the program objectives shows that the new curriculum prizes modeling. 6 items are taken from the general objectives list in the new curriculum. The study-related "Can develop models, and associate models with verbal and mathematical expressions" item draws the attention. Besides, about the mathematical process skills, the new curriculum states: "Along with abstract symbolic expressions, verbal expressions, written and visual expressions and if necessary, models are important in mathematical communication." The old curriculum also states the following in relation to communication skills: "Verbal and written expressions, images, graphs and concrete models should be used throughout mathematical efforts and also following this process." The new curriculum addresses the association skill from among the mathematical process skills as follows: "Environment should be created to facilitate association between concrete and abstract representation modes (tables, graphs, equations, figures, concrete models, real life situations etc.). Virtually the same expression is uttered in the old curriculum.

Upon evaluation of the curriculum on class basis, the following findings are found as a result of the reports of researchers. It is stated that models should be used in arranging fractions, and converting mixed fractions to compound fractions and vice versa. The old curriculum also shows that such subjects are handled with models. Comparison of natural numbers and compound fractions, abbreviation, expansion, equivalent fractions, arranging fractions with equal or solid denominators, finding the proper fraction of a quantity are among the subjects taught using models in the old curriculum, but not expressed in the new curriculum. While the old curriculum suggests teaching the subject of fractional operations with models, the new curriculum doesn't separately state that models should be utilized. While the old curriculum taught the subject of fractional multiplication by means of modeling, the new curriculum omitted this from the fifth grade subjects. Decimal notation of fractions, a subject of fourth grade, is given as a subject of fifth grade, and it is recommended to teach the subject using models. In addition, both curriculums suggest teaching certain concepts such as finding the specified percentage of a quantity and decimal fractions using models.

It is also recommended to teach the distributive property of natural numbers, a subject of sixth grade, using models, and the old curriculum teaches the same subject with decimal base blocks. Moreover, while four operations with natural numbers is a subject suitable for modeling, and while the old curriculum uses tables for addition and multiplication with natural numbers and shows different models to students about the properties of these operations, the new curriculum doesn't involve anything about how this subject should be taught. On the other hand, while the old curriculum teaches multipliers, prime numbers and prime multipliers using models, the new curriculum makes no mention of this subject. Fractions and fractional operations are recommended to be taught using models in both the old and the new curriculum, yet decimal notations are handled with models in the old curriculum, but again, the new curriculum makes no mention of this subject.

Analysis of the updated secondary school mathematics curriculum on class basis yielded the following data: While the old curriculum taught multiplication and division of natural numbers by using number pieces, patterns, and numerical axis, the new curriculum suggests using models for the subject. The old curriculum teaches the

subject of rational numbers using fraction cards, while the new curriculum makes no mention of this subject. However, the subject of rational numbers, and particularly four operations in rational numbers is a subject suitable for the modeling method. Besides, the old curriculum uses polygon models for the subject of interior and exterior angles of polygons, while the new curriculum gives no data about this subject.

Lastly, analysis on eight grade shows that both the old and the new curriculums suggest using square models to define the relation between perfect squares, natural numbers and their roots. In multiplying algebraic expressions, and explaining identities, both curriculums suggest the use of models. But while the new curriculum doesn't mention it, the old curriculum uses models for factoring algebraic expressions. Slope models are suggested in both curriculum for the subject of slope of a line. Both curriculums suggest using models to explain equality-similarity, prism, pyramid and cone.

#### 4. Conslision and discussion

As a whole, the new curriculum is simplified, the number of subjects is reduced, and course hours are increased. The new curriculum is more practical and flexible for both students and teachers. Moreover, subjects are divided among grades with a certain order, while the old curriculum had some difficulties with this issue. For example, while the subject of prisms was taught in the fifth grade, the subject of angles was instructed in sixth grade. The curriculum has no big changes in terms of modeling. The new mathematics curriculum also suggests teaching certain subjects using models just like the old curriculum. Tough problem solving with mathematical modeling is situated among the objectives of the new curriculum, the subject was not elaborated while describing attainments. Generally, use of concrete models was referred, however modeling and modeling skills of students were not mentioned. It is particularly emphasized that students should develop their problem solving, communicating, and reasoning skills with the use of technologies. Therefore, only a minor difference can be found between two curriculums in terms of modeling.

While the old curriculum teaches fractional operations in fifth grade using models, the new curriculum does not particularly state the need for models. The old curriculum teaches multipliers, prime numbers and prime multipliers in sixth grade using models, but the new curriculum doesn't mention about it again. In seventh grade, multiplication and division of whole numbers is taught using number pieces, patterns and numerical axis. And the new curriculum also emphasizes employment of models. Lastly, in eighth grade, both curriculums suggest using models to multiply algebraic expressions, and explain identities. While the new curriculum denotes nothing about it, the old curriculum employs models to facilitate understanding of factoring algebraic expressions. In the old curriculum, Pythagorean relation is taught using right triangles, but there is no such method given in the new curriculum.

Today, scientists express everything with mathematical terms in order to get a better grasp of the world around us, and to find solutions to technical problems. Thus, it is important for mathematics education that math teachers use real life problems and perform mathematical modeling in their courses. It is necessary to develop the modeling skills of students, helping them to think creatively, performing cognitive activities, and adopting an effective and student-based approach to improve the mathematics-oriented conceptual understanding of students, and to present the relation between mathematics and real life situations. Formulating, analyzing and interpreting a daily life problem means solving the problem in half. It is possible to consider mathematical modeling as a complex mathematical activity, and mathematical thinking, teaching, learning and many aspects of life can be found in mathematical modeling.

The new mathematics curriculum also encourages effective use of information and communication technologies in mathematics education. A special emphasis is put on information and communication technologies that make it possible to find out different representation methods for concepts and relations between them, and also help students in discovering mathematical relations. Environments, where students can develop

their problem solving, communicating, and reasoning skills using the method of modeling, should be designed with the help of such technologies (MEB, 2013).

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# Evaluation of the music workbook and teachers' guide books' of the 4<sup>th</sup> grade of the primary school from the perspective of the ability of creative thinking by the opinions of the classroom teacher candidates

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## Abstract

Music is the one of the factors which helps the person to express himself. Research indicates that music has an important role in the developmental stages of the children. From the early childhood, the music education contributes to the increase of success in many different areas for children. That's why the music education books which serve this area are needed to be capable of serving to the goals of education.

The goal of this research is to analyze the 4th grade music workbook and teachers' guide books from the perspective of ability of creative thinking with the candidates of classroom teachers. The research shows the contribution of the interrelated usage of the music workbook and teachers' guide books and its importance for the future candidates of classroom teachers.

The research is conducted to 185 candidates of classroom teachers as part of the music education class and the results are evaluated based on the qualitative research procedure.

**Keywords:** Music education, music workbook, creative thinking.

## 1. INTRODUCTION

In 2012-2013 educational year a new educational system was accepted and the system was organized as 4+4+4. The school starting age of primary schools was lowered from 7 to 5 and half. That's why, there should be new arrangements which are appropriate for the developmental stages of the children in the system.

In today's world the fast changes and developments in the field education with the usage of interactive whiteboards, ability to access the new information quickly, fast renewal and consumption draws attention to the importance of learning. "Learning is an art, more than a science and it is a kind of development. In this development, slow but continuous changes take place starting with the beginning of the individual's life. Learning is a product, produced by connecting mental connections between various senses and reactions" (Telman, 1988).

The development of the children who starts the primary school education in such an early age with a heavy burden of lectures. Primary school's academic timetable and the implementation of these timetables should be prepared according to the developmental stage of the children. That's why, schoolbooks should be prepared with the aim of helping the children express themselves better and improving the ability of creative thinking.

The ability of creative thinking is constructed with the different interpretations of an existing ideas, products, projects, with achieving original ideas in different environments and with the thinking

and interpreting differently. “Creativity is a strategy developed by Gordon and his colleagues to find creative solutions to the problems in the industrial organizations” (Açıköz, 2002).

“Creativity is a way of thinking and it is closely related to the imagination. We can find creativity in most of the emotional and mental activities, work and occupations. Power of creativity is the basis of the all human life and development. In the last 50 years, creative thinking which has significant scientific research conducted, is a mental ability. When a person has this mental ability he is rewarded. When a person does not have this ability, special educational programs executed for this person to develop this mental ability” (Aslan, 2002). Developing this ability is quite important to prepare the individual to his life and give him the ability to think sophisticated.

Sometimes it is inevitable to go out of a frame of mind which is accepted as normal to be able to solve the problems in the life. When an individual stays in the boundaries of a given thinking pattern, he/she cannot perceive the problems correctly and cannot find solutions. To be able to thinking creatively, a person should avoid the limitations of his mind. An individual will be able to think comfortably, perceive the events better and evaluate the relationships better as he let his subconscious to rise to the surface (Özden,1997).

The musical education which is received from the beginning of the early childhood contributes to the increasing success of the child in different areas. The music lecture books which contribute to this area should be prepared accordingly to this aim. That’s why, the contents of the academic schedule and the lecture books which are the practice tools of the academic schedule should be prepared in way to develop the ability of creative thinking of the students with the help of the experts’ opinions.

There are the students’ workbook and teachers’ guide book to apply the music lecture. There is no textbook in the educational system. “Teachers’ guide book helps teachers to conduct a series of activities, shows how to conduct the activities and helps the teachers to guide to the students. It provides a good preparation. It helps the teacher for a more planned lesson” (Kılıç, Seven, 2002).

In this research process, the topics in 4<sup>th</sup> grade music workbook and teachers’ guide book are analyzed and implemented with different teaching methods.

## 2. CONTENTS OF MUSIC WORKBOOK AND TEACHERS’ GUIDE BOOK

The 4<sup>th</sup> grade music workbook is organized with twelve topics. Here is a list of the topic’s headings and numbers of guidance by teachers.

1. Sing the Independence March (the Turkish national anthem) right: Explanations about the topic and an activity.
2. Let’s show the sounds with graphic: An activity.
3. Let’s learn the basic musical writing and units: Four activities.
4. Sounds and their basic characteristics: Four activities.
5. Let’s create rhythms and tunes: An activity.
6. Different rhythmic compositions: Two activities.
7. Let’s dance: An activity.
8. Speed changes in music: Two activities.
9. Volume changes in music: An activity.
10. Special days and weeks: Three activities.
11. Different genres of music: Four activities.
12. Ataturk and music: Six activities (Yaşar, Çelik, Şendağ, 2012)

In addition, 4<sup>th</sup> grade teachers’ guide book of music contains the notes of 27 songs.

**Problem:** Are the activities in the 4<sup>th</sup> grade music books prepared in the manner that support the ability of creative thinking?

**Purpose:** The purpose of this research is to perform an analysis of the 4<sup>th</sup> grade music workbook and teachers guide book by the classroom teacher candidates who have the lecture of music teaching in the academic year of 2012-2013 from the perspective of the books' capability of improving creative thinking.

**Significance:**

- To improve the creativity of the children with music.
- To help the development of personality and self-confidence of the children with music.
- To draw the attention to the importance of the music workbook and teachers' guide book's impact on the development of the creative thinking.

**Premises:** In research, classroom teacher candidates are asked questions to show that music books' capability of creative thinking. Teacher candidates gave frank answers.

**Constraints:** The research is conducted on the classroom teacher candidates who have the music education class in 2012-2013 academic year.

### 3. METHOD

**Research Model:** This research is conducted with survey method. It is an analysis of qualitative data.

**Group of Participants:** Population of the research is consists of the students of Marmara University, Department of Classroom Teaching. Sample consists of 185 teacher candidates who study in the 4<sup>th</sup> term.

**Data Collection:** Data is collected by survey.

**Data Analysis:** Frequency and percentage analysis is performed.

### 4. RESULTS

		Certainly Agree	I agree	Partially Agree	I don't Agree	No idea
1. Let's get to know our book page is designed well for the usage of the book.	Frequency	21	102	44	8	10
	Percent	11.4	55	23.8	4.3	5.4
2. The notes in the workbook are organized orderly and systematically.	Frequency	26	115	30	4	10
	Percent	14.1	62.2	16.2	2.2	5.4
3. Activities in the workbook and teachers' guide book are good enough and organized well in order to sing the Independence March correctly.	Frequency	37	80	46	6	16
	Percent	20	43.2	24.9	3.2	8.6
4. "Let's show the sounds with graphic" topic contains appropriate activities for improving the ability of creative thinking.	Frequency	20	69	59	16	21
	Percent	10.8	37.3	31.9	8.6	4.4
5. "Let's learn the basic musical writing and units" topic contains appropriate activities for improving the ability of creative thinking.	Frequency	22	59	62	19	23
	Percent	11.9	31.9	33.5	10.3	12.4
6. "Sounds and their basic characteristics" topic contains	Frequency	27	81	49	16	12
	Percent	14.6	43.8	26.5	8.6	6.5

appropriate activities for improving the ability of creative thinking.						
7. "Let's create rhythms and tunes" topic contains appropriate activities for improving the ability of creative thinking.	Frequency	46	63	48	18	10
	Percent	24.9	34.1	25.9	9.7	5.4
8. "Different rhythmic compositions" topic contains appropriate activities for improving the ability of creative thinking.	Frequency	35	70	55	15	10
	Percent	18.9	37.8	29.7	8.1	5.4
9. "Let's dance" topic contains appropriate activities for improving the ability of creative thinking.	Frequency	27	69	59	11	19
	Percent	14.6	37.3	31.9	5.9	10.3
10. "Speed changes in music" topic contains appropriate activities for improving the ability of creative thinking.	Frequency	23	81	49	24	8
	Percent	12.4	43.8	26.5	13	4.3
11. "Volume changes in music" topic contains appropriate activities for improving the ability of creative thinking.	Frequency	34	61	56	22	12
	Percent	18.4	33	30.3	11.5	6.5
12. "Special days and weeks" topic contains appropriate activities for improving the ability of creative thinking.	Frequency	26	77	49	20	13
	Percent	14.1	41.6	26.5	10.8	7
13. "Different genres of music" topic contains appropriate activities for improving the ability of creative thinking.	Frequency	23	81	54	15	12
	Percent	12.4	43.8	29.2	8.1	6.5
14. "Ataturk and music" topic contains appropriate activities for improving the ability of creative thinking	Frequency	26	75	53	18	13
	Percent	14.1	40.5	28.6	9.7	7
15. Topics in the student workbook and teachers' guide book supports each other well enough.	Frequency	37	71	53	18	13
	Percent	20	38.4	25.4	5.4	10.8
16. Songs in the student's workbook are chosen with taking the children's age into account.	Frequency	52	75	33	15	10
	Percent	28.1	40.5	17.8	8.1	5.4
17. Topics in the student's workbook are organized well enough to help children to perceive, understand and practice music.	Frequency	36	74	57	12	6
	Percent	19.5	40	30.8	6.5	3.2
18. Student's workbook and teachers' guide book are organized in a way to let teachers use and practice them easily.	Frequency	34	84	44	9	14
	Percent	18.4	45.4	23.8	4.9	7.6

## 5. FINDINGS AND COMMENTS

Here is the answers given to the scale:

1. Let's get to know our book page is designed well for the usage of the book. 102 participants out of 185 answered as "I agree" to this statement.
2. The notes in the workbook are organized orderly and systematically. 26 participants answered as "Certainly agree", 115 participant answered as "I agree" and 10 participants answered as "no idea" to this statement.
3. Activities in the workbook and teachers' guide book are good enough and organized well in order to sing the Independence March correctly. 80 participants answered as "I agree", 46 participants answered as "partially agree", but 16 participants answered as "no idea".
4. "Let's show the sounds with graphic" topic contains appropriate activities for improving the ability of creative thinking. 69 participants answered as "I agree", 59 participants answered as "partially agree" to this statement.
5. "Let's learn the basic musical writing and units" topic contains appropriate activities for improving the ability of creative thinking. 59 participants answered as "I agree", 62 participants answered as "partially agree", 19 participants answered as "I don't agree" and 23 participants answered as "no idea" to this statement.
6. "Sounds and their basic characteristics" topic contains appropriate activities for improving the ability of creative thinking. 27 participants answered as "certainly agree", 81 participants answered as "I agree", 49 participants answered as "partially agree" and 16 participants answered as "I don't agree".
7. "Let's create rhythms and tunes" topic contains appropriate activities for improving the ability of creative thinking. 63 participants answered as "I agree", 18 participants answered as "I don't agree".
8. "Different rhythmic compositions" topic contains appropriate activites for improving the ability of creative thinking. 70 participants answered as "I agree", 55 participants answered as "partially agree" and 15 of the participants said that they do not agree.
9. "Let's dance" topic contains appropriate activities for improving the ability of creative thinking. 69 participants answered as I agree, 59 participants answered as "partially agree", 19 participants answered as "no idea" to this question.
10. "Speed changes in music" topic contains appropriate activities for improving the ability of creative thinking. 81 participants answered as "I agree", 23 participants answered as "certainly agree. In total, 32 participants answered as "I don't agree" or "no idea".
11. "Volume changes in music" topic contains appropriate activities for improving the ability of creative thinking. 34 participants answered as "certainly agree", 61 participants answered as "I agree", 56 participants answered as "partially agree", 22 participants answered as "I don't agree" and finally 12 participants answered as "no idea".
12. "Special days and weeks" topic contains appropriate activities for improving the ability of creative thinking. 77 participants answered as "I agree", 20 participants answered as "I don't agree".
13. "Different genres of music" topic contains appropriate activities for improving the ability of creative thinking. 81 participants agreed, 54 participants agreed partially and 15 participants said that they do not agree to this statement.
14. "Ataturk and music" topic contains appropriate activities for improving the ability of creative thinking. 75 participants answered as "I agree", 53 participants answered as "partially agree", 26 participants answered as "certainly agree". 18 participants said that they do not agree and 13 participants answered as "no idea".

15. Topics in the student workbook and teachers' guide book supports each other well enough. 37 participants answered as "certainly agree", 71 participants answered that "I agree", 47 participants answered as "partially agree". 10 of the participants answered the question as "I don't agree" or "no idea".
16. Songs in the student's workbook are chosen with taking the children's age into account. 32 participants answered that "certainly agree", 75 participants answered as "I agree", 33 participants answered as "partially agree", 15 participants answered as "I don't agree" and 10 participants answered as "no idea".
17. Topics in the student's workbook are organized well enough to help children to perceive, understand and practice music. 36 participants answered as "certainly agree", 74 participants answered as "I agree", 57 participants answered as "partially agree", 12 participants answered as "I don't agree" and 6 of the participants answered as "no idea".
18. Student's workbook and teachers' guide book are organized in a way to let teachers use and practice them easily. 34 participants answered as "certainly agree", 84 participants answered as "I agree", 44 participants answered as "partially agree", 9 participants answered as "I don't agree" and 14 participants answered as "no idea" (Yaşar, Çelik, Şendağ 2012).

In addition to the answers given to the survey, candidates of classroom teachers said that the number of activities in the guide book should be higher. They also claimed that the teachers who don't have a habit of practice the features structuralist education can have a hard time practice the activities in the music books.

When the answers given to the survey analyzed, teacher candidates answered closer to the idea that music books are well organized to develop the creative thinking. I think that, this is because of structuralist model is practiced in the academic program. In the process of teaching music teaching class, different music teaching methods were practiced independently from the guide book.

In research, teacher candidates mainly agreed certainly to the statements "songs in the student's workbook are chosen with taking the children's age into account" and "topics in the student's workbook are organized well enough to help children to perceive, understand and practice music". In 2012-2013 academic year, 4<sup>th</sup> grade primary school students are started to the school in age 7. However with the new system, the 4<sup>th</sup> grade students will be in age 9 in the future. That's why the songs and topics in the music books should be reviewed and they should be compatible to the student's age in the future.

## 6. CONCLUSION AND SUGGESTIONS

As a result to the research classroom teacher candidates mostly think that music workbook and teachers' guide book are improving the creative thinking. However, because the starting age to the school is changed, the music books should be reviewed and reorganized. The topics like teaching song teaching, rhythm studies and composing tunes should be supported with the usage of educational and creative plays. The songs which children will dance and can be performed with motions, also the songs with easy melodic structures should be included. Students can create activities with writing new lyrics to the melodies they know. With these activities educational lyrics could be written from interdisciplinary areas to help student to learn from both music and other areas.

Music lecture has a structure which helps students to express themselves better. Therefore, classroom teachers should not see this lecture as an area of talent, but they need to make music attractive as a area of pleasure with the activities.

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# Evaluation the impact of environmental education veľká fatra national park to students grammar and secondary schools in the operating area

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## Abstract

In expert article we devote to evaluation of environmental consciousness and the impact of education Veľká Fatra National Park to young people aged 15 – 25 years in the region, where the National Park is located. Research was conducted by exploratory method through a scientific method of research, which was the questionnaire. The questionnaire was distributed to target groups (students of grammar schools and secondary schools in the cities of Martin and Žilina), in the Žilina self - governing region in which is situated the Veľká Fatra National Park. The results of the level of environmental consciousness and environmental education will be further used to project and implementation activities to consolidation and streamline of environmental education and consciousness of public in the region as well as proposals to improve environmental education and its focus on specific target groups in the Veľká Fatra National Park.

Keywords: environmental education, Veľká Fatra National Park, protected area, students, Slovak Republic

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## 1. Introduction

Veľká Fatra National Park is one from four parks in Žilina self - governing region. In this expert article we will discuss the issue of the impact of Veľká Fatra National Park the environmental consciousness of the target group of students grammar and secondary schools in this region. Healthy ecosystem is essential for human well-being, and protected areas (especially national parks) play a central role in their long - term maintenance (Sabo, et al., 2011).

Protected areas in Slovakia are last localities where we can find the original nature. In Slovakia divided protected areas by local jurisdiction to: 9 national parks, 14 protected landscape areas and 1 094 small - scale protected areas, 1 protected landscape element, 172 protected areas, 388 nature reserves, 219 national nature reserves, 254 natural monuments, 60 national natural monuments. Total area of national parks represents 6,5 % from land of Slovakia (Act No. 543/2002; Klinda, Lieskovská, et al., 2010; Anděra, 2011).

Most protected area organizations have significant communication capacities, but normally these are targeted at protected area visitors, particularly students. Targeting them rather differently can be very effective in bringing about societal change more broadly. However, identifying the key targets can be challenging. Consciousness and education are key tools for shifting attitudes and behaviours of society as a whole in ways that can improve protected area management - or, more particularly, can eliminate bottlenecks to such improvement (Lockwood, Worboys, Kothari, 2006). Secondary level environmental education has extremely important position, which is related to the overall status of secondary schools in the educational system and is related to reached level of mental maturity of young people. In this developmental period giving out to the maturing of the intellect of this age group and markedly is expressing its differentiation. It is possible to allege that is improving ability to acquire a greater range of knowledges, recognizing the essential characteristics, principles and sense of events and actions, understand relationships and very often receive the feedbacks. Increases the level of aesthetic perception surroundings, and is stabilizing ethical opinions. (Fazekašová, Manko, et al., 2007). A specific of environmental education that is going on in a particular environment and is using the specific conditions of this environment accordly to protect him, and that through its values to influence to the public with the goal to raise their environmental consciousness. Environmental consciousness in this context is understood as an ability of individual's to realize the cases and problems of environment in the context of their own value orientation, personal experience, but also knowledge of the wider sequences, and is reflected in the willingness to voluntarily correct their behavior in favor of conservation biological diversity of nature and ecological stability of country. National parks as a territory seeking to preserve the original nature, take the information and educational function of natural values. The role of national parks and protected areas is to find a suitable method for the education of visitors and the local population, in acceptance of protected areas (Haas, Ondrová, Švajda, 2008). The school as an educational institution has in the field of education and formation of approach of the company specific situation. It works comprehensively and areal to the population of pupils, in primary and secondary education. Systematically affects the formation of a pupil's personality from the perspective of knowledge, skills, but also from the perspective of creating its attitudes and lifestyles. Through children and youth school can affect the general public, including parents and grandparents and contributes to raising the level of consciousness of the entire population (Švecová, Sásiková, 2008). In protected areas environmental education has to take into account not only the objectives of protected areas, but also global and environmental issues. Environmental education has effective employ natural heritage of protected areas for proximate contact with nature. Next task is to bring near to people the nature, as something aesthetically pleasing, what necessarily needs protection. Environmental education should be organized by the participants and target groups to what are methods and language adapted. To participants are presenting ways of introducing new attitudes into their daily lives and thus change the way

their proceeding (Haas, Ondrová, Švajda, 2008). The effective environmental consciousness of public to promote and appeal to her also several experts. (Demo et al., 2007, Švecová, 2008).

## 2. Methodology

We used in the article exploratory method which instrument was the questionnaire consists from 20 questions. The questionnaire was distributed to target groups of young people aged from 15 to 29 years (mostly deal with students of grammar and secondary schools) in region of Žilina self – governing region, where is the Veľká Fatra National Park situated. For production of questionnaire were used as an input data information gained through working out SWOT analyse in the field of management Veľká Fatra National Park. For defined weaknesses identified by SWOT analyse of Veľká Fatra National Park in the field of environmental education and consciousness was aimed questionnaire research. Research was realized at the sample of 269 respondents. Questionnaire was by its questions aimed at exploration evaluation of level of environmental consciousness of target groups. Within questionnaire research was also evaluated influence of Veľká Fatra National Park to target groups in the field of raising of environmental consciousness and education. Within questionnaire research we evaluated also attitude of respondents to the Veľká Fatra National Park and their perception of meaning of park for region of Žilina self – governing region. Based on the results gained from questionnaire research will be suggest steps, which will be aimed at minimizing or completely eliminating defined defections in the field of environmental education and consciousness of Veľká Fatra National Park. Steps will be aim also at reinforce of position of Veľká Fatra National Park as an institution and streamlining its advertising within region of Žilina self – governing region and outside this region.

## 3. Conclusions and discussion

In the part of conclusions a discussion we are describing analysis and synthesis gained knowledges from the questionnaire research. Absolute and relative multiplicity mention in Tables number 1. – 20. Purpose of the each item will be shortly characterized together with the most essential determinations.

Table 1. Evaluation of the first question in questionnaire

Sex	Summary	Percent
Women	205	76 %
Men	64	24 %
Total	269	100 %

The second question in the questionnaire was the question of identification type. The question aimed at the investigation of age structure of respondents. That age structure of respondents was relatively equal.

Table 2. Evaluation of the second question in questionnaire

Years	Women	Percent	Men	Percent
15 years	25	9,29 %	4	1,49 %
16 years	36	13,38 %	16	5,95 %
17 years	55	20,45 %	17	6,32 %
18 years	56	20,81 %	20	7,43 %
19 years	30	11,15 %	5	1,86 %
20 years	2	0,74 %	2	0,74 %
29 years	1	0,37 %		
Total	205	76,19 %	64	23,79 %

Question number three was aimed at the investigation place of home respondents (see Table number 3.).

Table 3. Evaluation of the third question in questionnaire

Sex	Women	Percent	Men	Percent
House	121	45 %	38	14 %
Flat	84	31 %	26	10 %
Total	205	76 %	64	24 %

In the question number 4 we asked respondents about the amount of national parks in Slovakia (Table number 4.). The correct possibility was possibility c. This possibility ringed (answered) 132 respondents of female sex and 43 respondents of male sex from all number 269 respondents. At this question answered correctly 65 % asked respondents basically what we can allege that common environmental consciousness is at very good level.

Table 4. Evaluation of the fourth question in questionnaire

Answers	Women	Percent	Men	Percent
Answer a	20	7,43 %	6	2,23 %
Answer b	30	12,26 %	10	3,72 %
Answer c	132	49,07 %	43	16 %
Answer d	1	0,37 %	2	0,74 %
Answer e	19	7,06 %	3	1,11 %
Total	205	76,19 %	64	23,8 %

We asked respondents within the question number 5. what symbolize logo of Veľká Fatra National Park (Table number 5). The correct answer was possibility b. This possibility presented 17 respondents of female sex and 7 of male sex what did together only fewer than 9 %. We conclude that logo of Veľká Fatra National Park isn't well known to public. That were examination respondents from the region where is national park situated we can allege that is necessary strengthen publicity of national park as an institution within region and also outside region. Increasing of consciousness about Veľká Fatra National Park is possible through strengthen environmental activities organized by Veľká Fatra National Park Administration aimed at target groups of young people and students of secondary schools also at different target groups.

Table 5. Evaluation of the fifth question in questionnaire

Answers	Women	Percent	Men	Percent
Answer a	76	28,25 %	20	7,43 %
Answer b	17	6,32 %	7	2,62 %
Answer c	25	9,26 %	10	3,72 %
Answer d	21	7,81 %	5	1,85 %
Answer e	66	24,53 %	22	8,18 %
Total	205	76,17 %	64	23,8 %

We asked respondents within the question number 6. what natural heritage is possible to see at territory of Veľká Fatra National Park (Table number 6.). Correctly identified natural heritage from the territory of Veľká Fatra National Park 141 respondents of female sex and 37 respondents of male sex what is together 66 % of respondents. This question was question of inspection type and its result confirm to us that common environmental consciousness is at very good level at watched respondents. Percentage evaluation of this question was very similar as in question number 4. which had similar orientated in character.

Table 6. Evaluation of the sixth question in questionnaire

Answers	Women	Percent	Men	Percent
Right answer	141	52,4 %	37	13,8 %
Incorrect answer	64	23,8 %	27	10 %
Total	205	76,2 %	64	23,8 %

We asked respondents within the question number 7. what form they gained present information about Velká Fatra National Park (Table number 7.). From the investigation result that the most respondents of female sex more than 33 % gained information about Velká Fatra National Park in the school and respondents of male sex fewer than 10 % gained information at home. The last the most frequented resources of information are in our investigation mentioned media what are TV and radio. Within increasing education and consciousness of target group should aimed Velká Fatra National Park Administration at her advertisement at the realization of talks, exhibitions and different activities intended for target groups and families, schools and also for outputs to media such as local journals and radios in the region.

Table 7. Evaluation of the seventh question in questionnaire

Answers	Women	Percent	Men	Percent
Answer a	45	16,73 %	26	9,67 %
Answer b	90	33,46 %	18	6,69 %
Answer c	37	13,75 %	6	2,23 %
Answer d	22	8,17 %	6	2,23 %
Answer e	11	4,09 %	8	2,97 %
Total	205	76,2 %	64	23,79 %

We asked respondents within the question number 8. what is possible to realize at the territory of Velká Fatra National Park (Table number 8.). The most often respondents present tourism, sport, walks and recreation. Argument in this question we verify in next question.

Table 8. Evaluation of the eighth question in questionnaire

Activities	Women	Percent	Men	Percent
Hiking	55	20,45 %	9	3,35 %
Sports	43	15,99 %	15	5,58 %
Winter sports	11	4,09 %	5	1,86 %
Cycling	6	2,23 %	3	1,12 %
Climbing			3	1,12 %
Spa			4	1,49 %
Culture heritage	2	0,74 %	2	0,74 %
Recreation	8	2,97 %	7	2,60 %
Walking	72	26,77 %	12	4,46 %
Crop of increases			2	0,74 %
Photography			1	0,37 %
Cleaning of nature	5	1,86 %	1	0,37 %
Natural heritage	3	1,12 %		
Total	205	76,22 %	64	23,8 %

We asked respondents within question number 9. what are they using the most often during the visit of Velká Fatra National Park (Table number 9.). From investigation result that the most often are respondents visiting national park in order to visit tourism trails, sport institutions and visits of cultural heritage at the territory of national park the same women and men. It is necessary to retrace existing educational trails and expand net of educational trails in Velká Fatra National Park. As well as we recommend improve conditions for realization of sport and recreation in park for all target groups in zones with lower level of protection where it is possible and it won't be at the expense of protection. Especially it is necessary to aim at propagation and improvement availability of cultural heritage existing at the territory of national park.

Table 9. Evaluation of the ninth question in questionnaire

Answers	Women	Percent	Men	Percent
Answer a	98	36,4 %	32	11,90 %
Answer b	37	13,75 %	13	4,83%
Answer c	8	2,97 %	1	0,37 %
Answer d	29	10,78 %	11	4,09 %
Answer e	33	12,27 %	7	2,60 %
Total	205	76,17 %	64	23,79 %

We asked respondents within question number 10. what activities are useful to realize in national park from the perspective of the protection of nature (Table number 10.). Respondents presented the most often possibility a - what was protection ecosystems of plants and animals. This possibility presented 68 % respondents of female sex and 21 % respondents of male sex. As the second the most important activity within protection respondents presented education and consciousness (possibility b) and the last area was scientific research (possibility c).

Table 10. Evaluation of the tenth question in questionnaire

Answers	Women	Percent	Men	Percent
Answer a	185	68,77 %	58	21,56 %
Answer b	2	0,74 %	4	1,49%
Answer c	10	3,72 %	1	0,37 %
Answer d	4	1,49 %		
Answer e	4	1,49 %	1	0,37 %
Total	205	76,21 %	64	23,79 %

We asked respondents in this question. what protection of plant and animal are there (Table number 11.). Between respondents are from animals the most frequented lynx and from the plants is *Leontopodium alpinum*.

Table 11. Evaluation of the eleventh question in questionnaire

Activities	Women	Percent	Men	Percent
Lynx	93	34,57 %	18	6,69 %
Bear	25	9,29 %	17	6,31 %
Eagle	2	0,74 %	1	0,37 %
<i>Rupicapra rupicapra</i>	46	17,10 %	6	2,23 %
Salamanders	13	4,83 %	3	1,11 %
<i>Leontopodium alpinum</i>	6	2,23 %	3	1,11 %
<i>Carlina acaulis</i>	1	0,37 %	1	0,37 %
<i>Gentiana sp.</i>	5	1,86 %	2	0,74 %
<i>Galanthus nivalis</i>	3	1,11 %		
<i>Crocus sp.</i>	3	1,11 %	1	0,37 %
Wolf	3	1,11 %	1	0,37 %
<i>Pulsatilla subslavica</i>	2	0,74 %		
<i>Cyclamen fatrense</i>	2	0,74 %	4	1,49 %
Marmot	1	0,37 %		
Beaver			1	0,37 %
<i>Lilium sp.</i>			1	0,37 %
<i>Tulipa sp.</i>			1	0,37 %
Wood - pecker			2	0,74 %
<i>Taxus baccata</i>			1	0,37 %
Viper			1	0,37 %
Total	205	76,17 %	64	23,75 %

We asked respondents within question number 12. (Table number 12.) whether are at the territory of Velká Fatra National Park localities where we can find species of organism of European significance (possibility a), species of national significance (possibility b) and endemic species (possibility e). Respondents the most frequented knew localities where we can find species of European significance up to 37 % of women and 15 % of men.

Table 12. Evaluation of the twelfth question in questionnaire

Answers	Women	Percent	Men	Percent
Answer a	101	37,5 %	41	15,2 %
Answer b	65	24,2 %	13	4,8 %
Answer c	8	2,9 %	2	0,7 %
Answer d	13	4,8 %	3	1,1 %
Answer e	18	6,7 %	5	1,9 %
Total	205	76,1 %	64	23,7 %

We asked respondents in question number 13. (Table number 13.) according as the deficit (loss) some of the mentioned species in the question number 12. will affect species biodiversity in Velká Fatra National Park. "Yes" (possibility a) present 26 % of women and 6 % of men. "I don't know" (possibility c) presented almost 38 % respondents of female sex and 17 % respondents of male sex. Based on results we can allege that target group don't realize sequences in the protection of the nature. It is necessary to aim and strengthen education realized by employees of Velká Fatra National Park Administration in this area.

Table 13. Evaluation of the thirteenth question in questionnaire

Answers	Women	Percent	Men	Percent
Answer a	70	26,02 %	15	5,57 %

Answer b	33	12,27 %	2	0,74 %
Answer c	102	37,92 %	47	17,48 %
Total	205	76,21 %	64	23,79 %

We asked respondents in question number 14. (Table number 14.) what activities aimed at protection of animals or plants are realizing employees of Velká Fatra National Park Administration. The most often respondents present monitoring of animals (possibility b). This possibility present almost 43 % of women and 14 % men. The second the most often present activity is operating of emergency station for injured animals (possibility c) and the last the most often presented activity was (possibility a) transfer of amphibians. Based on determined we can say this area is well known to public as a result that some of these activities were promoted in local but also in national media.

Table 14. Evaluation of the fourteenth question in questionnaire

Answers	Women	Percent	Men	Percent
Answer a	25	9,29 %	12	4,46 %
Answer b	115	42,75 %	37	13,75 %
Answer c	31	11,52 %	5	1,86 %
Answer d	16	5,95 %	4	1,49 %
Answer e	18	6,69 %	6	2,23 %
Total	205	76,2 %	64	23,79 %

We asked respondents in question number 15. (Table number 15.) if were they helpful engage in environmentally beneficial activities organized by Velká Fatra National Park Administration. The most respondents said "I don't know" (possibility c), 30 % of women and almost 10 % of men. "Yes" (possibility a) presented almost 26 % of women and almost 8 % of men, "No" (possibility b) presented almost 21 % of women and 7 % of men. Based on percentage evaluation of this question we suggest to strengthen motivation of visitors to participate to these activities by form of increased propagation of these yearly activities and also by presentation of the value these activities for all people in the region.

Table 15. Evaluation of the fifteenth question in questionnaire

Answers	Women	Percent	Men	Percent
Answer a	69	25,65 %	20	7,43 %
Answer b	56	20,82 %	19	7,06 %
Answer c	80	29,74 %	25	9,29 %
Total	205	76,21 %	64	23,78 %

We asked respondents in the question number 16. (Table number 16.) whether they agree with protection of Velká Fatra National Park. "Yes" (possibility a) presented more than 70 % female and almost 22 % male respondents. From presented result that watched target groups realize the importance of protected area.

Table 16. Evaluation of the sixteenth question in questionnaire

Answers	Women	Percent	Men	Percent
Answer a	190	70,63 %	58	21,56 %
Answer b	6	2,23 %	3	1,12 %
Answer c	9	3,35 %	3	1,12 %
Total	205	76,21 %	64	23,8 %

We asked respondents in the question number 17. (Table number 17.) whether cancel Velká Fatra National Park as an institution would damage to Velká Fatra National Park? More than 50 % respondents of female sex and almost 18 % respondents of male sex presented “Yes” (possibility a). More than 19 % respondents of female sex and more than 3 % respondents of male sex presented they don't know to say (possibility c). From presented result it is necessary to strengthen education in the field of importance of protection area and also outputs to the media. This influence public to incline to protection in this area and expressly report for this opinion.

Table 17. Evaluation of the seventeenth question in questionnaire

Answers	Women	Percent	Men	Percent
Answer a	138	51,30 %	48	17,84 %
Answer b	15	5,57 %	7	2,61 %
Answer c	52	19,33 %	9	3,34 %
Total	205	76,2 %	64	23,79 %

In the question number 18 (Table number 18.) express respondents their opinion that the Velká Fatra National Park is the most frequently polluted through pollutants and emissions from the air (possibility b). This opinion express 30 % of women and 8 % of men. Polluting through tourism present in possibility a – almost 24 % respondents of female sex and almost 5 % respondents of male sex. Polluting by wastage (possibility c) presents more than 20 % respondents of female sex and almost 8 % respondents of male sex. This question was formulated that we find if respondents realize threats of national park from the side of human. We can evaluate that knowledges in this area are at very good level.

Table 18. Evaluation of the eighteenth question in questionnaire

Answers	Women	Percent	Men	Percent
Answer a	64	23,79 %	12	4,46 %
Answer b	81	30,11 %	22	8,18 %
Answer c	56	20,82 %	21	7,8 %
Answer d	4	1,49 %	8	2,97 %
Answer e			1	0,37 %
Total	205	76,21 %	64	23,78 %

We asked respondents in the question number 19. (Table number 19.) whether will be changes in ecosystem of Velká Fatra National Park influence people in surrounding regions and in European region. More than 27 % women and almost 8 % men answered “Yes” (possibility a), almost 10 % women and almost 12 % men answered “No” (possibility b). The most respondents – almost 40 % women and almost 12 % men didn't know to express (possibility c). Based on percentage evaluation we can say that target group don't realize influence of Velká Fatra National Park to the surroundings regions also to whole European region. It is necessary to aim Velká Fatra National Park Administration to strengthen of this area of environmental consciousness and so by form of lectures and events where will be this issue presented.

Table 19. Evaluation of the nineteenth question in questionnaire

Answers	Women	Percent	Men	Percent
Answer a	73	27,14 %	21	7,8 %
Answer b	26	9,67 %	12	4,46 %
Answer c	106	39,40 %	31	11,53 %
Total	205	76,2 1%	64	23,79 %

We asked respondents in the question number 20. (Table number 20.) how they can contribute to sustainable development of Veľká Fatra National Park. The most often presented the same women and men way to sustainability: education, protection of environment, cycling and don't polluted environment.

Table 20. Evaluation of the twentieth question in questionnaire

Activities	Women	Percent	Men	Percent
Protection environment	53	19,7 %	53	19,7 %
Don't produce trash	1	0,37 %	1	0,37 %
Cyclotourism (cycling)	53	19,7 %	1	0,37 %
Consciousness	57	21,19 %	3	1,12 %
Don't pollute	38	14,13 %	5	1,86 %
Financial assistance	3	1,12 %	1	0,37 %
Total	205	76,21 %	64	23,79 %

By questionnaire research we discovered more strong but also weaknesses in the realized consciousness and education of Veľká Fatra National Park Administration applied to the target groups that focused our research. Strengths is necessary develop and defined weaknesses in environmental consciousness of target groups is necessary eliminate. One from the possible ways how to achieve this is to develop Concept of public relations of Veľká Fatra National Park, where will be defined all target groups and concrete areas of problems and limitations what is need to solve. There also will be present way of solution of these problems and also dates admission of defined aims.

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# Examining academic achievement in pisa 2003, 2006 and 2009 Turkey implementation by using mathematic common items

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## Abstract

PISA (Programme for International Student Assessment) is an international programme which is conducted every 3 years to assess 15 years old students level of proficiency. PISA contains three different cognitive tests: mathematic literacy, scientific literacy and reading literacy. Every year that PISA is conducted, the numbers of cognitive test items vary in each test. Therefore it is difficult to develop a standardized procedure for comparison. However, there are some identical items that can be used as a criteria for comparison. The aim of this research is to examine academic achievement of mathematic literacy common items in PISA 2003, PISA 2006 and PISA 2009 applications with respect to mathematical content area and item format. This research is a survey and quantitative study which is conducted by secondary data base. The population of this research is all of the 15 years old students who are attending to schools in 2003, 2006 and 2009 academic years. 15 years old students who participated in PISA 2003, PISA 2006 and PISA 2009 applications and solved the questions regarding mathematic literacy common items are the sample of the research. Relevant statistical analysis was conducted based on research and sub-research questions by using the secondary data base that was prepared by rearranging the national data base of PISA 2003, PISA 2006 and PISA 2009. The findings of the research study demonstrated that the students have poor performance in 'space and shape' that is one of the mathematical content area. They have better performance in 'multiple choice' items while have poor performance in 'open-constructed' items. In general, it was seen that Turkish students have better performance in PISA 2003 and poor performance in PISA 2006.

Keywords: PISA, mathematic literacy, student achievement, mathematical content area, item format.

## 1. INTRODUCTION

PISA is an international study repeated every three years. The study aims to evaluate education systems worldwide by testing the skills and knowledge of 15-year-old students. PISA is generally a survey exam. Survey exams are used to evaluate curriculum and instruction in all system (Baykul and Turgut, 2010). The participating countries' educational systems, curriculums, profiles of student, parents and teacher are revealed in PISA. Cognitive abilities in reading, science and mathematics literacy areas are assessed with cognitive tests in PISA. A cognitive domain is determined as the main theme in every implementation years. The main theme of PISA 2003 is mathematic literacy. In PISA 2003, 84 (%50,9) of total 165 cognitive test items measures mathematic literacy (OECD, 2003). The main theme of PISA 2006 is science literacy. In PISA 2006, 48 (%26,8) of total 179 cognitive test items measures mathematic literacy (OECD, 2006). The main theme of PISA 2009 is reading literacy. In PISA 2009, 35 (%15,9) of total 219 cognitive test items measures mathematic literacy (OECD, 2009).

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PISA/OECD (2003) defines mathematical literacy as “an individual’s capacity to identify, and understand, the role that mathematics plays in the world, to make well-founded judgments and to use and engage with mathematics in ways that meet the needs of that individual’s life as a constructive, concerned, and reflective citizen”. According to this definition, there is no single spot for an individual which he/she is mathematical literate anymore. PISA/OECD (2003) lays out items mathematical literacy with that steps:

- (I) Beginning with a problem situated in real world,
- (II) Organising it according to mathematical concepts,
- (III) Gradually trimming away the reality through processes such as making assumptions about which features of the problem are important, generalising and formulising,
- (IV) Solving the mathematic problems and,
- (V) Making sense of mathematical solution in terms of the real situation.

Mathematical content area is defined as overarching-ideas by PISA. Overarching-ideas is divided dimensions that pattern, dimension, quantity, uncertainty, shape, change, counting, reasoning and communication, motion and change, symmetry and regularity, and position (Steen 1990; Devlin, 1994). PISA uses dimension of space and shape, change and relationship, quantity and, uncertainty (EARGED, 2005). PISA uses five item format: multiple choice, complex multiple choice, open-constructed, closed-constructed and short response (OECD, 2009).

The main theme of PISA 2003 is mathematic literacy which has 84 mathematical literacy items. PISA 2006 has 48 mathematical literacy items which used all of them before in PISA 2003. PISA 2009 has 35 mathematical literacy items which used all of them before in PISA 2003 and PISA 2006. In this research, common mathematical literacy items are used which are all items in PISA 2009. Thus, its aims to identify the percentage of success cleaner and more exact of the 15 years old generation 2003, 2006 and, 2009. The research importance is at all these three study work with mathematical literacy items which are common. Where by it can be identified the percentage of success with the different questions unrelated. There is no research which is used the common items of mathematical literacy. According to purpose of the research these problems will be answered;

- (I) How is the percentage of success take into account the common items of mathematical literacy according to “mathematical content area” at PISA 2003, 2006 and, 2009?
- (II) How is the percentage of success take into account the common items of mathematical literacy according to “item format” at PISA 2003, 2006 and, 2009?

## **2. METHOD**

### *2.1. Research Design*

In this research, if the percentage of success identified by according to the answers of the questions of mathematical common items then the research is descriptive research. A research which is used the numerical data generally they are quantitative research (Buyukozturk et al., 2010). In this research, the success is identified by points in PISA studies thus the research is quantitative research. The secondary data base is made by as a

result of existing primary data bases in this research. As a result the research is a survey and quantitative study which is conducted by secondary data base.

## 2.2. Population and Sample

In this research, the aim is identified the success position of 15 years old generation in Turkey according to common items of mathematical literacy in PISA 2003, 2006, and, 2009. The population of the research is the students who are 15 years old at the year of 2003, 2006 and 2009. The method of the student selection is used stratified sampling in Turkey. In Turkey 4855 students who are from seven different geographical area and from 12 primary and 147 high schools, joined to PISA 2003 (EARGED, 2005). The students who are joint PISA 2006 are selected with two level selection methods. Initially schools are selected then students are selected from these schools. 4942 students from 160 schools are selected and sample is generated in PISA 2006. 4996 students from 170 schools are selected for the sampling of PISA 2009. 15 years old students who participated in PISA 2003, PISA 2006 and PISA 2009 applications and solved the questions regarding mathematic literacy common items are the sample of the research.

## 2.3. Data Collection

Generally, data collection instruments used in this research are PISA 2003, PISA 2006 and PISA 2009 cognitive tests.

Table 1. Distribution of Mathematical Literacy Common Items in PISA 2003, 2006 and 2009 According to Mathematical Content Area

Mathematical Content Area	Number of Items	%
Space and Shape	8	22,9
Change and Relationships	9	25,7
Quantity	11	31,4
Uncertainty	7	20,0
Total	35	100

When Table 1. is examined will see that; mathematical literacy common items are distributed well balanced according to mathematical content area.

Table 2. Distribution of Mathematical Literacy Common Items in PISA 2003, 2006 and 2009 According to Item Format

Item Format	Number of Items	%
Multiple Choice	9	25,7
Complex Multiple Choice	7	20,0
Open-Constructed	8	22,9
Closed-Constructed	3	8,6
Short Response	8	22,9
Total	35	100

When Table 1. is examined will see that; Mathematical literacy common items are distributed well balanced except closed-constructed items according to item format.

#### 2.4. Analyze of Data

The process to prepare the data:

- (I) Mathematic literacy items with same code and name (35 items) are identified with helping codebooks which were downloaded from PISA website ([www.pisa.oecd.org](http://www.pisa.oecd.org)) belonging to PISA 2003, PISA 2006 and, PISA 2009.
- (II) PISA 2003 data was downloaded from website was not scored so researchers turned it to scored data with help of PISA 2003 codebook. PISA 2006 and PISA 2009 data had scored data file (scored cognitive item response data file) so turning process is not necessary for these data.
- (III) "The re-grading items": mathematical literacy common items were given new points (Full credit: 2, partial credit:1, wrong and empty: 0 points).
- (IV) After the re-graded items, three secondary data base was acquired belonging to PISA 2003, 2006 and 2009.
- (V) These three secondary data base were split according to mathematical content area and item format (for mathematical content area: 4, item format: 5 new data base). In this step, 27 new data base were acquired (for PISA 2003: 9, PISA 2006: 9...).

The process to analyse data:

- (I) Frequencies of "Full credit", "partial credit", "wrong" and "empty" answers were taken for each item with SPSS.
- (II) Total points were calculated for each item. Formula;  

$$\text{Total point for each item} = \text{Count of Full credit} \times 2 + \text{Count of partial credit}.$$
- (III) "Total points for each item" were added each other to acquiring Item Characteristic (math. content area and item format) Total Points (ICTP) for the same characteristic item.

(IV) Count of total students who answered items were calculated for each item. Formula;

*Count of total students who answered items = count of students who answered full credit + count of students who answered partial credit + count of students who answered wrong + count of students who left empty.*

(V) Maximum points (MP, can be taken) were calculated. Formula;

*MP = Count of total students who answered items x 2.*

(VI) Success percentages were calculated. Formula;

*Success percentage = (ICTP/MP) x 100*

### 3. FINDINGS

#### 3.1. Success of Mathematical Literacy According to Mathematical Content Area

Table 3: Success of Mathematical Literacy According to Mathematical Content Area

	Mathematical Content Area	Dist. of Items		Distribution of Answers				Average Point	Success (%)
				Full Cr.	Partial C.	Wrong	Empty		
PISA 2003	Change and Relationships	N	9	3730	180	5836	377	0,75	37,7
		%	25,7	36,9	1,8	57,6	3,7		
	Quantity	N	11	6386	0	7595	423	0,89	44,3
		%	31,4	44,3	0,0	52,7	2,9		
	Space and Space	N	8	2937	51	6471	375	0,60	30,1
		%	22,9	29,9	0,5	65,8	3,8		
Uncertainty	N	7	4020	0	5104	406	0,84	42,2	
	%	20,0	42,2	0,0	53,6	4,2			
Total	N	35	17073	231	25006	1581	0,78	39,1	
	%	100	38,9	0,5	57,0	3,6			
PISA 2006	Change and Relationships	N	9	3589	231	9646	188	0,54	27,1
		%	25,7	26,2	1,7	70,6	1,3		
	Quantity	n	11	6069	0	10338	326	0,72	36,2
		%	31,4	36,2	0,0	61,8	2,0		
	Space and Space	n	8	3026	62	8781	280	0,50	25,1
		%	22,9	25,0	0,5	72,2	2,3		
Uncertainty	n	7	4006	0	6451	187	0,75	37,6	
	%	20,0	37,6	0,0	60,6	1,8			
Total	n	35	16690	293	35216	981	0,63	31,6	
	%	100	31,4	0,5	66,2	1,8			
PI SA	Change and Relationships	n	9	4290	310	9036	132	0,65	32,3

	%	25,7	31,1	2,2	65,6	0,9		
Quantity	n	11	6518	0	10115	220	0,77	38,7
	%	31,4	38,7	0,0	60,0	1,3		
Space and Space	n	8	3501	81	8483	177	0,58	28,9
	%	22,9	28,6	0,7	69,2	1,4		
Uncertainty	n	7	4184	0	6396	136	0,78	39,0
	%	20,0	39,0	0,0	59,7	1,3		
Total	n	35	18493	391	34030	665	0,70	35,0
	%	100	34,5	0,7	63,5	1,2		

According to Table 3, Mathematical literacy common items were classified according to mathematical content area in PISA 2003; ‘quantity’ (%44,3) has the highest percentage of success in Turkey. ‘Space and shape’ (%30,1) has the lowest percentage of success in Turkey. Mathematical literacy common items were classified according to mathematical content area in PISA 2006; ‘uncertainty’ (%37,6) has the highest percentage of success in Turkey. ‘Space and shape’ (%25,1) has the lowest percentage of success in Turkey. Mathematical literacy common items were classified according to mathematical content area in PISA 2009; ‘uncertainty’ (%39,0) has the highest percentage of success in Turkey. ‘Space and shape’ (%28,9) has the lowest percentage of success in Turkey. Turkish students who joint PISA 2003 are most successful in all mathematical content areas. Turkish students who joint PISA 2006 have worse performance in all mathematical content areas.

### 3.2. Success of Mathematical Literacy According to Item Format

Table 4: Success of Mathematical Literacy According to Item Format

	Item Format	Dist. of Items		Distribution of Answers				Average Point	Success (%)
				Full Credit	Partial C.	Wrong	Empty		
PISA 2003	Multiple Choice	n	9	6536	0	5936	466	1,01	50,5
		%	25,7	50,5	0,0	45,9	3,6		
	Complex Multiple Choice	n	7	3517	0	6006	285	0,72	35,9
		%	20,0	35,9	0,0	61,2	2,9		
	Open-Constructed	n	8	1936	231	5296	326	0,53	26,3
		%	22,9	24,8	3,0	68,0	4,2		
	Closed-Constructed	n	3	1322	0	2592	116	0,66	32,8
%		8,6	32,8	0,0	64,3	2,9			
Short Response	n	8	3762	0	5176	388	0,80	40,2	
	%	22,9	40,2	0,0	55,5	4,2			
Total	n	35	17073	231	25006	1581	0,78	39,1	
	%	100	38,9	0,5	57,0	3,6			
PISA 2006	Multiple Choice	n	9	6570	0	6858	273	0,96	48,0
		%	25,7	48,0	0,0	50,0	2,0		
	Complex Multiple Choice	n	7	3442	0	7085	140	0,64	32,3
		%	20,0	32,3	0,0	66,4	1,3		
	Open-Constructed	n	8	1861	293	9765	209	0,33	16,6
%		22,9	15,3	2,4	80,5	1,7			
Closed-Constructed	n	3	1312	0	3078	124	0,58	29,1	
	%	8,6	29,1	0,0	68,2	2,8			
Short Response	n	8	3506	0	8430	235	0,58	28,9	
	%								

		%	22,9	28,9	0,0	69,3	1,9		
	Total	n	35	16691	293	35216	981		
		%	100	31,4	0,5	66,2	1,8	0,63	31,6
PISA 2009	Multiple Choice	n	9	7063	0	6549	178		
		%	25,7	51,2	0,0	47,5	1,3	1,02	51,2
	Complex Multiple Choice	n	7	3834	0	6815	78		
		%	20,0	35,7	0,0	63,5	0,73	0,71	35,7
	Open-Constructed	n	8	2367	391	9339	141		
		%	22,9	19,3	3,2	76,3	1,2	0,42	20,9
	Closed-Constructed	n	3	1461	0	3026	91		
		%	8,6	31,9	0,0	66,1	2,0	0,64	31,9
	Short Response	n	8	3768	0	8301	177		
		%	22,9	30,8	0,0	67,8	1,4	0,61	30,8
	Total	n	35	18493	391	34030	665		
		%	100	34,5	0,7	63,5	1,2	0,70	35,0

According to Table 4, mathematical literacy common items were classified according to item format in PISA 2003, 'multiple choice' (%50,5) has the highest percentage of success in Turkey. "Open-constructed" (%26,3) has the lowest percentage of success in Turkey. Mathematical literacy common items were classified according to item format in PISA 2006, 'multiple choice' (%48,0) has the highest percentage of success in Turkey. "Open-constructed" (%16,6) has the lowest percentage of success in Turkey. Mathematical literacy common items were classified according to item format in PISA 2009, 'multiple choice' (%51,2) has the highest percentage of success in Turkey. "Open-constructed" (%20,9) has the lowest percentage of success in Turkey. Turkish students who joint PISA 2003 are the most successful in all mathematical content areas except "multiple choice" (the students who joint PISA 2009 is the most successful in this format). Turkish students who joint PISA 2006 have worse performance in all mathematical content areas.

Mathematical literacy items are examined without classified; PISA 2003 has the highest success percentage. PISA 2006 has the lowest success percentage.

#### 4. RESULTS AND RECOMMENDATIONS

Different countries recognize to their success about mathematics, science and, main language educations owing to PISA studies from the year of 2000 which are repeated every three years. Turkey is joint PISA studies since 2003. Turkey prepares national report about PISA and examines the success at international area. However this reports is not included comparing of PISA implementation years. The students who joint PISA 2003 mathematical literacy average point is 423. The students who joint PISA 2006 mathematical literacy average point is 424. The students who joint PISA 2009 mathematical literacy average point is 445. These points difference may not become the real success difference. They could be other reasons:

- (I) In PISA studies, counts of mathematical literacy items differentiate according to years. PISA 2003 has 84 items. PISA 2006 has 48 items. PISA 2009 has 35 items. The success could be changed by difference of counts of items.
- (II) In PISA studies, students points are calculated with help international average point. According to international area, a student average point is 500 (EARGED, 2005). Counts of countries and counts of students are increased from PISA 2003 to PISA 2009 thus items points are changed between studies.

These success differences are exterminated by using common items and giving unrelated points from each implementation years to each item.

At this research results are; students' correct answers of mathematical literacy common items are changed according to mathematical content area and implementation year in Turkey. The high level percentage of success is got in "uncertainty" content area in PISA 2006 and PISA 2009 while this situation changes in PISA 2003. The low level percentage of success is got in "space and shape" in all three implementation. At this research results are; students' correct answers of mathematical literacy common items are parallel according to item format and implementation year in Turkey. The high level percentage of success is got in "multiple choice" item format in all three implementation. This situation may base on that Turkish students recognize "multiple choice" item format from national student selection exams.

Turkish students show worse performance in "space and shape" content area. Space and shape is known as geometry in traditional content area. Geometry curriculum is may revised in Turkey according to this research results. Turkish students show worse performance in "open-constructed" item format. According to this, In

national student selection exams may have open-constructed items. Thus, Turkish students recognize this item format.

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4<sup>th</sup> International Conference on New Horizons in Education

# Examining secondary school students' scientific process skills in terms of some variables

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## Abstract

Every individual may come across some problems in his/her daily life. These encountered problems can be solved by taking correct decisions that lead to a solution and successfully implementing these decisions, thereby reaching a result. Scientific process is one of these methods. A number of skills are required in order to implement the scientific process in the best manner. These skills are the skills that are used by scientists during their studies, and they provide great benefits in terms of students knowing themselves and actualize their efficient learning. The aim of this study was to examine the 7<sup>th</sup> grade students' scientific process skills in terms of their demographic features. Data collection tool was used Scientific Process Skills Test. It is observed that female students are better than male students in observation, classification, measurement and model formation skills. It can be generally stated that the students, whose families have high level of education, will have more acquisitions in scientific process skills. There was no statistically significant difference between the 7<sup>th</sup> grade students' hobbies that they perform in their spare time, their selection of occupation, the programs that they watch on television and their scores on scientific process skills test.

Keywords: **Scientific Process Skills**, Demographic Features, Secondary School Students

## 1. INTRODUCTION

Every individual may come across some problems in his/her daily life. These encountered problems can be solved by taking correct decisions that lead to a solution and successfully implementing these decisions, thereby reaching a result. Some methods can be followed in order to fulfill the aim in this process. Scientific process is one of these methods. A number of skills are required in order to implement the scientific process in the best manner. These skills are the skills that are used by scientists during their studies, and they provide great benefits in terms of students knowing themselves and actualize their efficient learning.

Students can reach the information that they require on their own using their scientific process skills in today's world where it is not possible to transfer all information from teachers to students. In this regard, scientific process skills constitute a tool for students to learn the methods of reaching information and to understand scientific studies. On the other hand, they constitute an important objective that is aimed at students in science education (Saraçoğlu, Büyük and Tanık, 2012).

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Scientific process skills are defined as the skills that facilitate learning; acquire research ability; make students active in learning environments; develop their sense of responsibility in their learning; and increase retention (Akdeniz, 2005). Scientific process skills are the ways and methods that are used by scientists in reaching information and processing information (Temiz and Tan, 2003).

According to Harlen (1999, 2000) scientific process skills constitute the basis of being able to conduct scientific research. These abilities contain the abilities that can be used by every individual in every stage of life in order to become literate in science and increase quality of life and standards of living by perceiving the nature of science (Bozkurt and Olgun, 2005). These abilities were defined in a science and technology lesson plan as follows: "The skills of thinking that are used by scientists in generating information, contemplating problems and formalizing results" (MEB, 2005). They were defined by Çepni, Ayas, Johnson and Turgut (1996) as follows: "The basic skills that facilitate learning, make students active, help them to acquire responsible awareness in their learning, increase retention in learning, and acquire ways and methods of research". Helping students acquire these important skills will help them understand their own world and learn throughout their lives (Türkmen and Kandemir, 2011).

When the literature is examined (Afacan, 2008; Akdeniz, 2005; Batı and Kaptan, 2013; Yök-Dünya Bankası, 1997), it is observed that the scientific process skills are studied in 3 main sections.

- 1) **Basic Skills:** Observation, measurement, classification, recording the data and forming number and space relationships.
- 2) **Causal Skills:** Prediction, determining the variables, interpreting the data and inference.
- 3) **Experimental Skills:** Hypothesizing, using the data and forming a model, conducting an experiment, changing and controlling the variables and making a decision.

Student acquisitions are given in teacher guidebooks for Secondary Science and Technology courses of the Ministry of National Education in terms of the classification of scientific process skills (MEB, 2012). These skills are as follows:

**1. Observation:** They observe objects (items, entities) and situations using their sense organs or observation tools. They determine sensorial properties of an object such as shape, color, size and surface. They select appropriate tools for observation, and they use these tools skillfully.

**2. Comparison-Classification:** They determine qualitative and quantitative properties that will be used in classifying the objects. They detect evident similarities and differences between objects or situations. They perform comparisons according to one or more properties on the basis of observations. They perform classifications in the form of groups and sub-groups according to similarities and differences.

**3. Inference:** They make statements about the reasons for situations that have occurred on the basis of observations.

**4. Guessing:** They suggest ideas about potential results for the future on the basis of observations, inferences or experiments.

**5. Prediction:** They suggest ideas about approximate values by stating the appropriate units for quantities such as mass, length, time, temperature and quantity for situations and objects.

**6. Determining the Variables:** They determine one or several most evident variables in a given situation or relationship. They determine the dependent variable in a given situation. They determine the independent variable in a given situation. They determine the controlled variables in a given situation.

**7. Hypothesizing:** They state the effect of the independent variable on the dependent variable in a given situation in the form of a testable hypothesis.

**8. Designing an Experiment:** They suggest an experiment to test the hypothesis that they formed.

**9. Recognizing and Using Experiment Materials and Tools:** They select the required materials and tools in simple researches, and they use them safely and effectively.

**10. Establishing an Experiment Mechanism:** They establish a mechanism for conducting the experiment that they designed to test the hypothesis that they formed using the given materials.

**11. Controlling and Changing the Variables:** They fix the variables other than the ones about the hypothesis. They determine the effect of the independent variable on the dependent variable by changing the independent variable.

**12. Functional Definition:** They conclusively define the variables appropriate to the aim of the research (hypothesis) along with the measurement criterion in cases where the variables may have more than one meaning and boundaries of which have not been fully drawn.

**13. Measurement:** They recognize measuring tools such as ruler, thermometer, scale and timer. They determine the magnitudes using appropriate measuring tools. They express magnitudes with their units.

**14. Information and Data Collection:** They collect information by utilizing different sources (conducting observations and experiments in the surrounding area and classroom, using photographs, books, maps or information and communication technologies). They collect qualitative or quantitative data to test the hypothesis that they have formed.

**15. Recording the Data:** They record the data, which has been obtained with observation and measurement and which is appropriate to the aim of the research, via various methods such as written statements, figures, tables or drawings.

**16. Data Processing and Model Formation:** They show the data obtained from the experiments and observations in different forms such as observation frequency distribution, bar chart, table and physical models by compiling and processing this data. They implement the rules about drawing graphs.

**17. Interpretation and Deduction:** They interpret the processed data and the formed model. They reach patterns and relationships from the obtained findings.

**18. Presentation:** They present and share their observations, researches and the results that they have obtained in appropriate forms using verbal, written and/or visual materials.

## 2. Method

The aim of this study was to examine the 7<sup>th</sup> grade students' scientific process skills in terms of their demographic features (gender, mother's educational status, father's educational status, number of siblings, hobbies performed in spare time, programs watched on television, frequency of reading books and selecting a future occupation).

### 2.1. Research Problem

Is there a relationship among the 7<sup>th</sup> grade students' scientific process skills in terms of their demographic features (gender, mother's educational status, father's educational status, number of siblings, hobbies performed in spare time, programs watched on television, frequency of reading books and selecting a future occupation)?

### 2.2. Population and Sample

The universe of this study is composed of the 7<sup>th</sup> grade students who are studying in the secondary schools located in Erzurum province. The sample of the study is composed of the 7<sup>th</sup> grade students who are studying in two secondary schools located in Erzurum province.

### 2.3. Data Collection Tool

"Scientific Process Skills Test", the original of which was developed by Kathleen A. Smith and Paul W. Welliver and the Turkish translation of which was provided by Başdağ (2006), was used in this study. This test measures a total of 13 scientific process skills, namely observation, classification, inference, guessing, prediction, measurement, recording the data, forming number-space relationship, functional definition, hypothesizing, conducting an experiment, determining the variables, interpreting the data, and model formation. The test is composed of 40 questions. The reliability of the test was determined as 0.81 by Başbağ.

## 3. Findings and Interpretation

When Table 1 was examined, it was observed that there was a statistically significant difference between the genders of the 7<sup>th</sup> grade students and the scores that they achieved on the SPST in favor of female students ( $t=2,205$ ;  $p<0,05$ ). It was observed that the average score of female students was 30.46 in the SPST whereas the average score of male students was 27.87.

Table 1. Independent t-test results of the 7<sup>th</sup> grade students' scores on the SPST in terms of gender

Gender	N	X	S	t	p
Female	65	30,46	6,36	2,205	0,029
Male	67	27,87	7,13		

When Table 2 was examined, it was observed that there was a statistically significant difference between the genders of the 7<sup>th</sup> grade students and their scores on observation, classification, measurement and model formation skills ( $p<0,05$ ). It was observed that the score averages of female students were higher than the score averages of male students. It was observed that female students were better at observation, classification, measurement and model formation skills than male students.

Table 2. Independent t-test results of the 7<sup>th</sup> grade students' scores on the scientific process skills in terms of gender

Skills	Gender	N	X	S	T	p
Observation	Female	65	1,68	0,56	2,789	0,006
	Male	67	1,33	0,84		
Classification	Female	65	2,12	1,21	2,041	0,043
	Male	67	1,70	1,17		
Measurement	Female	65	4,89	1,29	2,346	0,020
	Male	67	4,39	1,18		
Model Formation	Female	65	0,78	0,41	2,719	0,007
	Male	67	0,57	0,50		

When Table 3 was examined, it was observed that there was a statistically significant difference between the educational status of the mothers of the 7<sup>th</sup> grade students and the scores that they achieved on the SPST ( $F_{4,131}=3,504$ ;  $p<0,05$ ).

Table 3. One-Way ANOVA results of the 7<sup>th</sup> grade students' scores on the SPST in terms of the educational status of their mothers

Source	Sum of Squares	df	Mean Squares	F	p
Between Groups	613,140	4	153,285	3,504	0,009
Within Groups	5555,125	127	43,741		
Total	6168,265	131			

When Table 4 was examined, it was observed that there was a statistically significant difference between the educational status of the mothers of the 7<sup>th</sup> grade students and their scores on measurement, hypothesizing and data interpretation skills ( $p<0,05$ ). It was observed that the score averages of the students whose mothers were graduates of elementary school, secondary school, high school and university ranged from 4.84 to 4.64 in measurement skills whereas the score averages of the students whose mothers were only literate was 3.68. It was

observed that the score averages of the students whose mothers were graduates of elementary school, secondary school, high school and university ranged from 1.45 to 1.32 in hypothesizing skills whereas the score averages of the students whose mothers were only literate was 0.84. It was observed that the score averages of the students whose mothers were graduates of elementary school, secondary school, high school and university ranged from 4.33 to 3.47 in data interpretation skills whereas the score averages of the students whose mothers were only literate ranged from 2.78 to 2.32.

Table 4. One-Way ANOVA results of the 7<sup>th</sup> grade students' scores on the scientific process skills in terms of the educational status of their mothers

Skills	Source	Sum of Squares	df	Mean Squares	F	p
Measurement	Between Groups	20,343	4	5,086	3,469	0,010
	Within Groups	186,203	127	1,466		
	Total	206,545	131			
Hypothesizing	Between Groups	6,019	4	1,505	2,632	0,037
	Within Groups	72,617	127	0,572		
	Total	78,636	131			
Data Interpretation	Between Groups	40,411	4	10,103	4,053	0,004
	Within Groups	316,581	127	2,493		
	Total	356,992	131			

When Table 5 was examined, it was observed that there was a statistically significant difference between the educational status of the fathers of the 7<sup>th</sup> grade students and the scores that they achieved on the SPST ( $F_{4,131}=3,504$ ;  $p<0,05$ ).

Table 5. One-Way ANOVA results of the 7<sup>th</sup> grade students' scores on the SPST in terms of the educational status of their fathers

Source	Sum of Squares	df	Mean Squares	F	p
Between Groups	578,147	4	144,537	3,284	0,013
Within Groups	5590,118	127	44,017		
Total	6168,265	131			

When Table 6 was examined, it was observed that there was a statistically significant difference between the educational status of the fathers of the 7<sup>th</sup> grade students and their scores on guessing, measurement and variable determination skills ( $p < 0,05$ ). It was observed that the score averages of the students whose fathers were graduates of elementary school, secondary school, high school and university ranged from 5.06 to 4.19 in measurement skills whereas the score averages of the students, whose fathers were only literate was 3. It was observed that the score averages of the students whose fathers were graduates of elementary school, secondary school, high school and university ranged from 2.52 to 2.5 in variable determination skills whereas the score averages of the students whose fathers were only literate was 0.5. It was observed that the score averages of the students whose fathers were graduates of elementary school, secondary school, high school and university ranged from 4.44 to 4.11 in guessing skills whereas the score averages of the students whose fathers were only literate was 2.

Table 6. One-Way ANOVA results of the 7<sup>th</sup> grade students' scores on the scientific process skills in terms of the educational status of their fathers

Skills	Source	Sum of Squares	df	Mean Squares	F	p
Guessing	Between Groups	12,832	4	3,208	3,291	0,013
	Within Groups	123,797	127	0,975		
	Total	136,629	131			
Measurement	Between Groups	17,379	4	4,345	2,917	0,024
	Within Groups	189,167	127	1,490		
	Total	206,545	131			
Variable Determination	Between Groups	15,789	4	3,947	2,668	0,035
	Within Groups	187,870	127	1,479		
	Total	203,659	131			

When Table 7 was examined, it was observed that there was a statistically significant difference between the number of siblings of the 7<sup>th</sup> grade students and the scores that they achieved on the SPST ( $F_{5-131}=2,483$ ;  $p < 0,05$ ).

Table 7. One-Way ANOVA results of the 7<sup>th</sup> grade students' scores on the SPST in terms of the number of siblings

Source	Sum of Squares	df	Mean Squares	F	p
Between Groups	553,237	5	110,647	2,483	0,035
Within Groups	5615,028	126	44,564		

Total 6168,265 131

When Table 8 was examined, it was observed that there was a statistically significant difference between the number of siblings of the 7<sup>th</sup> grade students and their scores on measurement, hypothesizing and variable determination skills. It was observed that the scores of the students decreased generally in measurement, variable determination and guessing skills when the number of siblings increased.

Table 8. One-Way ANOVA results of the 7<sup>th</sup> grade students' scores on the scientific process skills in terms of the number of siblings

Skills	Source	Sum of Squares	df	Mean Squares	F	p
Measurement	Between Groups	18,554	5	3,711	2,487	0,035
	Within Groups	187,992	126	1,492		
	Total	206,545	131			
Hypothesizing	Between Groups	7,456	5	1,509	2,675	0,025
	Within Groups	71,091	126	0,564		
	Total	78,636	131			
Variable Determination	Between Groups	24,233	5	4,487	3,403	0,006
	Within Groups	179,426	126	1,424		
	Total	203,659	131			

When Table 9 was examined, it was observed that there was no statistically significant difference between the 7<sup>th</sup> students' frequency of reading books and the scores that they achieved on the SPST. No relationship was observed between the frequency of reading books and their scientific process skills ( $F_{2-131}=2,483$ ;  $p>0,05$ ).

Table 9. One-Way ANOVA results of the 7<sup>th</sup> grade students' scores on the SPST in terms of frequency of reading books

Source	Sum of Squares	df	Mean Squares	F	p
Between Groups	59,797	2	29,899	0,631	0,533
Within Groups	6108,468	129	47,352		
Total	6168,265	131			

When Table 10 was examined, it was observed that there was no statistically significant difference between the 7<sup>th</sup> grade students' hobbies that they performed in their spare time and the scores that they achieved on the SPST ( $F_{4-374}=0,789$ ;  $p>0,05$ ). No relationship was observed between the 7<sup>th</sup> grade students' hobbies that they performed in their spare time and their scientific process skills.

Table 10. One-Way ANOVA results of the 7<sup>th</sup> grade students' scores on the SPST in terms of hobbies that they performed in their spare time

Source	Sum of Squares	df	Mean Squares	F	p
Between Groups	75,822	4	18,956	0,427	0,789
Within Groups	16436,327	370	44,423		
Total	16512,149	374			

\*Students marked more than one option.

When Table 11 was examined, it was observed that there was no statistically significant difference between the 7<sup>th</sup> grade students' selection of a future occupation and the scores that they achieved on the SPST ( $F_{11-}$

$F_{131}=0,789$ ;  $p>0,05$ ). No relationship was observed between the 7<sup>th</sup> grade students' selection of a future occupation and their scientific process skills.

Table 11. One-Way ANOVA results of the 7<sup>th</sup> grade students' scores on the SPST in terms of selection of a future occupation

Source	Sum of Squares	df	Mean Squares	F	p
Between Groups	899,453	11	81,768	1,862	0,051
Within Groups	5268,812	120	43,907		
Total	6168,265	131			

When Table 12 was examined, it was observed that there was no statistically significant difference between the programs watched on television by the 7<sup>th</sup> grade students and the scores that they achieved on the SPST ( $F_{7,446}=0,789$ ;  $p>0,05$ ). No relationship was observed between the programs watched on television by the 7<sup>th</sup> grade students and their scientific process skills.

Table 12. One-Way ANOVA results of the 7<sup>th</sup> grade students' scores on the SPST in terms of the programs watched on television

Source	Sum of Squares	df	Mean Squares	F	p
Between Groups	467,592	7	66,799	1,367	0,217
Within Groups	21451,325	439	48,864		
Total	21918,917	446			

\*Students marked more than one option.

#### 4. Results

When we look at the genders of the 7<sup>th</sup> grade students and the scores that they achieved on the scientific process skill test, it is observed that female students are better than male students in observation, classification, measurement and model formation skills. The effect of the educational status of their mothers on their measurement, hypothesizing and data interpretation skills are clearly observed. It is observed that the students, whose mothers were only literate, generally achieved lower scores on these skills. The effect of the educational status of their fathers on their measurement, guessing and variable determination skills are clearly observed. It is observed that the students whose fathers were only literate generally achieved lower scores on these skills. It is observed that the educational status of the families of the students is very important for the education of these students. It can be generally stated that the students, whose families have high level of education, will have more acquisitions in scientific process skills. It is observed that the scores of the students generally decrease in measurement, variable determination and guessing skills when the number of siblings increases. A general decrease was observed in the scores of the students who have four or more siblings. It is known that a general decrease occurs in family's paying attention to the condition of the student at school when those families have a high number of siblings. This condition can cause a failure for students in fully overcoming their insufficiencies. It was observed that there was no relationship between students' frequency of reading books and their scientific

process skills. However, it is considered that the students did not sincerely answered the question, “How often do you read books?”. It was observed in the researches conducted in the literature that the students who have a habit of reading books will be better at scientific process skills (Aydođdu, 2006). There was no statistically significant difference between the 7<sup>th</sup> grade students’ hobbies that they perform in their spare time, their selection of occupation, the programs that they watch on television and their scores on scientific process skill test.

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# Examining secondary school students' perceptions of computer self-efficacy in terms of gender and class level variables

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## Abstract

The aim of this study is to examine the computer self-efficacy perceptions of secondary students and examining of gender and grade. The study was designed with survey model and conducted with 302 students enrolled in secondary education. The data were collected via the "Self-Efficacy Perception Scale in relation to Computer" developed by Işıksal and Aşkar (2003). The data were analysed through standard deviation and mean value as well as independent t-test and One Way ANOVA for group comparison, besides to find which group causes the difference in the group comparison, a Post Hoc test was employed. At the results of study was found that secondary primary students' have high level self-efficacy perceptions related to computers. Additionally it was obtained that the self-efficacy perceptions about computer do not differ according to gender. Conversely it was found that there was a significant difference for grade.

*Keywords: Computer Self-Efficacy, Student, Gender, Grade*

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## 1. Introduction

Self-efficacy is one of the important variables of social learning theory. According to Bandura (1995), self-efficacy is the belief in one's capabilities to organize and successfully perform the activities required to show one's performance. In other words, self-efficacy belief is the individuals' belief of "I can do it" or "I can not do it" while performing a certain activity (Siegle, 2003). Students' self-efficacy beliefs, which affect their motivation and performance, need to be high (Cantürk-Günhan & Başer, 2007). That is because the individuals having high self-efficacy perception exert great effort to succeed in something, and when they come across adversities, they act insistently and patiently in order to overcome those adversities (Aşkar & Umay, 2001). When the related literature is examined, it is observed that self-efficacy, which is a concept that was developed in the field of social psychology, has been implemented in many fields and how it changes in terms of different variables has been researched (Aksu, 2008; Alabay, 2006; Duatepe-Paksu, 2008; Ekici, 2008; Üstüner, Demirtaş, Cömert, & Özer, 2009; Hacıömeroğlu & Taşkın, 2010; Seferoğlu & Akbıyık, 2005; Usluel & Seferoğlu, 2003). For instance, Compeau and Higgins (1995) set forth the perception of computer self-efficacy by implementing the self-efficacy concept into field of computers, and they defined it as the "judgment regarding the individual's skill of using computers". In addition, many studies focused on the relationship between self-efficacy with respect to using computers and a variety of computer behaviors (Hill, Smith, & Mann, 1987; Webster & Martocchio, 1992; 1993).

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The studies conducted on computer self-efficacy perception show that the individuals with high computer self-efficacy are more willing to participate in computer related activities (Usluel & Seferoğlu, 2003). Furthermore, the individuals having high perception of computer self-efficacy resist to technological developments less and adapt to technological developments more quickly than the individuals having low perception of computer self-efficacy. An important aspect of computer self-efficacy is that it affects individuals' interests, their use of computers and their interaction with computers (Gürcan, 2005). Educational institutions, which take the responsibility of raising individuals that fit the human profile required by the society, are expected to raise individuals that can reach information, use technology and learn on their own (Akkoyunlu & Kurbanoglu, 2003). It is aimed to make education widespread and increase its quality in our country as the period of study was changed into 4+4+4. For that purpose, information technology classrooms were established in at least two schools in every province and district (Milli Eğitim bakanlığı [MEB], 2008). It is stated that eleven millions of these students are computer and internet users. To raise individuals with this quality lays serious responsibilities on the educational institutions. Therefore, it has become necessary for the educational institutions to arrange the learning environments of the students in accordance with existing conditions. In this regard, to determine secondary school students' computer self-efficacy holds importance since it contributes in determining whether or not the educational institutions succeed in fulfilling the responsibility that they took.

When the studies conducted on computer self-efficacy were examined, it was observed that the majority of these studies focused on prospective teachers (Akkoyunlu & Kurbanoglu, 2003; Aşkar & Umay, 2001; Gürcan, 2005; Özden, Aktay, Yılmaz, & Özdemir, 2007), and then, the studies on teachers were conducted (Akkoyunlu & Kurbanoglu, 2004; Seferoğlu & Akbıyık, 2005). However, not many studies on students were encountered (Ekici & Uzun, 2008; Işıksal & Aşkar, 2003). Thus, to determine secondary school students' computer self-efficacy will be significant for taking the necessary precautions for the students of lower educational levels before they enroll higher education institutions.

### *1.1. Purpose*

The aim of this study is to determine 5<sup>th</sup>, 6<sup>th</sup>, 7<sup>th</sup>, and 8<sup>th</sup> grade students' perceptions of computer self-efficacy and to examine these perceptions in terms of gender and class level variables.

## **2. Method**

### *2.1 Research Model*

This research was conducted using the survey model. Survey model is to try to describe a previous or existing situation the way that it is or it was (Karasar, 2011). Thus, it was considered appropriate to use the survey model in determining secondary school students' perceptions of computer self-efficacy in terms of gender and class level variables.

### *2.2 Sample*

The study sample consists of 302 students who study in a secondary school located in a province of South Eastern Anatolia Region in the 2012-2013 academic years.

## **3. Data Collection Tool**

### *3.1 Computer Self-Efficacy Scale*

Computer Self-Efficacy Scale, which was developed by Işıksal and Aşkar (2003), was used in the study in order to determine secondary school students' perceptions of computer self-efficacy. The scale is of 5-point

Likert type and contains 10 items. The scale is composed of two dimensions, namely as general information on computers and special computer skills. Cronbach's alpha value was calculated as 0.86 for the overall scale. Cronbach's alpha reliability coefficient, which was calculated for the reliability of measurements, was found as 0.86 in this study.

#### 4. Data Analysis

The items in the computer self-efficacy scale were graded from 5 to 1 ranging from "Completely Agree" category to "Completely Disagree" category. The lowest possible score is 10 and the highest possible score is 50 in the scale. If the score obtained in the perception scale ranges from 10 to 18, it corresponds to "Completely Disagree" category; it corresponds to "Disagree" category if the score ranges from 19 to 26; it corresponds to "Undecided" category if the score ranges from 27 to 33; it corresponds to "Agree" category if the score ranges from 34 to 42; and it corresponds to "Completely Agree" category if the score ranges from 43 to 50. SPSS 16.0 program was used in analysing the obtained data. Arithmetic mean and standard deviations were calculated in terms of variables and they were analysed using t-test, one-way analysis of variance and LSD test.

#### 5. Findings

The data obtained in the study, which was conducted in order to examine the level of secondary school students' perceptions of computer self-efficacy and whether or not there was a difference among their perceptions of computer self-efficacy in terms of gender and class variables, was presented as tables. The equality of variances belonging to the designated groups were tested with Levene's test, and it was presented that the variances were homogeneous.

**Table 1**

	<b>N</b>	<b>Min</b>	<b>Max</b>	<b>Mean</b>	<b>sd</b>
<i>Perception Scores on Computer Self-Efficacy</i>	302	11	50	39.77	6.77

*Distribution of Secondary School Students' Perception Scores on Computer Self-Efficacy*

As seen in Table 1, students' average perception score on computer self-efficacy is 39.77. Standard deviation is 6.77. The highest perception score is 50 whereas the lowest perception score is 11. Students' perception of computer self-efficacy is at a "good" level ( $\bar{x}=39.77$ ). In view of these values, secondary school students' perceptions of computer self-efficacy correspond to "Agree" category. This finding shows that the secondary school students' perceptions of computer self-efficacy are positive and they are self-confident. Independent t-test was conducted on the scores obtained from the scale in order to determine whether or not secondary school students' average perception scores on computer self-efficacy differed in terms of gender. The results were given in Table 2.

Variable	Gender	N	$\bar{X}$	sd	df	t	p
<i>Perception Scores on Computer Self-Efficacy</i>	Female	142	39.54	7.09	300	1.27	.563
	Male	160	39.99	6.48			

**Table 2**

*Independent t-Test Results of Students' Perception Scores on Computer Self-Efficacy in Terms of Gender*

As seen in Table 2, average perception scores of female students and male students on computer self-efficacy are 39.54 and 39.99 respectively. In the conducted t-test, it was observed that the perception scores of male students on computer self-efficacy were a little higher than those of female students. However, no significant difference was found between scores of female students and male students on computer self-efficacy [ $t_{(300)}=1.27, p>.05$ ].

This finding shows that secondary school students' perceptions of computer self-efficacy did not change in terms of gender. The data obtained from secondary school students' computer self-efficacy scale was analysed in terms of their class levels. The results were given in Table 3.

**Table 3**

*Distribution of Students' Perception Scores on Computer Self-Efficacy in Terms of Their Class Levels*

Variable	Grades	N	$\bar{X}$	sd	Std. error of Mean	Min.	Max.
<i>Perception Scores on Computer Self-Efficacy</i>	5 <sup>th</sup> grade	97	39.09	6.81	.692	14	50
	6 <sup>th</sup> grade	77	38.58	7.55	.861	11	50
	7 <sup>th</sup> grade	67	41.88	6.14	.750	26	50
	8 <sup>th</sup> grade	61	40.05	5.88	.753	27	50
	Total	302	40.98	6.44	.465	17	50

Levene Test  $F= .672, sd= 298, p=.570$

Whether or not the average differences among students' perception scores on computer self-efficacy were significant were analysed with One-Way analysis of variance. The results are given in Table 4. It was observed that there was a significant difference among computer self-efficacy perception scores of the groups that were formed in accordance with class levels ( $F_{(3-298)}=3.391, p<.01$ ).

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**Table 4**

*ANOVA Results Regarding the Significance of the Difference Among Students' Perception Scores on Computer Self-Efficacy in Terms of Class Levels*

	Average	Sum of Squares	df	Mean Square	F	Sig.
The average of Perception Scores on Computer Self-Efficacy	Between Groups	455.925	3	151.975	3.391*	.018
	Within Groups	1335.763	298	44.815		
	Total	1381.689	301			

\*  $p < .01$

LSD test was conducted in order to find the source of this difference. According to LSD test, it was observed that there is a significant difference in favor of 7<sup>th</sup> grade students in their average perception scores on computer self-efficacy when compared to 5<sup>th</sup> and 6<sup>th</sup> grade students. However, no significant difference was observed between 8<sup>th</sup> grade students and 5<sup>th</sup>, 6<sup>th</sup> and 7<sup>th</sup> grade students (Table 5).

**Table.5**

*Tukey HSD Results Regarding the Significance of the Difference Among Students' Perception Scores on Computer Self-Efficacy in Terms of Class Levels*

Grade I	Grade J	Mean Difference (I-J)	Std. Error	Sig.
5 <sup>th</sup> grade	6 <sup>th</sup> grade	.508	1.022	.619
	7 <sup>th</sup> grade	-2.788*	1.063	.009
	8 <sup>th</sup> grade	-.956	1.094	.383
6 <sup>th</sup> grade	5 <sup>th</sup> grade	-.508	1.022	.619
	7 <sup>th</sup> grade	-3.296*	1.118	.003
	8 <sup>th</sup> grade	-1.465	1.147	.203
7 <sup>th</sup> grade	5 <sup>th</sup> grade	2.788*	1.063	.009
	6 <sup>th</sup> grade	3.296*	1,118	.003
	8 <sup>th</sup> grade	1.831	1.185	.123
8 <sup>th</sup> grade	5 <sup>th</sup> grade	.956	1.094	.383
	6 <sup>th</sup> grade	1.465	1.147	.203
	7 <sup>th</sup> grade	-1.831	1.185	.123

\* The mean difference is significant at the 0.05 level.

## 6. Conclusion and Discussion

In this study, it was determined that secondary school students' perceptions of computer self-efficacy were at a "good" level. This condition signifies that the students consider themselves adequate in terms of computers. It can be stated the fact that the Ministry of National Education established computer laboratories in schools was effective in the emergence of this result. However, in their study, Ekici and Uzun (2008) argue that the students' perception scores on computer self-efficacy are at a "medium" level and that they do not have self-efficacy in using computers. The results obtained in the study do not show parallelism with the result of the study of Ekici and Uzun. In view of the study, it was observed that the perception scores of male students on computer self-efficacy were a little higher than those of female students. However, no significant difference was found between students' perception scores on computer self-efficacy and their genders. This result of the study shows parallelism with the results obtained by (Özden et al., 2007; Seferoğlu, 2005; Torkzadeh, Pflughoeft, & Hall, 1999) in their studies. Apart from this, in some researches, it was found that there was a significant difference in favor of male students among computer self-efficacy of female students and male students (Ekici & Uzun, 2008; Işıksal & Aşkar, 2003; Miura, 1987). In his meta-analysis study, Whitley (1997) examined 82 studies. In his study, he states that male students are more adequate than female students in computer technologies. The results of that study contradict with the result of this study. This condition can be explained as the fact that gender is not an effective factor on perceptions of computer self-efficacy. Another results obtained from the study is that there is a significant difference among secondary school students' perception scores on computer self-efficacy in terms of their class levels. This result coincides with the result obtained from the study of Ekici and Uzun (2008). Similarly, Torkzadeh, Pflughoeft, and Hall (1999) stated that students' beliefs of computer self-efficacy increase during their education. Therefore, contribution must be made for the improvement of low-level students' computer self-efficacy by organizing computer activities also in other disciplines of elementary programs apart from computer courses in computer laboratories.

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## Experience And Existence Revisited Something Essential On A Philosophical Education In Film Art

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### Abstract

The film, the living imagery, traces out its legend before the eyes of the viewer seated there in the darkened space, and in his consciousness becomes a lived spectacle, an interiorised impress of experience. It takes up its abode in him and he falls in step with its movement, merging with the stream of its narrative. In this there evolves an aesthetic-existential situation – of one, many; of one, a qualitative multiplicity is born, and with it the experienced essence of the unique, the inimitable.

On this same, the critic pronounces judgement – as often as not his verdict – on this spectacle which he – and another – has beheld; that individual, original experience is thus now couched in words, petrified on paper. Whose judgement is the right one? whose wrong? Who is entitled, who in duty bound to pronounce a final word on this? Who or what can speak as if for a collective audience? And who then is being silenced, who makes himself heard? And if in this some faceless, nameless nobody is to be imagined viewing, experiencing the scene, then who – or what – has played the decoy, and who has been bamboozled? And what of the film itself – is there anything left of it?

Something of the essence must indeed be said by way of inculcating a more philosophical appreciation of film. Or does even this carry in it a seed of that same totalisation, a burgeoning aspiration to erase whatever is unique? He who reads will know, will feel it.

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*Keywords:* Aesthetic situation; aesthetic experience; media philosophy; media critics; self-illumination.

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## 1. Opening: A Memory

”This story is not true. This is no lie. This is a tale.” (See for example Ahonen, 2000, p. 16.) Thus “writes” the Finnish film director Markku Pölönen in the opening moments of his “Badding”. I am sitting in the Fantasia cinema in Jyväskylä and I am trembling: all within me is music, my consciousness ablaze. Before my eyes something unfolds which I have never seen before. I have now a model for the language in which experience of the world – the vortex of existence, the maelstrom of being – can be described. The subjective quality of an experience can never be rendered truly intersubjective – all talk of commonality of experience is sheer nonsense. Nor is the ‘we’ form ever to be defended in phenomenological philosophy – at least not ontologically. The notion of lived language, of the primacy of the mother tongue, is the poetry of being: a unique prospect onto the existential milieu. The possibility that it can never be verified is ever present; existence is always prior to essence. Being is and endures, the living creature vanishes – is that ontological difference by any measure linguistic? (See especially Itkonen, 2001; 2004a; 2010; 2011.)

## 2. Words of Experience

One often hears of someone being overtaken by an access of ecstasy which he refers to as an aesthetic experience. The philosopher Roman Ingarden, however, would see the matter otherwise; for him an aesthetic experience is not a momentary onset of pleasure or displeasure born as a reaction or response to some object of perception – a lake view, say, and the beholding of it. An aesthetic experience is rather a combinative process involving a diversity of phases and a characteristic development of heterogeneous elements. The duration and complexity of this sequence depends of course upon whether the experiencing subject is confronted with a complex or a simple aesthetic object. Sometimes a shade of colour or a quality of sound suffices in itself to evoke such a response; yet even though the passage of the aesthetic experience may be equally fleeting, it is for all that no momentary “fit”. (See esp. Ingarden, 1961, p. 295; Itkonen, 2004b; 2004c; 2005b.)

The aesthetic situation consists in two basic elements: (1) the formal structure of the (artistic) object, and (2) the subjective consciousness of the observer. The conjunction of these, their coincidence, gives rise to an

aesthetic constellation. Subjective awareness constitutes a new kind of reality which is not to be reduced to any one of its components. Each such element acquires a new identity in the aesthetic process. How does this take place? In what sense? (See Mitias, 1986, p. 164.)

By way of an answer here I would propose the following:

(1) Prior to experience of it the artistic nature of, for example, some artefact – the totality of its aesthetic qualities – is not given as a ready content. The composite of its properties subsists rather as a possibility awaiting realisation. It is as it were incumbent upon the observer to actualise – to bring to life – this artistic potential.

(2) Furthermore, prior to the envisaged experience the observer's consciousness is – in general – undefined. It too exists as a potential capacity for the intuition of meaning. Consciousness is actualised – that is, becomes active awareness – only in the apperception of some object. The peculiar nature of that awareness – what consciousness is at that given moment – is determined by the nature of the object perceived. What is accessible to understanding in it is interpreted in consciousness as a living content which has meaning. In the aesthetic situation perception and object, as a work of art, are fused in a separate, private reality. This individuality is defined on the one hand in terms of the characteristic properties of the object, on the other by the observer's profundity, sensitivity and personal propensities. In short, the aesthetic situation subsists in the living stream of aesthetic experience. (See *op.cit.*, pp. 164-165; see also Dufrenne, 1979; Itkonen, 1999b; 2009; 2012.)

Once again I visit the Fantasia cinema – Saturday December 12<sup>th</sup>, 2002. The previous day the film “Frida” had had its premiere. The modern virtuality might have provided me with advance information – address «[www.miramax.com/frida](http://www.miramax.com/frida)», «[www.fridamovie.com](http://www.fridamovie.com)» and «[www.egmont-entertainment.fi](http://www.egmont-entertainment.fi)», only I preferred to avoid being trapped into conceptualised, petrified experience. All that was in my mind at that moment was what the film advertisements had conveyed – Salma Hayek-Frida Kahlo and red, colour redolent of life. The rest awaited realisation, the possibility as yet un-lived.

At least two desiderata might of course be envisaged as some sort of yardstick of genuinity, some experiential guarantee; loss of awareness of being a spectator and surrender to the narrative stream, participation in the process of creation. Now the lights go out, the adventure begins.

### 3. Words of Being

#### 3.1. Fragments of media reality

There are positive and there are negative values. Criticism awards its object some mark, some grade. For whom in fact are such pronouncements written? Is there, always and everywhere, some identifiable average spectator – myself, for example? So who am I? A faceless nobody, just any Tom, Dick or Harry? That I refuse to be – I want more than simply to be, I want an active part in things.

Now what is needed is a seed-bed, a linguified substrate in which existential words of being can be set. A polyphonic media reality must be devised in which a diversity of voices make themselves heard simultaneously, yet distinct, each for itself.

Let the chorus of critics be heard.

The paper *Aamulehti*: “When Rivera conquers New York, Frida sees her husband as King Kong and the reflection of a skyscraper as her own leg. Taymor fuses the best of theatrical effect with cinematographic thinking, making of the experience of seeing Frida a fascinating mystery. [...] The aesthetic of the film is reinforced as it were surreptitiously by the eruptive ethnic music at the hands of genuine interpreters.” (Välinoro, 2002, p. B 29.)

*Demi*: “The epochs in Frida Kahlo’s life are presented through the medium of electronic animations and pastiches which look like newspaper cuttings. By her own unusual narrative means Taymor succeeds in penetrating deep into the main character’s life-course. [...] The spectator is drawn into the tale of this woman avid for life and is released only with the film’s closing text.”

(Paavolainen, 2002, p. 80.)

*Ilta-lehti*: “This biographical film, focusing as it does on entertaining romance, is enlivened by the beautiful trickery with Frida’s paintings. The works come to life, and in one old photograph collage the living images of Frida and Diego are humoristically inserted by manipulation. Equally admirable is the placing of the couple within the film “King Kong”, in which Diego is of course given the role of the giant ape. Such pictorial play is something we could have more of.” (Kangassalo, 2002, p. 26.)

*Ilta-Sanomat*: “As a production American but filmed mainly in Mexico, “Frida” is a remarkable combination of the superficial allure of Hollywood entertainment and the serious poetry of the European art film. [...] Taymor and Hayek content themselves with recounting the most familiar elements in Kahlo’s life without being able to introduce a viewpoint of their own. Following the film is like flipping through a well-thumbed picture-book: there’s that scene, this is where this or that person comes into the picture...” (Poussu, 2002, p. 30.)

*In*: “With its technical innovations and excellent acting performances the film offers a basic course for anyone concerned to learn something of Kahlo. In all its plenitude of colour the portrait constitutes a work of its own, something different from the usual stolid “likeness”.” (Häkli, 2002, p. 80.)

*Katso*: “The tale of this fascinating artist is nevertheless reduced to banality by the people about her. All of this woman’s agonies and afflictions are obscured behind her various relationships; her fate is defined above all by love, jealousy and the men in her life.” (Laurila, 2002, p. 24.)

*Keskisuomalainen*: “The actress in the main role, Salma Hayek, was also co-producer of the film. She aspires to the fullest possible empathy with Frida and seeks thus to bring her close to the viewer. Against the background of her own career such an undertaking is of course an enormous step forward, but Kahlo’s emotionality and feverish passion, her dignity and her deeply agonising soul place an unmistakable strain on the resources available to the traditional actor.” (Valkola, 2002, p. 21.)

*Nyt*: “The acting in the film is uneven. Salma Hayek does her utmost in the formidable role of Frida, but leaves the impression of a very beautiful model girl who has indeed talent, only not enough. There is something almost

inane in the way we are first told of the numerous serious operations Kahlo underwent, then confronted with Hayek's perfect body bearing one carefully made-up scar." (Avola, 2002, p. 47; see also Ahonen, 2003, p. 17.)

*Savon Sanomat*: "The part of Kahlo is played by the shapely Mexican ex-soap opera star Salma Hayek, who also produced the film. Her Frida is a beautiful and courageous, politically and sexually revolutionary woman. She has relationships with women as with men – among these the Russian Lev Trotsky – and downs tequila after tequila into the small hours." (SS, 2002, p. 23; see also Jäntti, 2002, p. 8; Niemi, 2003, p. 4.)

*Suur-Jyväskylän Lehti*: "The film "Frida" is like a photograph album which offers snapshots of the culminating points in its subjects' lives. The essentials are recounted impressively and entertainingly, but anyone looking for fuller enlightenment and analysis would do better to visit a library." (Pynnönen, 2003, p. 17; see also Pentikäinen, 2003, p. 84.)

*Tv-maailma*: "Over the years many have aspired to this role; among them Madonna and Jennifer Lopez have been eager to trick themselves out in Frida Kahlo's exotic garb. [...] The film does not perhaps move in the true depths of human agony but must nonetheless take its place as one of the most sensual experiences of the year. Taymor directs courageously and trusts in an interestingly oblique mode of conception which the puritans of the film world will hardly find attractive." (Lindqvist, 2002, p. 70.)

### 3.2. Existential self-appraisal

Questing now after the nature of openness – the unconcealed, *alêtheia*. At the same time I would also assess the concept of freedom in terms of an indwelling luminescence. In a word, I shall take a step towards the radiance of our being in this world and lay myself open to the revealing power of an existential exercise in the expression of being. (See e.g. Heidegger, 1992a, pp. 148-149; Kockelmans, 1984, pp. 9-10; of Heidegger studies also Itkonen 2005a; Lehtinen, 2002; Passinmäki, 1997; Varto, 1993.)

I shall adopt an evaluative approach and take up a discourse with both the text and myself and my experience of this film. The following counterpointed monologue – alternating between self-appraisal and existential contemplation – draws upon a lived poetics derived from a notion of filmaticity experienced in corporeal terms.

I may avail myself here of the philosopher Martin Heidegger's lecture 'Der Begriff der Zeit' (1924), where he analyses the temporality and the basic structures of Dasein – being-in-the-world. The interpretations are my own, drawing upon the German and English edition. Let this exercise in self-illumination then commence.

*Existential a:* Dasein – being-here – entails the entity definable as being-in-the-world; in-der-Welt-sein. Human life does not constitute a subject's performing some trick or other in order to gain a place in the world. Being-here, being-in-the-world, is to be conceived of as 'having-to-do-with-the-world', being involved in it; dwelling in it, having being in its bosom, concomitant with it, doing and accomplishing, bringing to completion – but also as contemplation, questioning and defining as is the customary procedure in deliberation and analysis. Characteristic of our being-in-the-world, so conceived, is Sorge, concern.

*Counterpoint a:* For the sake of clarity – in a spirit of reader-friendly concern – it is perhaps appropriate first to elucidate Heidegger's terms. With 'existential', namely, he envisages some kind of essence or apodictic nature of being on whose basis or in whose medium each of us experiences the world in absolutely unique terms. (See also Van Manen, 1990, pp. 101-105.)

Then a number of items to do with the film: (1) title: Frida, (2) direction: Julie Taymor, and (3) the cast: Salma Hayek – Frida Kahlo; Alfred Molina – Diego Rivera; Geoffrey Rush – Lev Trotsky.

The critic writing for the Helsingin Sanomat extra is male, Pertti Avola. This one could assume from the very content of the review. Mr Avola would not appear to have the least concern for his own competence in the business of being-in-the-world; he scarcely pauses that long in it – has no time for existence as contemplation of it. He apparently sees in Salma Hayek nothing beyond a Latino entity capable of presenting herself as a figure of beauty, the quality of her Dasein being defined in advance – a model girl out of whom no magician could conjure

up anything like a convincing Frida Kahlo. One is indeed left with the impression that in the existential sense Hayek and Kahlo are as far removed from each other as it is possible to be; their respective worlds would never attain to the goal of mutual interaction.

Avola would seem to be anxious to put the finishing touches to his definitive version, to establish his kingdom of critique as expeditiously as possible. He apparently sees himself, along with the paper he writes for, as a representative of the whole of masculine Finland. As if one is supposed to regard Salma Hayek's body as perfect on the sole merit of a fulsome bosom – or by merit of what? Hayek as Frida Kahlo has in her being anguish and the passion of living flesh. My own concern is for Avola's arrogant incapacity for self-appraisal, his complete lack of – or neglect of – the dimension of questioning in our being. True Dasein entails a retreat which lets things be – in this case a humility before the experience of a film; it means seeing Salma Hayek in the unique essence of her own existence. Perhaps then the cosmetic scar on her body would not adequately represent the entire masculine burden of the apperception of her.

*Existential b:* At the same time as Dasein consist in being in a locative sense, it is also a Mit-einander-sein – being with others, sharing, possessing a common world. It means encountering others, each meeting each in confluent lives, living as if one for the other. Yet this being-here in this way is at the same time being present to others – being there like a stone which lacks a world and lacks concern for it.

*Counterpoint b:* The reviewer in Katso, this time a woman, would appear to have completely overlooked the element of coexistence essential to our being in this world. In her critique I find neither myself nor my experience of the film – evidently I do not possess a world in common with Johanna Laurila. The account of the artist's life is in no way banalised – Hayek gives living and moving expression to the being of Frida Kahlo in all her pain, her loves and her disappointments.

What we see here is a failure to encounter, a failure on many levels; both Hayek's role figure and the real reader or viewer lie beyond Laurila's reach. This was surely not the main objective of the paper she writes for. I am made to feel as if as a man I exist as a mere presence, an external shell devoid of inwardness; as if I lacked completely all living experience of the world. What is Laurila the critic aspiring to accomplish with this

technique of jellification or petrification? She lacks all awareness of the need to be for others. I fail to see what critiques such as this are for – unless to turn the male viewer to stone.

*Existential c:* Being together with others in the world, possessing this world as a being-together is a unique ontological choice. The world's basic mode of Dasein – possessing the world here, Dahaben – each with the other – is a conversation. In the last analysis conversation, dialogue, entails one subject addressing another directly, genuinely, sincerely. For the greater part being-in-the-world consists in precisely this – something which Aristotle was well aware of. And while being here in one's world speaks of one's way of having dealings with that world, "keeping company with it", the function of self-analysis – Selbst-auslegung – is also given. This function evinces the way Dasein explicitly – as appropriate precisely to itself – understands itself, how it conceives itself. In speaking one to another – in what is unfolded in that process – resides the actual self-interpretation of the present moment. This, this presence, preserves itself, abides, in such dialogue.

*Counterpart c:* The critiques in *Ilta-Sanomat* and *In* would seem for all their differences to emanate from some kind of kinship of spirit – is this in consequence of, or by merit of, the superficiality of the forum and the male gender of the writer? If the basic mode of dwelling in the world is speech, the use of words should involve a certain seriousness lived in the flesh, a sincerity of intent, of ideation. If such a precept were observed, the viewer or the reader would never be quite simply taken for granted – words must always be addressed to somebody, or conversely, each party should find in those words something of himself. This requires of the critic a profound existential self-understanding, an 'I' apperception; he must be able to answer the questions of being: Who am I? How do I exist and why? First, of course, he must learn to ask himself these questions.

A reasonable measure of self-insight in a critic would indeed entail a conception of being-for-others, a realised idea of the self in the role of an interpreter for others. The allusions of Tarmo Poussu of *Ilta-Sanomat* to the superficial attractions of Hollywood entertainment may be seen to contain a certain unwitting (self)-irony; on the other hand the observation on the poetic quality of the European art film prompts the reader, too, to a re-appraisal of his own prior conceptions. The same may be said of the critic Vesa Häkli in the magazine *In*, referring as he does to the divergences from mere likeness in the portrait. The result is the emergence of an original interpretation illuminated by a genuine inwardness.

In the passage immediately following that alluded to, however, Poussu shatters the illusion of depth of insight, and I heave a sigh of relief: “There you are, I knew Ilta-Sanomat is hardly likely to come up with anything truly profound!”

The film contains nothing one could predict – at least nothing I could have predicted. Does that make me a cultural vacuum who knows less than (even) the critic? And are technical insights also something beyond my grasp?

A bout of feverish self-searching has brought me to the following conclusions: “As a viewer prepared to let things be I must indeed strive to encounter the film as a boundless void – apprehending it without the eye of petrified foreknowledge. This is precisely what the filmatic unravelling of the experience entails.” One must be momentarily present in the dialogue between oneself and one’s fellow-beings.

*Existential d:* Dasein means a being which crystallises itself in the property ‘I am’. The particularity, the specificity of this element is essential to our being-here. While Dasein consists primarily in being in this world, it also comprises *my* being here. It is, in every discrete case, of itself and precisely its own. If this being is to be defined as to its ontological quality, then there must be no abstraction, no separation of its particularity as in every given instance explicitly mine. *Mea res agitur* – I am all that in which I have a part in myself at this precise moment of my being. Every basic quality must thus make for confluence in particularity – and this every given case – as my own.

*Counterpoint d:* How does Jarmo Valkola of Keski-Suomalainen justify his claim that Salma Hayek’s performance in her role fails to fulfil the requirement of an ‘I am’ quality? How can a critic see into the core of Frida Kahlo’s being-in-the-world? Whose existence is in fact involved here? How am I supposed to accept the insolence of someone who takes it upon himself to do my thinking for me?

I do concede that as co-producer of the film Salma Hayek has been in a position to expand her territory somewhat more than is usually possible; for all that, I see no problem here, rather the contrary. As I sat there in

the Fantasia cinema, losing awareness of myself and my surroundings, the distance between me and Hayek-Kahlo also disappeared; for a moment we were one and the same being, living through the same experience, loving and deeply suffering. I could no longer have said whose particular existence this was. *Mea res agitur* – I was all that Hayek-Kahlo's intense nature possessed of its own existence. I was part of the yearning spirituality the film exuded. Hayek-Kahlo took up her abode in me, and I in her. Is it possible to bring Frida any closer to a viewer than this?

Clearly it is not. In the particularity of that moment of being-in-the-film we became one; I ceased to exist as my ordinary everyday self. After such an experience all humming and hawing about whether Hayek succeeded or not seems utterly fatuous. Even with the actor's traditional means the realities may be transcended – only the blasé critic seems to have forgotten this.

*Existential e*: Insofar as Dasein entails the existing entity which I am, and at the same time is defined as a being-together one with another, then I myself am for the most part not – not even on the average – my own Dasein. It is precisely those others who constitute my being-here. I am with them, just as they in turn are with yet others. No one of us in his Alltäglichkeit – his everyday existence – is his own self. What anyone is, and the way he is, is 'niemand' – nobody; nobody, and yet everybody, anybody at all – 'das Man'. We have this and that to say, we listen, we are on this or that side, we are concerned for something or other, and in the persistent primacy of the 'anybody' lie the potentialities of my being-here. On precisely this basis, this road laid down, the 'I am' element is possible. The entity which entails the possibility of that specifically personal dimension is as such for the most part the entity which means everyone, anyone at all.

*Counterpoint e*: Savon Sanomat purchased its text from – ultimately – Reuters. As neither the name nor the gender of the writer is given, the "entity" which confronts me constitutes no actual presence; by the same token the being of the writer entails no communality with any fellow-being, since the writer is here represented by the text and the forum it appears in, the paper Savon Sanomat. The being of such an entity can mean anything and everything I choose to read into it. One might perhaps imagine that this mundane being has become part of my everyday – in which case one must ask who of us is the original Mister Nobody.

All the writer brings out in Salma Hayek comprises two completely trivial attributes: her ample bosom and her former connections with the world of kitsch. At the same time, it would seem, I myself as a putative male reader am damned forever to masculine nonentity. I need no name, certainly no face. In that capacity of a mere cipher no-one can exist as his own self. Here I am something in the passive form, ever lost, lost over and over. As to Frida Kahlo's life the reader is treated to the odd allusion to her beauty, her (supposed) bisexuality and her (manly?) prowess in downing tequilas far into the night. Not a hint of her Schopenhauerian will or her interest in Hegel's philosophy. Why not? The answer surely lies once more in the fact that I, as an assumed male reader, am being treated as some sort of masculine nobody; the possibility of my being an 'I' is either deliberately – consciously – or unwittingly – thoughtlessly – relegated to oblivion. Any and every male 'I' is presumably regarded as a thing quite self-evident; know any one of them and you know the lot. In this same context, however, there would obtain a manifest potential for the attainment of selfhood; the subject, personal, bearing a name, might breathe life into himself, in which case the text should convey something of Kahlo's artistic and philosophical deliberations rather than her dallies with Lev Trotsky. Who knows, that might entail making an entirely different film.

*Existential f.* A being in his particular everyday existence means – so conceived – something for which that existence is meaningful, important. As any talk of the world involves a direct expression of being-here – for example the evocation of a quality apperceived – so too all concerned intercourse entails concern for the existence of our being-here. Up to a point I am that which I am concerned with – that is, what I work with and what my profession involves me with; and it is in precisely these contexts that my being-in-the-world proceeds. Concern for Dasein has in each and every particular case placed being “in care” – being as we know it, as something familiar and understood in the prevailing construal of it.

*Counterpoint f.* The papers Aamulehti, Demi and Iltalehti may well be regarded as mutually very different publications. The first-mentioned doubtless considers itself the most objective of the three – this in spite of its conspicuously Rightist past. Of the critics in question only the one writing for this same paper is a woman – Anne Välinoro. Nonetheless all three reviews are akin in that the notion of the specificity of being is conserved as something of significance. The dialogue the text conducts with reader and role figure clearly reflects a concern for the possibility of being-in-the-world to constitute a unique existence – in other words a concern that the critic writing, myself the reader, and Hayek-Kahlo be each permitted to evince – be enticed into manifesting – their own peculiar quality of being. At the same time the narrative filmaticity of the work comes into its own. Of

particular merit in these reviews – and particularly thought-provoking – are the observations on pictorial manipulation and the symbolic intertextuality of the King Kong elements.

The writers succeed in establishing themselves in their own particular contexts; they are reviewers recounting for intelligent readers their own thoughts on phenomena they have encountered. In this way I too as reader may at least partly exist in my own right, as my own actual self. The text, too, speaks of the same film I went to see – I recognise that film in those texts, I recognise myself in them, and I recognise Hayek-Kahlo in all her profound experience of life. The concern for my being-in-the-world unfolds in the familiarity of the interpretation the reviewers convey, in the tactful deference with which the reader is here addressed.

The trio includes the teenage magazine *Demi* and the reputedly superficial *Iltalehti*. Am I surprised? Indeed I am. Perhaps this was a much-needed lesson – perhaps I may someday rid myself of that generalising tendency which evidently mars my thinking. True, the critic Olli Kangassalo does toss me one morsel of consolation in once getting his spelling wrong – at least that was as I had expected.

*Existential g*: In the average of everyday being there is, there dwells, no reflection of the ego or the self; nonetheless Dasein possesses a selfhood. It finds itself alongside its own self, as something existing concomitant with it. Dasein encounters itself in everything with which it is in any way involved.

*Counterpoint g*: The critic Tuomas Pynnönen writes for the *Suur-Jyväskylä Lehti*, a free-distribution weekly appearing for some decades now. The critique in this case bears the stamp of its forum's own mode of being-in-the-world; unreflective mediocrity. The writing finds itself in a coexistence with the affairs of its home town and satellite conurbations, mirroring in miniature the whole reality of its existence. The film review itself indeed resembles a photograph album of its own being and non-being. I too as reader am realised in it once more as a faceless man-in-the-street. The quester after more profound material will do better to look elsewhere. Perhaps nevertheless honesty is a positive element; the paper takes up its place in the world as precisely what, at bottom, it is – what more can one require?

*Existential h:* Being-here cannot be proved to be an existing entity; it cannot even be demonstrated. The original primary relationship to Dasein is not of an inquiring nature, not contemplative; it is 'es sein' – mere being. Experience of the self, like speaking of the self, interpreting the self, comprises but one particular form of it in which Dasein possesses itself in any and every given case. In the general run of things Dasein is a mundane affair marked by the quotidian humdrum traditionally referred to as human life – the tradition of Everyman. (See on all the above existentials Heidegger, 1992b, pp. 7-9.)

*Counterpart h:* Antti Lindqvist writes for the Tv-maailma which appears with Suomen Kuvalehti. Why such a context? Is it that it constitutes a part of, an adjunct to that all-encompassing 86-year-old fatherland fixation? Is the world of TV equally dominated by that ubiquitous heritage of anonymity?

It may be that the history alluded to, a kind of experiential memory trace, is not amenable to demonstration or proof. What if that is indeed the intention; one is supposed to be no more than an extension of, an increment to a given line of historical development by being explicitly what one ought to be. No reflection or self-scrutiny. Any contemplative experience of the self or talk of such belongs elsewhere; existence in the world is existence as given.

Lindqvist writes of the aspirations of Madonna and Jennifer Lopez to doll themselves up as Frida Kahlo. One is left with the impression that Salma Hayek is just one more of the same bunch of superficial, talentless dilettante actresses; it behoves them to confine their interest to clothes – the deep waters of anguish lie beyond their scope. How far is the reader assumed to attain in such ramifications of thought; at least there is no call to explain to him the interesting obliqueness of the producer's conceptions. As to evidence of sensuality, a mere mention of the names of well-known and proclaimed sex symbols will surely suffice – this is how it has always been, it is already tradition.

Here the critic's arrogance would appear to reach its zenith; the writing makes of Hayek-Kahlo and of me the reader a foreknown nameless nonentity. Is this modus operandi, too, a part of human life? Apparently I do not belong among the crypto-puritans of the film world. Perhaps, however, I need have no fear on this score. I am but

one emanation in the endless series of average readers or viewers, part of the common run of everyday experience. With this I must content myself; the male critic Antti Lindqvist has spoken.

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#### 4. Close: Waiting

In the context of aesthetics one also frequently speaks of empathy (for a more detailed analysis see e.g. Itkonen, 1999a; 2002a; Stein). Wilhelm Dilthey also writes of this “feeling oneself into things”. In his view it is in this foundation in transference, transposition, that the highest form of understanding – that in which the life of the mind is totally engaged – takes its origin. What this in fact entails is re-creation, re-living. Understanding as such proceeds converse to the actual order of events. Full empathy, in contrast, is bound up with a mode of understanding which follows events as they evolve – it falls in step with life, and precisely thus opens up, expands. The process of re-experiencing follows the sequence of events unfolding, and we evolve as the given span of history plays itself out, in tandem, as it were, with the mental processes of our fellow-men or with the events themselves as they transpire. This process of experiencing anew comes to fulness when events are sifted in the consciousness of the poet or painter and confront us in a static, enduring artefact. (See Dilthey, 1986, p. 159.) Analysis of this calls for great precision and profundity.

“After that night their paths converged almost every evening, and the summer played itself out before they knew it” – thus Onni Halla in his first novel ‘Mustat loimet’ (p. 15) from the year 1925. In their joint dedication work *Tulenkantajat* Lauri Viljanen writes of this piece by his contemporary and co-publisher: “This elegantly written little tale is anything but a detached account of a people; it is throughout a prose poem pervaded by subjective lyricism.” (Viljanen, 1926, p. 61.) I share Professor Viljanen’s view; the passage from Halla’s work comprises a poetic depiction of being, of dwelling within a moment, at its very core. The significance of that existential participation one recognises only when one has lost it. What we see here is a filmatic attitude which lets be, which preserves the momentary experience ever in the raw; a capacity to encounter the world ever new, in all its freshness. Only in this way can the aesthetic situation endure and the film assume the actuality of its own being-in-the-world. (On the critique of criticism, metacriticism and philosophical education in film see esp. Itkonen, 2002c, pp. 33-34.)

The truth is nonetheless brutal. Thursday January 9<sup>th</sup>, 2003 is – or was – ladies’ day in all Finnkino cinemas; simply because they are women ‘Frida’ (and ‘My Big Fat Greek Wedding’) are open to them at a lower price than what I have to pay to see them. Is the film in its actual, its true being feminine? And I, simply because I am a

man, incapable of appreciating it? Who decided this for me as well without as much as by your leave? Is the whole of reality divided by sex at the decree of Finnino? Where did I get lost? Or did somebody lose me?

### **5. Supplement: Poetic Film or Filmatic Poem?**

25.7.2003

The heartland of Finland

high-summer green.

Sun blazing down –

yet a hint of dusk descending;

the nightless night bends its step to the dark.

A night at the films.

I take my place and scan

the print-out in my hand:

«[www.farfromheavenmovie.com](http://www.farfromheavenmovie.com)»

Julianne Moore in a headscarf stares back.

The lights are dimmed

and the paper image comes to life.

Colours smouldering red.

The landscape seems to weep

last glow of setting sun.

We are in the fifties,  
the days of MegaTech TV,  
the multimedia age;  
all seems so innocent –  
sinless virtuality?  
Or poetic fake-real –  
where real people still dwell,  
living, experiencing in the flesh?

Far from Heaven?  
Far from the everyday,  
or close to the earth, the ground of being?  
The lights go up.  
I leave – it is already dark.  
The green is gone:  
before me the gaudy neon ads.  
I am close to the earth  
and far from heaven.  
Yet I am.

Translated by Robert MacGilleon

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# Exploring the impact of diversity-infused content and structural diversity on students' attitudes towards marginalized groups

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## Abstract

This paper contemplates the outcomes of exploratory research on the impact of diversity-infused content on students' attitudes towards marginalized groups. The research revealed low levels of intolerance among students in both structurally diverse and structurally non-diverse groups. The results suggest that transformative change among students is likely to occur over the longer term. Future research with the same cohort will explore the longer term aspects of transformative learning.

Keywords: sociology, structural diversity; diversity-infused content, attitude change

## 1. Introduction

Research indicates that educators, especially those concerned with issues related to diversity, human rights, and social justice, often have faith in the transformative nature of their educational efforts (Stamp, 2001; Westerman & Huey, 2012). Educators across discipline areas often assume that including diversity-infused content in courses will lead to a reduction in measured prejudice among participants in such courses. Some studies have indicated that classroom education about minority groups can reduce prejudicial attitudes in students (Harris, 2003; Kernahan & Davis, 2007). In order to test this assertion, Hussey, Fleck, and Warner (2010) undertook a quasi-experimental study at the University of New Hampshire to measure changes in students' attitudes toward a number of different minority groups. In their study the authors compared, via pre and post-test data, changes in attitudes in two different first year Psychology courses over one term: one that included diversity content and one that did not. Their research revealed a reduction in levels of prejudice among the students exposed to diversity-infused course materials and methods.

Hussey et al.'s study was conceptually replicated in the current study to test attitude change among first year Sociology students in two different institutions: one that is structurally diverse and one that is not. Educators often also assume that students in more structurally diverse classrooms and institutions will be more open to challenging prejudices and confronting stereotypes because they are exposed to members of social groups that are dissimilar from their own. Studies have demonstrated that structural diversity has positive effects on student attitudes (Kowalski, 2000). However, other research indicates that contact with minority groups is not enough (Gurin, Dey, Gurin, & Hurtado, 2003). Therefore, structural diversity in combination with diversity infused course content may have a great impact on student attitudes toward minority groups.

For the purposes of the research, *diversity* is defined as variance and a range in characteristics including race, social class, ethnicity, sexual orientation, ability, religion, etc. within a particular group, population, or setting (Banks, 2002, as cited in

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Hussey et al., 2010). A *structurally diverse* institution is deemed to represent such variety. *Diversity-infused* modules or courses involve course content and pedagogy that are more inclusive of traditionally marginalized groups. The level of inclusion of diversity issues used by the instructor on the project is referred to by Hussey et al. (2010) as the transformation approach, in which the instructor “offer[s] each course topic through multiple, non-dominant perspectives. Teaching methods and materials foster understanding and tolerance of other cultures as well as critical evaluation of monocultural perspectives” (p. 86). For example, students in the current study explored topics such as racism, sexism, and classism by analysing statistics and research studies that challenge prejudices and encourage students to view the world from the perspective of members of marginalized groups. Video excerpts were also used to introduce narratives from members of marginalized groups.

It was expected that students in the diversity-infused learning condition would see a greater reduction in intolerance compared to those in the non-diversity infused learning condition. It was also expected that participants from a structurally diverse institution would experience less of an impact from diversity-infused teachings compared to an institution that is less diverse.

## 2. Procedures

The current study was a quasi-experimental design that tested the impact of diversity-infused course content on student attitudes by systematically measuring and comparing attitude changes toward minority groups in post-secondary students. Participants were either exposed to diversity-infused modules in a first year Sociology course, or not exposed to diversity-infused modules in a non-Sociology course. Participants from two different institutions were used, allowing the comparison of two student populations: one that is structurally diverse (a college in a major metropolitan area in Canada) and one that is not structurally diverse (a university in small city in the United Kingdom). The dominant culture in both societies is white British.

Data collection occurred in the first and last weeks of classes at both institutions. Both institutions' semesters lasted 15 weeks. Courses were chosen on the basis of the first year status of the course. Therefore, the most important issue with regard to the sample is that the students had little to no experience in Sociology prior to taking the courses under study, which can be assumed, although not guaranteed, by the choice of an introductory course. While factors such as age may have an impact on student attitudes, these factors cannot easily be controlled for under the circumstances (i.e. instructors do not normally have control over who enrolls in a first year course based on demographic factors).

The *Intolerant Schema Measure (ISM)* (Aosved, Long, & Voller, 2009) was used to collect data on student attitudes towards minority groups in all four conditions. The 54-item ISM is a measure of intolerance toward six constructs, and is a reliable scale (Cronbach's alpha = .96). Demographic data were collected in order to analyse whether differences in age, gender, etc. have an impact on attitude change in either or both institutions.

## 3. Results

### 3.1 Participants

A total of 58 participants from the structurally diverse institution and 81 participants from the non-diverse institution took part in this study. As seen in Table 1, participants in both samples were relatively the same age, and had roughly the same breakdown of gender (there were more females in both samples). The structurally diverse sample had a wider variety of self-identified ethnicities. Note that the table below only displays 65% of that diverse sample; the other participants' ethnicities were quite varied. In both samples, participants were primarily single or not in a relationship. In both groups, over 90% of the participants had no children.

In the diverse group, most participants identified as not being a member of a religious group (34.5%), while 22.4% identified as Christian, 13.8% identified as Catholic, and 10.3% identified as Sikh. About 40% noted rarely attending any religious services, but over half of the participants occasionally or often attended religious services. In the non-diverse group, most (37%) identified themselves as Christian, 14.8% noted no religious affiliation, 9.9% identified as Catholic, and 7.4% identified with the Church of England. However, over half noted rarely attending any religious services.

There was a significant difference in occupation categories between the two institutions,  $\chi^2(6, n = 116) = 36.88, p = .000$ , Cramér's  $V = .56$ . The diverse group had more participants in higher ranked positions. Most of the participants in the non-

diverse group were not employed outside the home (25.9%), followed by a skilled manual worker (14.8%) and causal or lowest grade worker (12.3%). In the diverse group, the most frequently identified occupations were both intermediate managerial, administrative or professional work (22.4%) and skilled manual worker (22.4%), followed by higher managerial, administrative or professional work (19%). None of the participants in the diverse group reported themselves as unemployed.

Table 1. Demographic Information

Diverse Group (n =58)				Non-Diverse Group (n = 81)			
Age	M = 22.2	SD = 8.1		Age	M = 23.4	SD = 8.5	
	n	%			n	%	
Gender				Gender			
Male	17	29.3%		Male	17	21.0%	
Female	40	69.0%		Female	64	79.0%	
Ethnicity				Ethnicity			
Caucasian-Canadian	15	25.9%		White	35	43.2%	
Chinese	7	12.1%		White British	19	23.5%	
Indo-Canadian	4	6.9%		British	10	12.3%	
Asian	3	5.2%					
Canadian	3	5.2%					
Filipino	3	5.2%					
Indian	3	5.2%					

### 3.2 Overall ISM Scores

The overall ISM scores for all participants show relatively low levels of intolerance, with average scores around 2 out of a scale of 5 (with 5 being the highest level of intolerance). For all participants, a paired samples t-test showed no significant changes were detected in the overall ISM scores, although the averages did actually increase somewhat in both conditions from the start to the end of the term. Furthermore, there was no significant difference in the pre-semester ISM scores between the diverse group (M = 1.89) and the non-diverse group (M = 1.84). This was also true for the post-semester ISM scores; there was no significant difference in the post-semester ISM scores between the diverse group (M = 1.91) and the non-diverse group (M = 1.90) (See Table 2).

Table 2. ISM Means and Standard Deviations for all participants (n = 139)

	Structurally Diverse		Non-Diverse		p-value
	Mean	SD	Mean	SD	
Pre-ISM	1.89	0.48	1.84	0.49	ns
Post-ISM	1.91	0.57	1.90	0.55	ns

ns= not significant

Again, for both institutions, the experimental condition received diversity infused content, and the control condition did not. Within the structurally diverse institution, there was no significant difference between in the ISM means between the control group and the experimental group at the start of the semester, or at the end of the semester. No significant changes were identified in either condition from the start to the end of the semester, although the diversity infused content course did see a decrease in ISM scores (See Figure 1).

The same comparisons were made within the non-diverse institution. Similar to the structurally diverse institution, there were no significant changes found from the start of the semester to the end of the semester for either type of learning environment (diversity infused vs. not) for overall ISM score (See Figure 2.).

Figure 1. Overall ISM Means for Structurally Diverse Group (n = 58)

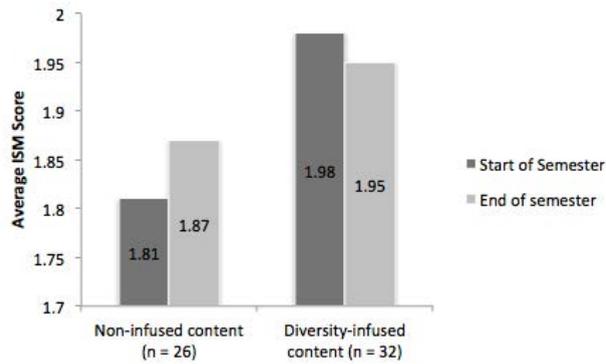
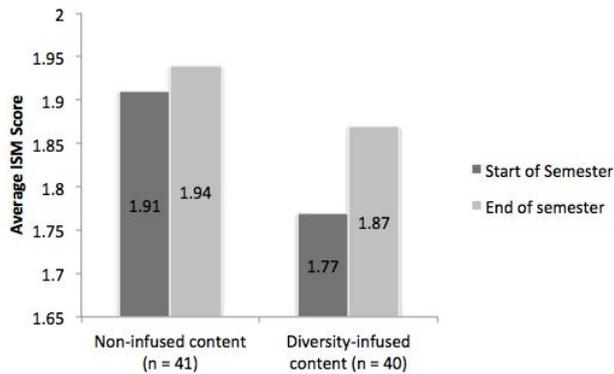


Figure 2. Overall ISM Means for Non-Diverse Group (n = 81)



### 3.3 ISM Subscale Findings

The ISM is composed of six subscales, of nine items each, covering the following issues: sexism, racism, sexual prejudice, ageism, classism, and religious intolerance. Again, scores range from 1 to 5, with 5 being the most intolerant. There were no significant differences found between the two institutions in their subscale scores, either at the start of the semester or at the end of semester.

In the structurally diverse institution, there were no significant changes from the start of the semester to the end of the semester in any of the subscales for all 58 participants. (See Table 3.) Within this group, the two conditions (i.e. experimental, receiving diversity infused content, and control, not receiving diversity infused treatment) were compared. A chi-square test revealed significantly more females in the control condition.  $\chi^2(1, n = 57) = 4.763, p = .029$ . At the start of the semester, the 32 participants in the experimental condition were significantly more sexist ( $M = 1.71$ ) than the 26 participants in the control condition ( $M = 1.43$ ),  $t(56) = -2.11, p = .039$ . This significant difference did not appear at the post-test, suggesting the groups had more similarity in responses by the end of the semester. The only significant difference between males and females was found in the control condition: males were significantly more sexist at the start of the semester ( $M = 1.78$ ) compared to females at the start of the semester ( $M = 1.36$ ),  $t(24) = 2.14, p = .043$ . Interestingly, this significant difference did not exist at the end of semester, and this was due to increased variability in responses to items measuring sexism by both males and females at the end of the semester.

Table 3. Subscale ISM Means and Standard Deviations for Structurally Diverse Group (n = 58)

	Pre-scores		Post-scores		p-value
	Mean	SD	Mean	SD	
Sexism	1.58	0.53	1.62	0.65	<i>ns</i>
Racism	1.92	0.64	1.89	0.62	<i>ns</i>
Sexual Prejudice	1.84	0.80	1.85	0.87	<i>ns</i>
Ageism	1.68	0.49	1.65	0.58	<i>ns</i>
Classism	2.37	0.69	2.37	0.80	<i>ns</i>
Religious Intolerance	2.00	0.59	2.09	0.69	<i>ns</i>

*ns* = not significant

In the non-diverse group, there were significant changes for all 81 participants in three of the subscales from the start of the semester to the end of the semester. Measures of sexism, racism, and religious intolerance all significantly increased by the end of the semester, but with small effect sizes (see Table 4). Within this institution, the experimental condition participants were significantly older ( $M = 26.31$ ) than the control condition participants ( $M = 20.68$ ),  $t(78) = -3.103, p = .003$ . At the start of the semester, the control participants were significantly more intolerant of lower class ( $M = 2.72$ ) compared to those who were exposed to diversity content ( $M = 2.36$ ),  $t(79) = 2.517, p = .014$ . This difference was not significant at the end of semester, suggesting greater similarity in classist beliefs between the two learning conditions. Additionally, within the control condition, the subscale of racism was found to increase significantly from the start of the semester ( $M = 1.78$ ) to the end of the semester ( $M = 1.98$ ),  $t(40) = 2.309, p = .026$ . There were no other significant differences or changes between the two conditions.

Table 4. Subscale ISM Means and Standard Deviations for Non-Diverse Group (n = 81)

	Pre-scores		Post-scores		p-value	d
	Mean	SD	Mean	SD		
Sexism	1.43	0.53	1.62	0.69	$p = .001$	0.40
Racism	1.73	0.62	1.88	0.69	$p = .013$	0.28
Sexual Prejudice	1.73	0.84	1.71	0.75	<i>ns</i>	
Ageism	1.52	0.55	1.50	0.50	<i>ns</i>	
Classism	2.54	0.68	2.47	0.81	<i>ns</i>	
Religious Intolerance	2.08	0.67	2.22	0.71	$p = .030$	0.25

*ns* = not significant

d = effect size: |0.2| = small, |0.5| = medium, |0.8| = large

In both institutions, classism had the highest scores of all subscales. These values did not significantly change from the start to the end of the semester for either type of institution.

At the non-diverse institution, participants in the experimental condition were involved in a focus group after the semester was over. Discussion with the course instructor revealed information that was helpful to interpreting results (see Section 4.2 below).

#### 4. Discussion

##### 4.1 Current Study

The results of this study suggest that diversity infused content, whether delivered in a structurally diverse setting or not, had little effect over changing levels of tolerance toward minority groups over the period of one semester. Overall, levels of intolerance, as measured by the Intolerant Schema Measure, did not significantly decrease at either institution. The overall ISM values for both groups were fairly low, indicating low levels of intolerance in both groups. This may be a factor in the results that suggest little change. Participants were arguably not intolerant to begin with, so it is possible that their opinions of minority groups overall were unlikely to experience significant change toward more acceptance. There was a slight and non-significant drop in the overall ISM scores in the structurally diverse experimental group; however, this change is too small to support the notion that the content of the Sociology course had a direct impact on the ISM score.

However, the expectation that the structurally diverse student population would not be impacted as much by diversity-infused content compared the non-diverse institution was supported. The changes in this non-diverse institution were greater, although not in the anticipated direction.

The subscale information is potentially more interesting. Both groups were least tolerant of lower classes, suggesting that classism is a particular area of interest when building diversity-infused course materials. This is especially true given the significant differences in occupation of the participants between institutions. While there were no significant changes in the ISM subscale scores in the diverse group from the beginning to the end of the term, the scores on three of the subscales increased in the non-diverse group over the course of the term, indicating a rise in intolerance. This may represent some

resistance to the information on the part of the students of the non-diverse group, although only the experimental group was exposed to explicitly diversity-infused material. The work of authors such as Lake and Rittschof (2010) demonstrates that some students exhibit resistance and show signs of becoming more deeply entrenched in their intolerant attitudes when exposed to diversity-infused content. The ISM scale used for this study tested students' attitudes to marginalized groups only, and not their reflections on the learning experience in the course, so we cannot say with certainty that the increased intolerance scores are related to course content.

Further, there appears to be a gendered dimension to this resistance, with males being less open to diversity than females (see Pascarella et al., 1996). Both Hussey et al.'s (2010) research and the current study showed higher levels of sexism in males in some groups. Whitt et al.'s (2001) longitudinal study of undergraduates through 3 years of college also noted that male students tended to be less open to diversity and challenge than female students, suggesting that "a higher average level of openness to diversity among peers [may have] created a threatening climate for men who, in response, clung to behaviours and ideas that felt comfortable" (p. 196). Directly challenging student's beliefs under the wrong circumstances may cause students to disengage from the course; Bowman and Brandenberger (2012) noted that the level and form of the challenges presented to the student should be appropriate to the student's level of experience with diversity. Lake and Rittschof (2012) suggest that the reasons for students' resistance should be explored in order to improve diversity education. They also suggest that consistent attitude change and increased empathy for others among students result from a) direct challenges to misinformation about groups through b) the use of personal narratives in a c) non-threatening classroom environment. These suggestions will inform the pedagogical choices made in the future. While providing a safe space of discussion and challenging misinformation about marginalized groups is central to the content of the Sociology course, further efforts to engage students with personal narratives could enhance the structure of the course in the future.

#### *4.2 From Attitude Change to Transformative Learning*

The scale of this study was small and its purpose exploratory. Furthermore, the sample sizes for these two groups are not large, and may not be representative of both institutional populations. There are limitations with generalizing beyond these samples. Rather than making generalizations, the authors' thoughts on the study for purposes of moving this research forward are below.

Our study seems to indicate that simple exposure to structural diversity does not guarantee lowered intolerance (see also Gurin et al., 2003), nor does it support the notion that major attitude change is likely to occur over one single course. Learning and change regarding attitudes towards those different from ourselves may not happen as a single "a-ha" moment, nor over the process of a single course. Rather, it is more likely that such changes occur as part of the process of growth, maturity, and knowledge development that evolve over several years of post-secondary education. As a result of our preliminary research, we have chosen to explore this longer-term learning. We are particularly interested in transformative learning, as defined by Mezirow (1997): "the process of effecting change in a frame of reference...when circumstances permit, transformative learners move toward a frame of reference that is more inclusive, discriminating, self-reflective, and integrative of experience" (p. 5). Mezirow argues that transformative learning is central to adult education as it aids the individual in becoming an autonomous thinker. The teacher/facilitator models critical reflection and openness to diversity for the learners, rather than simply focusing on being a content expert or authority figure.

Facilitating openness to diversity and critical reflection can be encouraged through unexpected encounters related to diverse groups of people. Such encounters can challenge the individual's belief system and belief challenge is associated with attitude change (Bowman & Brandenberger, 2012). This type of encounter is referred to in Mezirow's work on transformative learning as a "disorienting dilemma" or an experience that does not fit with an individual's previous belief or value system. According to Brock's (2010) research, the most prevalent precursor step to transformative learning was a disorienting dilemma. The disorienting dilemma can set a student on a path to critical reflection, self-evaluation, and new

patterns of thinking and acting. The process of transformative learning is not communicated by the teacher and absorbed by the student: it is an active process in which the student encounters a situation that challenges him/her and causes him/her to become dissatisfied with his/her value system and then critically reflect upon it. Personal narratives can be used to engender the experience of a disorienting dilemma, as illustrated by Lake and Rittschof (2012).

Brock's (2010) research supports the notion that discussing a disorienting dilemma with peers contributes to the critical reflection that is central to the transformative learning process. The dissatisfaction and will to change resulting from a disorienting dilemma can be reinforced by interactions with peers who also share the dissatisfaction. The importance of peer interaction is reinforced in several studies on the longer-term transformation of students with regard to issues of diversity and social justice. Whitt et al. demonstrate that students who converse with one another about personal and cultural differences and controversial subjects, such as social problems, tend to become more open to diversity over the course of their college experience (2001). Interactions that challenge previously held ideas and beliefs were associated with an increase in openness to diversity and challenge. Pascarella et al.'s study of transformative change over the first year of college also demonstrates that "the more students interact with diverse peers and the greater the extent to which such interactions focus on controversial or value-laden issues that may engender a change in perspective or opinion, the greater one's development of openness to diversity and challenge" (1996, p. 188).

Preliminary interviews with members of the non-diverse experimental group cohort at the end of the second year of their program revealed that discussing controversial issues with their peers, both inside and outside of the classroom, was a key element in their learning. Participants generally agreed that a significant impact of participating in the program was becoming more open minded, as well as considering the opinions of others and why they are held. Considering the opinions of others is part of the maturation process and contributes to transformative learning. The participants noted the importance of interactions with other members of their cohort in their development of self-confidence and critical thinking about social problems, because many different and controversial topics were discussed with peers with various opinions. For example, one student interviewed at the end of the second year her program described the influence of peer-group discussions on her own evolving learning process: "I think that is the biggest thing for me and I think it has come from learning more about the different [marginalized] groups [through lectures] because obviously that then gives me the information to form an opinion but also meeting all these different people who have their own opinions." When asked which aspect of her program thus far had the most influence on her learning process, the same participant replied "Talking to peers, definitely. Because we get the information from the lectures but it's through the discussions that we have, in person, on Facebook, through confrontations with each other, through talking to each other, that has given me more of a sense of understanding".

Although transformative learning may be a process that takes several years to develop, factors that may contribute to openness to diversity and difference could be introduced in individual classes in order to support the transformative learning process. As Brock notes, "in looking back over a semester, learners can be surprised that life lessons have been learned. Sharing these with classmates can cement this change and stimulate others to see the world in a new way" (2010, p. 137). Providing experiences that may contribute to the development of a disorienting dilemma in the form of personal narratives, films, guest speakers, or other methods of exposing students to belief challenge seems central to the development of transformative learning. Coupling such experiences with exercises in which students interact with one another can also contribute to the process. Encouraging students to share their perspectives on controversial topics in a safe environment can help them to appreciate different perspectives. Discussing beliefs, disorienting dilemmas, and belief change with peers can encourage critical reflection.

## **5. Conclusion**

The data provided in the first phase of the project do not support the notion that structural diversity contributes significantly to lower levels of intolerance in post-secondary Sociology students. Attitudes towards marginalized groups may

be less likely to change significantly over a single term. The findings, however, have alerted the researchers to several areas that might require special attention in future teaching and to developing the conditions necessary to limit resistance to diversity information. This study highlights the advantage of following students through a multi-year program in order to examine transformative learning.

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4<sup>th</sup> International Conference on New Horizons in Education

## E-Accessibility for Students with Visual Impairment at Universities in Czech and Slovak Republic

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### Abstract

Presented paper is aimed at the area of e-Accessibility which is an integral part of the involvement in modern educational platforms in university environments. The theoretical basis of e-Accessibility in the Czech and Slovak Republic is defined in the context of applicable legal norms. Results of research focused on e-Accessibility in both countries showed that only one third of the universities in Czech and only one fifth of the universities in Slovak Republic meet requirements on e-Accessibility. In the conclusions authors present recommendations for more effective elimination of the discrimination of the students with visual impairment at universities.

*Keywords:* e-Accessibility; Student with Visual Impairment; University

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## 1. E-Accessibility

The term “e-Accessibility” (also used as “*eAccessibility*”) is directly linked to the term “*accessibility*”, which according to Špinar (2004) represents a condition when a given matter presents its users with no significant obstacle in use. An accessible building, for example, can be visited by people in wheelchair and an accessible electronic environment by the people without visual perception. Accessible in the given concept means barrier-free access. Letter “e” signifies the aspect of accessibility of the wide range of electronic processes for individual with disabilities. The term e-Accessibility can be classified and can have various levels defined accordingly as “the extent to which information is available” (Ho, 2004, p. 85). The state of the matter is not static; in contrary it is rather dynamic in nature, because electronic environment is subjected to the development and continuous change.

The character of accessible electronic information respects the specific limitations of persons with visual impairment. The term “accessibility”, in the context of electronic information, is most frequently related to the internet, especially to web browsing and to working with electronic documents in various formats, such as web pages and text files (txt, html), text documents (odt, doc, docx, rtf), spreadsheets (ods, xls, xlsx) and PDF files. The contents, functions, services or possibly the individual elements of electronic documents should be accessible to the largest possible range of users, regardless of age, health impairment, or technical limitations at the user-end (Regec, 2010b).

In presented paper we use the term “*e-Accessibility*” in context of visual impairment, which determines the students in the area of inclusion to the electronic environment of university.

## 2. E-Accessibility in the context of visual impairment

E-Accessibility for the students with visual impairment is “a fundamental requirement to allow for participation, independence and inclusion” (Miesenberger, Corradi, Mele; 2012, p. 197). In this context, we agree with Sopczyk & Viggiani’s definition of a visual impairment “as some form and degree of visual difficulty which includes a wide spectrum ranging from partial vision to total blindness” (2011, p. 343). Categories used to describe students with visual impairment in the educational environment are according to Pierangelo & Guiliani (2007) “partially sighted, low vision, legally blind and totally blind” (p. 331). Access to electronic educational environment is generally through a graphical user interface and therefore not easily accessible to legally blind and totally blind users (Hersh & Johnson, 2008). Appropriate means of processing and converting to audio or tactile form is essential for these students (Finková, 2012). For individuals with low vision or partially sighted is e-Accessibility primarily focused at appropriate adjustment of visual representation of information (contrast, text style, text size, ease of navigation etc.). Assistive technology (e.g. screen reader software, screen magnifier software) is fairly well developed, but can only be used if “documents are appropriately designed” (ibid, p. 386).

Finková, Regec & Růžičková (2012) defined following basic rules for creating the accessible electronic documents:

- Text information in a document is provided as a text (not in a graphical form).
- All “non-text” elements (e.g. pictures, animations, photographs) are provided with text equivalent.
- A document does not provide such information that its comprehension would require correct color perception.
- Text information is provided with adequate contrasts.
- Document structure is semantically organized and correctly described (especially headings, lists etc.).
- Font size and typeface used are defined in accordance with the requirements of an individual with visual impairment.
- Tables are readable and understandable even in linear arrangement.

### 3. E-Accessibility in the realm of Czech republic

Fulfillment of the national plan for equal opportunities for citizens with health impairment included stipulating the conditions for publishing information on public administration in an accessible form. This was carried out in the form of rules compiled in accordance with Act No. 365/2000 Coll., on public administration information systems and on change of other selected laws, with the last amendment to the Act amended by Act No. 81/2006 Coll. Information pertaining to the issue of accessibility from the aspects of individuals with visual impairment is specifically stipulated in the legal rules (public notice) as well as in the relevant guideline. The quoted public notice No. 64/2008 Coll. currently includes 33 mandatory and conditionally mandatory rules (the original number of rules was 37), divided into six logical units:

- 1) A website content must be accessible and readable.
- 2) Working with a website is controlled by its user.
- 3) Information must be comprehensible and transparent.
- 4) Controlling a website must be clear and comprehensible.
- 5) The code must be technically competent and structured.
- 6) Website accessibility declaration.

Individual rules were created according to Blind Friendly Web materials “Documentation of websites accessibility principles for users with severe visual impairment” and the set of rules Web Content Accessibility Guidelines 1.0 from 1999, as well as new aspects concerning accessibility from Web Content Accessibility Guidelines 2.0 (Finková, Regec & Růžičková, 2012).

In accordance with § 21 Section 1, Act No. 111/1998 on Higher Education Institutions and on the amendment and supplement to some other Acts (The Higher Education Act) a public higher education institution is obliged to make all possible provisions for ensuring equal opportunities for study at the higher education institution” (under letter e). The code however does not specify extent of these provisions nor other, more detailed circumstances in the electronic environment. In this context, it is important to point out also § 62 which states that a student has the right to “use equipment and information technology required to study in a degree program in accordance with the rules established by the university.” (Section 1, letter g). Moreover Act No. 198/2009 on Equal Treatment and Legal Protection Against Discrimination (Anti-discrimination Act) in § 2 states that “direct discrimination is understood as means of such conduct, including omissions thereof, where one person is treated less favorably, than other person is, used to be treated or would be treated in a comparable situation because of race, ethnicity, nationality, gender, sexual orientation, age, disability, religion, faith or belief” (Section 3). In addition to the above we must note that legal framework still does not guarantee that the level of e-Accessibility at universities in the Czech Republic and is, or will become satisfactory.

In research conducted in 2012-2013 focused on visually impaired students in the realm of Palacký University Olomouc, for 25 % of the websites belonging to individual departments and institutes the determined level of accessibility was “very low” (Rezek, 2013). Author (ibid) further notes that for another 25 % of departments the determined level of accessibility was “lowered” or “low”. The findings showed that overall half of the departments (respondents) had a major barrier for people with visual impairment in their electronic environment and only one fifth of workplaces has reached a high level of accessibility.

Our pilot research conducted during May 2013 on 21 main web portals of public and private universities did not produce positive results about the overall level of e-Accessibility. Evaluation was conducted manually on title pages and on other publicly accessible content including electronic documents, forms, tables etc.

As a background for quantification of the overall accessibility level we used calculation model developed by Regec (Regec, 2008; Regec, 2010a; Regec 2012).

The following table and chart present overview of the results based on the achieved levels of e-Accessibility.

Table 1. Distribution of e-Accessibility levels of universities' web portals in 2013 in the Czech Republic.

Level of e-Accessibility	<i>Absolute frequency</i>	<i>Relative frequency in percentage</i>
Fully accessible	1	4.76
Good	6	28.57
Insufficient	10	47.62
Poor	3	14.29
Not accessible	1	4.76

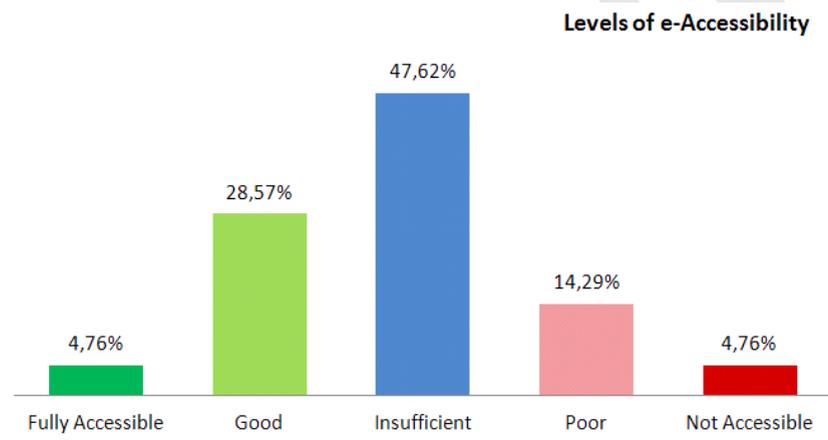


Fig. 1. Chart depicting the distribution of universities' web portals e-Accessibility levels in 2013 in the Czech Republic.

The results show that only one third of the universities' main portals does not contain any substantial barriers in e-Accessibility (presented as the levels "Fully accessible" and "Good"). On the other side about one fifth of the portals (19 %) have real deficiencies that directly worsen access to the electronic information or make it totally inaccessible for the visitors with visual impairment (presented as the levels "Poor" and "Not accessible"). The remaining 50 % of web sites technically violates multiple accessibility rules, these violations however do not have any serious impact on the real level of e-Accessibility for the visually impaired user.

On the account of the presented results it must be noted that within this pilot study we have evaluated only publicly accessible information on the universities' main portals. E-Accessibility levels thus do not reflect accessibility of other web publishing systems utilized at individual faculties and departments, learning management systems, academic information systems etc.

#### 4. E-Accessibility in the realm of Slovak republic

The first binding code that determined compulsory requirements for accessibility was the Act No. 275/2006 Coll. on Public Administration Information Systems. Edict No. 1706/M-2006 defined requirements for e-Accessibility of public administration. As compulsory requirements for accessibility we listed selected WCAG 1.0 guidelines (Web Content Accessibility Guidelines 1.0) and Blind Friendly Web 2.3 guidelines. Currently in force is the Edict No 312/2010 Coll. on standards for public administration information systems, which lists compulsory requirements under § 14 "Accessibility of web sites". More detailed information on accessibility including practical examples to this legal norm is published in a document named "Methodology to Edict No. 312/2010". Similarly to the Czech Republic, also Slovakia has enacted anti-discriminatory legislation which is also applicable in the area of e-Accessibility. Act no. 365/2004 Coll. on Equal Treatment in Certain Areas and Protection Against Discrimination, and on amending and supplementing certain other laws as amended (Antidiscrimination Act) states in § 2a, that discrimination due to "disability shall also mean the discrimination due to a previous health impediment or the discrimination of a person in the event in which based on external signs of a person it would be possible to presume that the person has a disability" (Section 11). Furthermore, in the same context Act no. 131/2002 Coll. on Universities and on the amendment of certain acts as amended, in § 100 "The support of students with disability" states that: "Within the scope of its abilities university provides special support during university studies to the students with disability." In view of the provisions "within the scope of its abilities", a support system in practice is not clearly defined.

In an extensive research during the years 2007-2009 (Regec, 2010a), author came to the conclusion that only 3 out of 34 universities could be, based on the evaluated areas in the electronic environment, evaluated as highly accessible to the visually impaired persons. In contrast, electronic environment with low and very low level of accessibility was recorded in 15 (44 %) of universities (ibid.). Especially alarming was the accessibility level of the most frequently used Academic Information System, then used by over half of the subjected universities. The determined level was at very low level of accessibility. Practical implications of this were that student with visual impairment could not, without the help of an assistant, enroll in a new school term, look up his schedule, grades, sign-up for exams etc. Among other problems identified by Regec (ibid.) were also electronic study texts and other compulsory materials inaccessible to the visually impaired students or published in the form not suitable for conversion to the format accessible by the supportive technologies such as text magnifiers and screen readers.

Even worse than the results in the Czech Republic were the outcomes of the pilot study on e-Accessibility conducted in Slovakia in 2013 on 13 universities. Even though when compared to the research done in 2009 (Regec, 2010a) there is a relative 10 % decrease in the number of web sites in the "Not accessible" category, they still compose unacceptable 14 %. Only one fifth of evaluated main portals achieved "Good" level of accessibility while not even one could be considered as "Fully accessible" (Table 2).

Table 2. Distribution of e-Accessibility levels of universities' web portals in 2013 in the Slovak Republic.

Level of e-Accessibility	Absolute frequency	Relative frequency in percentage
Fully accessible	0	0.00
Good	3	21.43
Insufficient	5	35.71
Poor	4	28.57
Not accessible	2	14.29

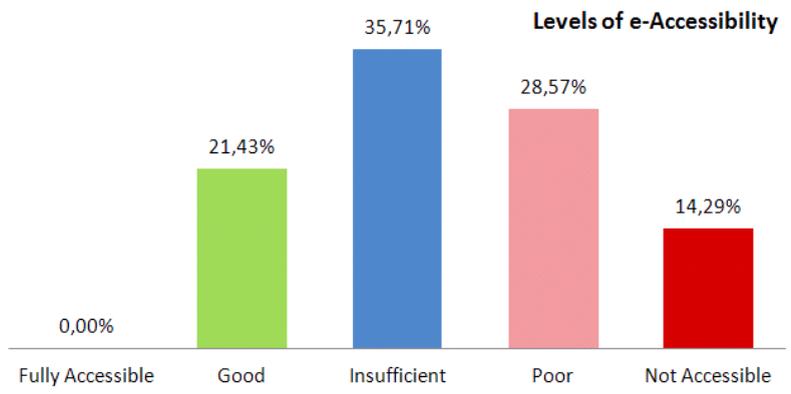


Fig. 2. Chart depicting the distribution of universities' web portals e-Accessibility levels in 2013 in the Slovak Republic.

## 5. Recommendations

**Re-evaluate current approaches and politics in the field of implementation and use of information technologies at universities.** Explicitly and clearly define universities' obligation to provide electronic information to students with visual and other disabilities in an accessible form through the adoption of legal standard that will be in accordance with international standards and directives of the European Commission.

**Increase competencies of faculty staff in the field of information technologies in order to support creation of accessible digital content.** Provide orientation and training for the faculty members responsible for the creation and development of online digital content focused on e-Accessibility best practices. Also include IT staff, special-needs educators and other related personnel in these trainings. We presume that accessibility issues are an integral part of multiple scientific fields and calls for interdisciplinary collaboration.

**Analyze e-Accessibility at universities and remove identified deficiencies and barriers.** Accessibility of electronic information is a complex phenomenon that must be addressed at multiple levels. From decision makers selecting the next publishing or information system, to personnel responsible for implementation, external providers and own IT managers, people responsible for content down to the individual contributors – to a various degree all these people must be informed about the importance of e-Accessibility and way how to achieve or to maintain it.

**Guide university students with visual impairment to achieve full autonomy when using information technologies.** Because accessible electronic environment means a great potential for improvement of the conditions in which individuals with visual impairment learn, as well as the whole process of their socialization,

it is necessary to look for the solutions that do not needlessly create barriers that would increase reliance of persons with disabilities on their surroundings.

## 6. Conclusion

In the inclusive environment principles of different approach to intact and visually impaired must not be applied. It is unacceptable for a student or other person (applicant for admission, school employee etc.) with visual impairment not to be able to fully participate in all electronic processes at the same level as another intact person in the same situation. Differentiating schools to those that take the needs of visually impaired students into account and those which do not, opposes legal standards and principles of modern education. Similarly it is incorrect to argue that university should undertake inclusive measures only upon the admission of visually impaired student, because mechanisms as e-Accessibility should be an integral part thereof.

In conclusion, we agree with the statement by Cattani (2003) on describing the basic premises of society, which transforms theoretical conditions for inclusion into reality by the means of effective measures. Cattani states that it should be a primary interest for a political system to include persons with disabilities rather than to exclude them. He points out that even though in our society there are many legal norms dealing with improving conditions of persons with disabilities, binding formulations are often changed into words like “may” and thus in interpretation and practical level they create rather moral than legal standards.

We consider it very important that the issue of e-Accessibility should not be focused at the affected individual alone or at the university department assisting with special needs. Inclusive model of university education requires mechanism of effective measures to be part of the entire education platform.

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#### **Legal standards**

Act No. 365/2000 Coll., on public administration information systems and on change of other selected laws.

Act No. 111/1998 on Higher Education Institutions and on the amendment and supplement to some other Acts (The Higher Education Act).

Act No. 198/2009 on Equal Treatment and Legal Protection Against Discrimination (Anti-discrimination Act).

Act No. 275/2006 Coll. on Public Administration Information Systems.

Act no. 365/2004 Coll. on Equal Treatment in Certain Areas and Protection against Discrimination, and on amending and supplementing certain other laws as amended (Antidiscrimination Act).

Edict No 312/2010 Coll. on standards for public administration information systems.

4<sup>th</sup> International Conference on New Horizons in Education

## Facebook literacy in education

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### Abstract

Recently there have been lots of development in technology. These developments create a base of information society. Especially social networks are one of the stone that help to create a base of information society. Facebook is widely used in the present century. The aim of this study to investigate the students' levels of literacy Facebook through the gender, class, having computer, how many hours spending on computers, having access internet, how many hours spending on internet, the purpose of using internet, which devices use to accessing internet, member a social network, which social networks member, how many hours spending on social networks variables. As a result of this study there have been a significant in the variable of "which social network are you member" in Facebook and Google plus and also "how many hours spending on social networks". SPSS 20 was used to analyze the data.

Keywords: Information society, Facebook, Information literacy.

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## 1. INTRODUCTION

In the information society, in parallel with the development of technology concepts have gained size. The development of technology in the information society has also changed the desired features of individuals. Information society, individuals seeking knowledge, information, classify, has features that can store and evaluate appropriate environment (Numanoğlu, 1999). Information literate individual, it is necessary in the face of ever-increasing and changing information, classification of information, analysis and synthesis can be done. According to Gündüz ve Odabaşı (2004), people in the information society, knowledge of who knows how to have access to necessary information and can use the new information is required to be capable of producing individuals. Which has become the building blocks of modern society, the concept of information literacy has brought. The concept of information literacy is constantly increasing and changing the information he needs from a pile of information, classifying and sizing information, individuals can produce new knowledge can be explained in the light of new information. This concept has gained new dimensions in parallel with the development of technology (Akkoyunlu, 2008). Media literacy, internet literacy, digital literacy and etc. There are concepts in the literature of technology developments in the infrastructure. Facebook is not in the literature on the concept of literacy and education, widespread use of Facebook, because this study is expected to contribute to education.

## 2. METADOLOJI

Our study has planned with screening model and carried out research, with the blended learning students in Sakarya University Computer Education and Instructional Technology department 2nd 3<sup>rd</sup> and 4<sup>th</sup> class. The concept of literacy is examined in detail and was created on Facebook literacy questionnaire with a single factor consisting of 17 items. To carry out the work of the validity of the questionnaire was created to explore the exploratory factor analysis (EFA) were conducted. Accordingly, the value of self-developed Facebook Literacy scale factor greater than 1, only 68.06% of the total variance structure 'constituted. It is over 30% of the explained variance, is sufficient for the behavioral sciences in the development of the test (Büyüköztürk, 2004). As a result of the Cronbach's alpha internal consistency reliability was 0.97. The validity and reliability of the results of studies show that Facebook is a valid and reliable scale of Literacy. With the 5-point Likert-type data collection tool that we have developed, collected 138 blended learning students' views. According to information from the data Sakarya University official department, our research universe has been with 193 blended learning students. In this study, it is important to study achieved almost all of the universe.

## 3. RESULTS

In this section, blended learning students participating in the survey of gender, class, having computer, how many hours per day spent their time at the computer, having internet, how many hours per day spent their time on the Internet, the purpose for which they use the Internet, which devices they use to connect to the internet, membering social networking sites, which social networks they have membered and how many hours per day spend time on the social network. Demographic characteristics of the students' analyzed with t-test and ANOVA. The findings of  $P < .05$  or 5%, 95%, ignoring the margin of error was evaluated as reliable results (Büyüköztürk, 2011).

Blended learning students in terms of gender difference in the two means in order to determine the levels of literacy Facebook significance test (t-test) according to the values of literacy levels of the students on Facebook in the p-value is larger than .05. Because of that there is no significant difference according to gender ( $t = -1.745$ ,  $p = .083$ ) was found.

Blended learning in terms of students' class variable in order to determine the levels of literacy Facebook one-way analysis of variance (One Way ANOVA) according to the values of literacy levels of the students on Facebook in the p-value is larger than .05. Because of that there is no significant difference according to class ( $t = .302, p = .740$ ) was found.

Blended learning students in terms of having computer difference in the two means in order to determine the levels of literacy Facebook significance test (t-test) according to the values of literacy levels of the students on Facebook in the p-value is larger than .05. Because of that there is no significant difference according to having computer ( $t = .854, p = .431$ ) was found.

Blended learning in terms of how many hours spent time on computer per day variable in order to determine the levels of literacy Facebook one-way analysis of variance (One Way ANOVA) according to the values of literacy levels of the students on Facebook in the p-value is larger than .05. Because of that there is no significant difference according to spending time on computer ( $t = .641, p = .634$ ) was found.

Blended learning students in terms of having internet access difference in the two means in order to determine the levels of literacy Facebook significance test (t-test) according to the values of literacy levels of the students on Facebook in the p-value is larger than .05. Because of that there is no significant difference according to having internet access ( $t = .882, p = .470$ ) was found.

Blended learning in terms of how many hours spent time on internet per day variable in order to determine the levels of literacy Facebook one-way analysis of variance (One Way ANOVA) according to the values of literacy levels of the students on Facebook in the p-value is larger than .05. Because of that there is no significant difference according to spending time on the internet ( $t = 1,506, p = .192$ ) was found.

Blended learning in terms of what is the purpose of using internet variable in order to determine the levels of literacy Facebook significance test (t-test) according to the values of literacy levels of the students on Facebook in the p-value is larger than .05. Because of that there is no significant difference in reading news/books/music/radio, playing game, doing homework/studying lesson, chat, improving foreign language, having communication, watching video/tv, sending e-mail according to purpose of using internet was found.

Blended learning in terms of which devices are using to access the internet variable in order to determine the levels of literacy Facebook significance test (t-test) according to the values of literacy levels of the students on Facebook in the p-value is larger than .05. Because of that there is no significant difference according to devices in laptop, personal computer, tablet, mobile phone to access the internet was found.

Blended learning students in terms of membering a social network difference in the two means in order to determine the levels of literacy Facebook significance test (t-test) according to the values of literacy levels of the students on Facebook in the p-value is larger than .05. Because of that there is no significant difference according to membering a social network ( $t = 1,829, p = .208$ ) was found.

Blended learning in terms of which social networks are you a member variable in order to determine the levels of literacy Facebook significance test (t-test) according to the values of literacy levels of the students on Facebook in the p-value is larger than .05. Because of that there is no significant difference according to twitter and others was found. But there is a significant difference in Facebook ( $t = 7,868, p = .000$ ) and Google plus ( $t = 2,750, p = .007$ ).

Blended learning in terms of how many hours spent time on social networks per day variable in order to determine the levels of literacy Facebook one-way analysis of variance (One Way ANOVA) according to the values of literacy levels of the students on Facebook in the p-value is smaller than .05. Because of that there is a significant difference according to spending time on the social network per day ( $t= 3,282$ ,  $p=.008$ ) was found. Also to determine the differences in detail Tamhane test has used. There couldn't find a significant differences, either.

#### 4. CONCLUSION

Students participated in the study, which examined students' levels of literacy Facebook member variable of social networking sites, Facebook and Google Plus seems to be a significant difference according to the variable. This results in students spend time on Facebook, on their own, solve the problems encountered can be explained by. Blended learning courses, students are also an effective way to use Facebook, Facebook is seen that the relationship between the levels of literacy.

Facebook literacy levels of the students was how many hours per day spending time on social networks variable. The students were a significant differences according to spending time on social networks. This results in students spend time on social networks, they are looking for and finding can be explained by integration of social networking platform.

As a result of this study shows that to be member of Facebook and spent time on Facebook affects their Facebook literacy level. So that by using Facebook in the education process can help students to get the information more effectively and efficiently. After the classifying, analyzing, sorting and synthesizing the information, they can put out a new product.

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# Factors and conditions impacting teacher leader influence

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## Abstract

This study explored factors and conditions that impact teacher leaders' ability to influence colleagues in secondary schools in Ontario, Canada. Data were collected from six department heads in a suburban school board using semi-structured interviews. This student demonstrates that teacher leaders ability to influence others is affected by both external and internal factors and conditions. A framework presenting department heads as teacher leaders was developed using a constructivist lens. These results will allow boards, schools and teacher leaders to deepen their understanding of the need for collaborative environments that foster on-going learning and decrease the negative effects of external and internal factors and conditions department heads experience in their schools.

Keywords: Teacher leadership; teacher influence; teacher working conditions; teacher influence

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## 1. Introduction

Teacher leadership is emerging as a recognized necessity in schools. Engaging multiple stakeholders for their collective capacity is increasingly being seen as fundamental to student success. As such, teacher participation in leadership allows for a ground level perspective on instruction, pedagogy, decision-making, and policy interpretation and should play a pivotal role in school leadership (Katzenmeyer & Moller, 2009). Nevertheless, secondary school department heads have consistently had a role in school leadership and can be considered teacher leaders working and influencing others within diverse educational contexts. This study explored how six department heads in a suburban school board demonstrated elements of teacher leadership and how the factors and conditions under which they worked affected their ability to influence others.

## 2. Purpose of the Study

Teachers are, given the nature of their role, in leadership positions; however, the current expectation for teachers to lead beyond the classroom is challenging many secondary school educators. This study investigated factors and conditions that secondary school department heads experience in their formal teacher leadership roles in Ontario, Canada. To explore teacher leadership, department heads were asked to discuss their perception of their role, their working conditions, and how they navigate these conditions. Teacher leaders are educators who "lead within and beyond the classroom; identify with and contribute to a community of teacher learners and leaders; influence others toward improved educational practice; and accept responsibility for achieving the

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outcomes of their leadership” (Katzenmeyer & Moller, 2009, p. 6). Teacher leaders have their own understanding of their roles and experiences and these roles are greatly influenced by context (Barth, 2001; Peckover, Peterson, Christiansen & Covert, 2006). As such, definitions of teacher leadership vary. And, as Ryan (2007) notes, not enough emphasis has been placed on examining the purposes and outcomes of teacher leadership as opposed to the tasks they engage in.

Four issues led to the exploration of the factors and conditions under which department heads function. First, department heads have little collective voice because of the absence of a governing body that specifically responds to their interests and concerns. Subject specific associations exist for teachers and the Ontario College of Teachers governs the entire body of educators in the province; however, support for teacher leaders and department heads is lacking. Second, there is little written about both subject-specific and cross-curricular department heads at the secondary level in Ontario. Third, there is great variety, poor role definition and extensive responsibility in the departmental headship, resulting in role ambiguity and role confusion (Hannay & Denby, 1994; Schmidt, 2000). Fourth, as schools demonstrate more distributive forms of leadership (Grubb & Flessa, 2006) and as professional learning communities flourish (Muijs & Harris, 2006), the headship is becoming more complex. In Ontario, the role expectations of the department head has been expanding while at the same time, professional development, autonomy, and resources are dwindling. It is clear that principals can no longer be expected to lead schools independently (Lambert, 2002) and a deeper recognition of the potential benefits of teacher leadership must surface. This study gives voice to department heads, fills a gap in the literature on the role from their perspective, and examines how teacher leaders navigate a changing environment where they are assuming more leadership responsibility and in turn, influencing other educators.

### **3. What is teacher leadership?**

The roles and responsibilities of both teachers and administrators are expanding, leaving many educators overburdened, but still striving to improve education and in particular, to develop coherent and positive instructional and assessment strategies for students. As such, modern approaches to leadership are appearing. Definitions of teacher leadership abound. Barth’s (2001) formative piece on teacher leadership outlines 10 essential tasks that teacher leaders can perform to demonstrate their leadership. Moving from this task-specific understanding of teacher leadership, Andrews and Crowther (2002) define teacher leadership as “behaviour that facilitates principled pedagogical action toward whole-school success. It derives from the distinctive power of teaching to share meaning for children, youth and adults. It contributes to enhance quality of community life in the long term” (p. 154). Teacher leadership is an evolving contextually and culturally defined construct (Scribner & Bradley-Levine, 2010). It is part of the sociocultural contexts of schools (Ryan, 2007). Teacher leadership, similar to other forms of leadership, involves a process of influencing others and working collaboratively toward improved student learning while engaging in student-focused teaching and learning practices. Angelle, Nixon, Norton, and Niles (2011) found that teacher leadership is an organizational construct that extends beyond individual teacher roles. In their influential meta-analysis of teacher leadership, York-Barr and Duke (2004) define teacher leadership as “the process by which teachers, individually or collectively, influence either colleagues, principals, and other members of school communities to improve teaching and learning practices with the aim of increased student learning and achievement” (p. 287-288). Clarke (2009) suggests that teacher leadership is a constantly evolving construct that is rooted in school contexts. Despite Ryan’s (2007) statement that much of the research on teacher leadership focuses on the process of teacher leadership, emphasizing the technical aspects of teaching and omitting the systemic issues such as equity and democracy, there is also a budding body of literature that explores how teacher leadership fosters democratic ideals within schools (De Villiers & Pretorius, 2010) and social awareness (Larabee & Morehead, 2010; Rottmann, 2011).

Influence is a significant concept for leaders; without it, there would be no change. Anderson (2008) identified influence as key in organizations with shared or distributed leadership processes in place. He found that mutual influence often took place between teachers and principals (p. 11). This influence transpires as a result of one of three “transformational shifts” from individualism to professional community within education (Lieberman & Miller, 2004) and these shifts support a new approach to school leadership—teacher leadership. Teacher leadership has become more relevant and needed as educators navigate this current period of accountability and as the roles for teachers become ever more complex (Valli & Buese, 2007). It is a construct that can be seen as a support to navigating these complexities. Lambert (2003) suggests that teachers have the ability to lead, but the right context must exist for their actions to have influence. Often times, teacher leadership is evident in schools with a more devolved organizational structure; studies indicate that teacher leadership can exist in schools working within a more distributed leadership framework, those which are being navigated by servant leaders, and schools that prioritize professional development (Darling-Hammond, et al., 1995).

Teacher leadership is often linked to distributed leadership, but can be seen as a narrower leadership construct in the sense that it is primarily concerned with the leadership roles of teachers, yet broader in that it allows for informal leadership roles (Muijs & Harris, 2007). A significant component of distributed leadership is the work of teachers leading innovation and change both inside and outside their classrooms (Harris & Muijs, 2004). Teacher leadership necessitates a redistribution of power, with a diffusion of power away from the principal to other educators within the school (Muijs & Harris, 2006). However, “the contested and contextual nature of ‘distributed leadership’” has been raised by Anderson (2011, p. 330), leading academics to question whether distributed leadership is truly empowering for teachers or merely a redistribution of work with little increase in power or influence. Teacher leadership is also often coupled with shared leadership (Lambert, 2002) and parallel leadership (Andrews & Crowther, 2002). Andrews and Crowther distinguish difference between parallel leadership and distributed leadership by stating that “the leadership functions of teacher leaders are equivalent in value to those of principals” (p. 155) in parallel leadership. Teacher leadership is also often connected to authentic leadership. Authentic leadership, which pushes organizational culture to the level of the community, parallels informal teacher leadership in that leaders often provide guidance, seem altruistic, act honestly and with integrity and place service over self (Pielstick, 2000, p. 111). The connections between teacher leadership and other leadership constructs that buck traditional hierarchies exist and merit further exploration.

### *3.1. Formal Teacher Leadership Roles*

The role of department head is evolving into one of teacher leadership. Based on the contention that the role of principal is too large for one person to manage, historically, department heads were designated to support school organization. Currently, the role of teacher leader is to support the overall school vision (Barth, 2001; Beachum, & Dentith, 2004; Lambert, 2002). However, as the role of department head extensive, there is concern that the role continues to be merely a distribution of tasks, as opposed to a distribution of power. Furthermore, these formal teacher leadership roles, designated as department headships, continue to exist within the traditional and hierarchical models of leadership (Anderson, 2008). These formal roles are often seen as part of a leadership ladder (Ryan, 2007), where teachers move from informal leadership roles to formal leadership roles (Searby & Shaddix, 2008) prior to moving to administrative roles. Many secondary schools in Ontario continue to be organized according to this structure despite an emergence of more distributed forms of leadership.

#### 4. Theoretical Framework

This study used a constructivist lens to examine department heads' perceptions of the nature of their leadership role and the factors and conditions that affect their ability to influence others. Constructivism, a learning theory formalized by Jean Piaget, roots knowledge to each unique individual and to their personal experiences, reinforcing the social construction of knowledge and the mediation of its construction by cognitive structures (Schwandt, 2007). Constructivism has taken on aspects of realism: the recognition that research and knowledge construction are on-going, that the researcher is an actor in the research environment and that multiple realities are at work in any given situation (Mir & Watson, 2000). An individual's personal framework, developed through their historical and cultural experiences, informs their construction of meaning. The idea of socially constructed meaning also evokes Foucault, who theorized that truth is a power-laden construct, and accordingly, knowledge identified as true knowledge would represent the limited perspectives of a small group: those with power. Furthermore, according to Desautels, Garrison, and Fleury (1998), constructivism dismantles the concept of truth as it relates to reality and focuses on the impossibility of identifying true knowledge (p. 255). Ernest von Glaserfeld, a forefather of constructivist theory, suggests that knowledge exists only within an individual and that it is redefined through on-going reflective processes. Additionally, these processes are considered to be a social endeavour with groups collectively developing ideas and individuals appropriating those ideas. Constructivist epistemology also emphasizes inquiry and the interaction between the knower and the known, with the result being the development of understanding through continued reflection and self-understanding (Razik & Swanson, 2001). In turn, constructivism informs the way educational researchers interpret what goes on in schools and has "emerged as an important educational perspective that is changing how educational researchers, writers, and practitioners view the world of teaching and learning" (Lambert, 1995, p. 28).

Constructivist leaders use inquiry within their communities to co-construct knowledge informed by their contexts (that is, the history and culture of their school, its students and its staff). They recognize their role in leading and aim to move toward more democratic approaches and reflective practices. Constructivist leadership is defined as "the reciprocal processes that enable ... participants in an educational community to construct meanings ... that lead toward a common purpose of schooling" (Lambert, 1995, p. 32). With constructivism as the overarching framework, the factors and conditions that department heads as teacher leaders work within were analyzed. Constructivist leadership emphasizes the co-construction of meaning while recognizing the mutual influence between educators within an educational setting. Therefore, constructivist leaders are leaders of change, as they shift the thinking around school improvement to relate more directly to the needs of students, resulting in leading for learning, a more humanist and democratic approach to leadership (Shapiro & Koren, 2007). As with constructivism, which focuses on teachers' ability to facilitate learning, constructivist leadership focuses on the ability of leaders to facilitate collaborative learning. Mir and Watson (2000) contend that teacher leadership, a power-laden construct, can only be constructed by those involved in the act. The teacher leader is an active participant in the construction of their role based on the experience and contexts of their school. Each teacher leader may have a slightly different construct of teacher leadership, yet there are similarities that are guided by the six assumptions of constructivism. In her work on leadership capacity and school improvement, Lambert (2003) asserts that teacher leadership does not follow the traditional hierarchical nature of school organization; teacher leadership can empower teachers who are at the bottom of the school organizational pyramid. Furthermore, Lambert suggests that leading and learning are interconnected with leading acting as the foundation to teaching (Lambert, 2003).

#### 5. Methods

This study was qualitative in nature and used a constructivist inquiry design (Guba, 1978; Guba & Lincoln, 1985). The research participants' perceptions of their role were at the core of this study, and thus semi-

structured interviews, lasting from 60 to 75 minutes, were conducted with six department heads. Qualitative research supports the use of small, focused samples, (Creswell, 2005). The sample represents department heads with a variety of professional experiences from a large school board in southern Ontario. Of the three male and three female participants, four held dual-role headships, combining two curricular areas. They ranged in age from early 30s to mid 50s, had between four and 25 years of teaching experience and had held headships for between one and 18 years. Two sampling methods were used to identify potential research participants because of the dual challenges of garnering interest in the study and identifying a range of research participants. A snowball sampling method was originally anticipated (Creswell, 2005). However, after the first research participant—whom a colleague recommended—did not suggest others, a more purposive sampling method was undertaken. Additional participants were invited to join the study by contacting department heads whose names were posted on school websites. This was in line with Merriam (1998) who suggests that purposeful sampling can be used when an investigator wants to understand a phenomena specific to a group.

## 6. Results

The department heads perceived their roles to have three consistent elements that align with the construct of teacher leadership. They considered themselves to primarily be teachers with a focus on student success. This included teaching a full course load, completing supervisory duties, doing on-call coverage for colleagues, and developing sound instructional practices and classroom management strategies. Interestingly, the department heads communicated different understandings regarding what “teacher leadership” meant and how their roles demonstrated this and several of the department heads were unfamiliar with the term. Department heads also noted their role as having both instructional leadership—leading through mentorship and collaborating on curriculum and pedagogy— and managerial facets—acting as a liaison between administrators and teachers and completing administrative duties.

Department heads discussed the context of their work and their working conditions at length. Factors and conditions affecting the influence of the teacher leaders were categorized into two groups: external conditions outside the department head’s realm of control that affected their ability to influence others and internal factors that affected their feelings about the role. At times these factors conditions interfered with the goals of the department.

### 6.1. *External factors and conditions affecting department heads*

The departmental headship is a challenging position if the goal is to develop whole school improvement and to have a broader impact on student success. Many department heads struggled to focus on improving student success and implementing district-wide initiatives within their own departments. The department heads reported five external factors that impacted their ability to collaborate with colleagues and influence teachers: relationships with colleagues; lack of time; the impact of policy on practice; school and department culture; and the leadership approaches of the administration.

The primary external challenge for department heads was demanding relationships with colleagues. Department heads noted the difficulty of dealing with some department members and administrators. Department heads with dual-responsibility roles had additional challenges because often times they were not qualified as specialists in both of areas of responsibilities; this resulted, at times, in divisive departments where some teachers felt under-supported. Lack of time was also a recurring issue for the department heads; they discussed the significant amount of time required to mentor new teachers and to complete administrative duties such as organizing book rooms, ordering materials and attending meetings. The complexities of the administrative tasks

and the number of responsibilities often took precedence over the development of instructional practices supporting student achievement. Department heads were not afforded time to fully understand new initiatives, nor were they offered sufficient professional development to be able to articulately engage colleagues. Additionally, policy, such as the policy preventing department heads from participating in hiring processes for new teachers, was noted as negatively impacting their ability to develop effective teams. All participants also described the effects of departmental culture on their efforts. They noted that to support a collaborative department, a great deal of time, skill, and effort was required to model appropriate teaching and to support others' efforts. Most importantly, the participants spoke at length about being enabled by supportive administrators working within a collaborative leadership framework. This resulted in a need for trusting relationships between department heads and administrators. Trust manifested itself in different ways: a hands off approach, an open-door policy by administration, public comments of support from administration, and recognition of effort.

### *6.2. Internal conditions affecting department heads*

Department heads were also faced with internal conditions affecting their ability to enact teacher leadership as a process processes. Frustration, powerlessness, and stress were the manifestations of role ambiguity and role conflict. Additionally, their own skill set affected their ability to influence others. Despite these struggles, department heads experienced positive internal conditions such as enjoyment, satisfaction, and engagement in their work.

Role ambiguity and role confusion were significant factors in the department heads' ability to influence others. The diversity and complexity of the role was evident when all six headships were examined. Each department head identified roles and responsibilities that were at times similar, yet individualized. They reported tension caused by misunderstanding other leaders' roles, and a hierarchy among departments based on whether their subject(s) were required for graduation, the size of department, or charisma of department heads. Additionally frustrating was the fact that none of the participants received job descriptions at the outset of their work, leading to role ambiguity. In dual-role department heads were challenged to engage all colleagues in a single focus, leading to stress and frustration. All of the research participants experienced feelings of unease as a result of the reality of their job versus their perceptions of their roles. Mayers and Zepeda (2002) note that participants in their own study experienced role conflict and role ambiguity as a result of the conflict between the experienced role and the role outlined in a faculty handbook. Schmidt (2000) notes "evidence points to the role of the department head being one of the most stressful positions in the education profession" (p. 828). All research participants' experienced role confusion and frustration.

The department heads noted how gaps in their own skills could negatively affect their ability to influence others. One participant expressed the headship as a learn-as-you-go experience, yet she also described how her teaching experiences rooted her work. Another participant sought courses from a private management institution to help him fill in gaps needed for the role. Department heads deal with a significant amount of stress, and the consequences of these effects are decreased self-esteem, feelings of inadequacy, and lack of empowerment (Schmidt, 2000). In summary, department heads feel a lack of teacher-efficacy at times.

### *6.3. How department heads influence others*

Some department heads held confidence in their ability to influence others in matters related to curriculum and instruction, but only two department heads cited their work as effecting significant change resulting in increased student success within their department. Department heads reported little success with their own initiatives because of the numerous pre-existing school and district initiatives. The ability to initiate change on a large scale or even on a department-wide scale was very challenging and for the most part not attempted. All research participants stated their role was centred on maintaining a positive climate, focused on improving student success, but they respected and even promoted individual teacher autonomy, with little emphasis on meaningful collaboration. It is this area where their role is significant. They created an environment where teachers could engage in student-focused conversations and supported teachers to the best of their abilities.

## **7. Significance of the Study**

The department head role is an example of teacher leadership and how teacher leaders can work toward influencing others. This is illustrated in the Framework of Teacher Leadership for Department Heads (Figure 1) constructed from the findings. The complexity of each participant's context allowed teacher leadership to illustrate itself in diverse ways. This is consistent with Siskin and Little's (1995) observation that each department has its own "context-specific differences" which make us aware that "the department is the singular entity that most predictably unites teachers with one another, and most deeply divides faculty groups from one another" (p. 7). Educators depend on the organization of schools into departments, but this narrows their school-wide ability to impact and influence other educators.

Many department heads and department members draw their sense of self through their membership in a department. This placement in a department forges "social identity, professional community and the social organization of the school" (Siskin & Little, 1995, p. 8). As a result, as a curricular leader in a specific department, many heads used the subject as a filter for information. They would engage their focus on their subject area and pass on relevant information to their department members. This had a detrimental effect on their ability to participate in whole school decision-making, as their own subject area often limited them. This supports Hargreaves and Fullan's (1998) ideas regarding the balkanization of departments and its detrimental effects on school culture

## **8. Recommendations**

The analysis points to several recommendations. Department heads should discuss their perceptions of the role and come to an agreement on how to navigate the role with colleagues and administrators. This would promote communication and facilitate leadership that focuses on student success. School administrators should collaborate with department heads to develop a deeper understanding of their responsibilities and the scope of their work within the department and the school. School board administration needs to be cognizant of the teacher leaders' need for training and professional development. This includes training in problem solving, conflict management, time management, leadership techniques, and issues around curriculum and instructional strategies. Boards need to provide time and opportunities for these skills to be developed.

## **9. Final Word**

Department heads are teacher leaders. They exemplify how teacher leadership is a process tasked to focus on student success and rooted in the classroom. With an understanding of their role, along with the necessary supports and positive conditions, department heads can be empowered to lead. Their role is multifaceted; it includes managing and leading. They are faced with numerous obstacles, which include role ambiguity and role confusion, the challenges that surface as a result of conflicts with colleagues, and feelings of

powerlessness, frustration, and stress. Despite the best efforts of these teacher leaders and their colleagues, they face a sometimes-difficult school culture or climate, demanding district and provincial initiatives, lack of time, foggy educational vision, and their own incomplete skill set. Much work is needed if departmental heads are to fulfill their potential as teacher leaders.

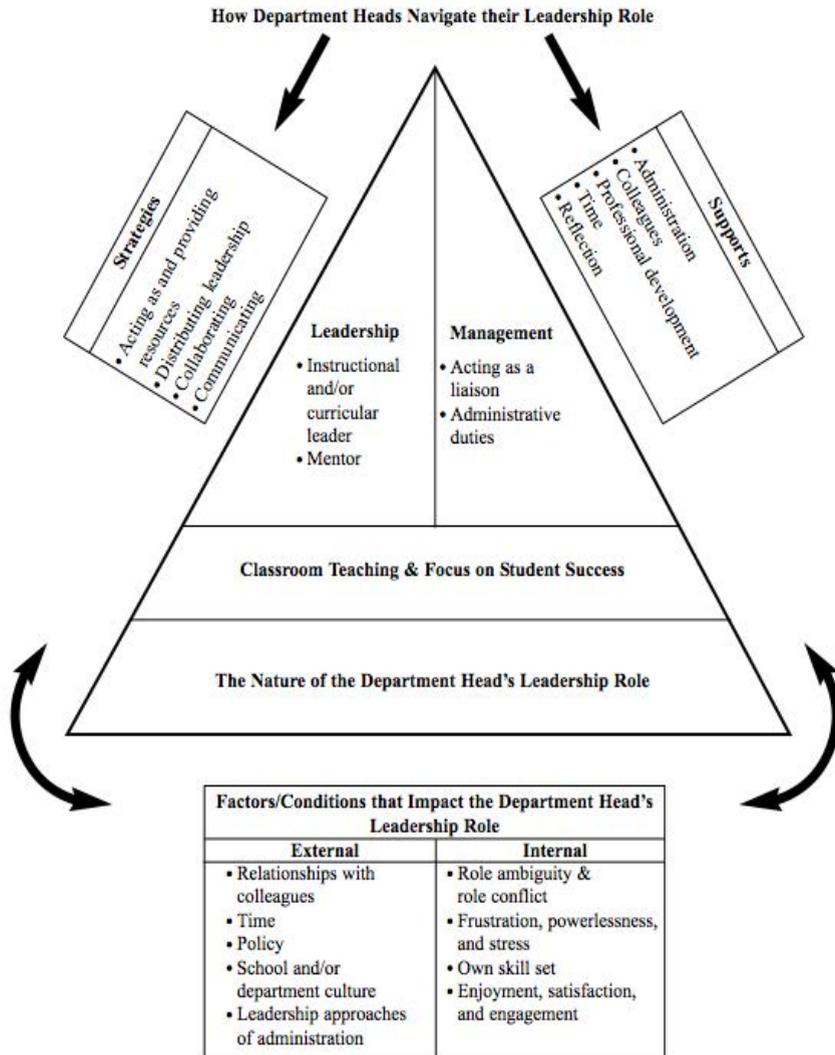


Figure 1: Framework of teacher leadership for department heads.

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4<sup>th</sup> International Conference on New Horizons in Education

## Field activities, science education and problem-solving

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### **Abstract**

Portuguese science curricula acknowledge field activities as important tools for students to learn science and to relate science knowledge with the outside school world. The educational outcomes of this type of activities depend on the way they are organized and integrated into the teaching sequence. This paper presents a typology of field activities named after their main educational goal and categorized with regards to a set of educational criteria. Afterwards, it discusses the extent to which each type of field activity is consistent with problem-solving, namely with a problem-based learning approach.

*Keywords:* field activities; field work; science education; problem-solving; problem-based learning

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## 1. From field work to field activities

Portuguese science curricula guidelines (DEB, 2001) acknowledge field trips as important tools for students to learn science and to relate science knowledge with the outside school world. This paper assumes that field trips, field work and field activities are related but different concepts. As a matter of fact, a review of the specialized literature reveals that over the years, several different words have been used to address the same or related entities associated with teaching outside the classroom and that they are not clearly defined and differentiated. Words like field work (Dummer, Cook, Parker, Barrett & Hull, 2008; Lock, 1998; Marques, Praia & Kempa, 2003; Schnoebelen, 1990), field activities (Dourado, 2001; Viveiro & Diniz, 2009), educational field activities (Diez, Martín & Vicente, 2008), field trips (Brusi, Zamorano, Casellas & Bach, 2011; McKenzie, Utgard & Lisowski, 1986; Orion, 1993; Scortegagna & Negrão, 2005), excursions (Compiani & Carneiro, 1993; García, 1994), and study visits (Andrade, 1991; Oliveira, 2008; Varela, 2009) are among the words commonly used to address such entities. This paper acknowledges Lock's definition of field work as the whole set of the all possible types of field activities, with diverse aims, structures, content, etc. Thus, it is conceptualized as a single entity that has encompasses all activities that students do outside the classroom, whatever they do it in open space or outdoors, to learn and develop relevant competences. However, its singular form does not enable to differentiate among field activities.

Based on Millar, Tiberghien & Le Maréchal's (2002) proposal for differentiating lab activities from lab work, this paper acknowledges that field activities differ from field work as the former have to do with a diversity of tasks that are carried outside the classroom; where the events to be studied take place; where the natural phenomena happen and can be observed as they happen, without the need of being reproduced; or in real work contexts, where technology is used for industry and production purposes. As a matter of fact, the word field in field activities suggests that there are activities that can be done outside the classroom and the plural form of activities indicates that there may be activities that are quite different from each other.

Field activities may start and/or continue in the classroom or in the school lab but they take place outside them. Therefore, in order to do field work and field activities, there is a need to do a field trip which includes going out of school and taking a journey to the place where the activities are to be performed. Preference for the word field trip instead of field visit has to do with the fact that field visit seems more leisure like and time limited than field trips are. Similarly, the word excursion activates meanings and ideas related to leisure. Although there is nothing wrong with associating learning and pleasure, it does not seem appropriate to emphasize leisure over learning. Finally, the word study in the designation study visits emphasizes the learning part but it goes together with a more time limited and leisure related word (visit) that may withdraw some seriousness from the former. However, it should be noticed that doing field work does not necessarily require a long trip (Del Carmen, 1999). In short, when one takes a field trip to do field work, one can do one, two or more activities, with quite similar or very different objectives and structures. It should also be noticed that field activities are different from a class outside the classroom, for example, in a museum or a university. In fact, in these cases, and opposite to what happens when field work is at stake, the place where the class will happen is different from the usual one but there will be no students' contact with the truly real world. If one wants students to be involved into field activities, a field trip has to be planned and organized and it can include the performance of one or more field activities which are relevant for one or more school subjects.

The objectives of this paper are: to present a reconceptualizing synthesis of the variety of field activities that can be thought of; and to discuss their relative consistency with a problem-solving perspective. The relevance of the paper lies in the fact that there are quite a lot of texts dealing with the first issue but they are written in diverse languages, do it in parts and use quite different words to name the same entities. This diversity makes it hard for the reader to make sense of all that stuff. Besides, there is no global discussion on the relationship of field activities and problem-solving in science education. This lack of discussion may impair teachers from becoming

aware of the relative strengths and limitations of the different types of field activities and consequently it may prevent students from being involved in truly problem-solving and problem-based learning of science situations.

## 2. Curriculum scope of field trips

Taking students out of school requires deciding on the scope of the field trip and setting up a set of administrative procedures as well as obtaining parents' authorizations for their children to take the trip.

As far as the scope of the field trip is concerned, it has to do with the way the field trip is integrated into the curriculum as well as with its intended educational objectives. A field trip can be organized within a single school subject or it may be planned by a few school subjects together. In the former case, the field trip is discipline-based and it focuses on places or issues that are relevant for the school subject within which the field trip is organized. In the latter case, field trips can be integrated within the diverse school subjects and this can be done in several ways, some of which may have higher disciplinary integration degrees than others do, depending on whether the field trips are multidisciplinary, pluridisciplinary, interdisciplinary or transdisciplinary in nature. Bearing in mind Costa's (2012) and Dalrymple & Miller (2006) definitions of these concepts, these types of field trips can be distinguished from each other based on the way they deal with places or issues analyzed during the field trip, as follows:

- multidisciplinary field trips: each school subject that is involved in the field trip concentrates on a place or issue, looks at it from its own perspective and makes it explicit some relationships between that place or issue and the content of the other subject(s);
- pluridisciplinary field trips: the diverse school subjects focus on the same place or issue, look at it from their own perspectives but they previously agree among them how they approach the object in order to avoid undesirable or even confusing repetitions and to save time;
- interdisciplinary field trips: all the school subjects involved in the field trip concentrate on the same place or issue, they approach it from each one's perspective although in such a way as to complete each other's point of view and to foster knowledge integration;
- Transdisciplinary field trips: all the school subjects concentrate on the same place or issue which is approached in a holistic way, so that the barriers between school subjects are vanished.

A field trip is often imagined as something that requires a long journey. However, this has not to be (Del Carmen, 1999) and is not (Howarth & Selingsby, 2006; Lock, 2010) necessarily the case, as very productive field trips can require short journeys. The local public garden, the village river, the public park pound, or the school garden or the playground wall can be relevant field trip destinations, as they can provide material to be explored in biology, geology or even physics and chemistry school subjects. Besides, the most frequent field trips concentrate on the surface of the Planet, but they can also have the underground (e.g., caverns) or on the sea (e.g., deep water sea) as their destiny.

As far as learning outcomes are concerned, a field trip can both help students to develop several different competences (Brusi, Zamorano, Casellas & Bach, 2011) and have a variety of learning goals (Braund & Reiss, 2004; Compiani & Carneiro, 1993; Lock, 1998). The latter include to serve as a way of complementing school-based activities (e.g., visit to a chemistry industry laboratory, after studying the ammoniac synthesis at school), to allow the contact with the natural world (e.g., to visit some natural caverns, in order to see stalactites and stalagmites) or with some natural (e.g., to visit a set of sand dunes, in order to understand how they are formed) or social (e.g., visit a fishermen to understand his ways of leaving) phenomena. Whatever the case, according to some authors (Braund & Reiss, 2004; King & Glackin, 2010; Lock, 1998) a field trip may be organized in such a way as to enable students to attain objectives related to:

- conceptual learning, that is objectives that focus on strengthening previously acquired conceptual knowledge, constructing 'new' conceptual knowledge, or reconstructing students' conceptual knowledge (which is especially interesting when students hold alternative conceptions on the concepts to be studied within the scope of the field trip);
- procedural learning, that is knowledge of specific purposes observation techniques (e.g., birds needing), samples collection (e.g., water from a river), conservation and transportation of materials (e.g., plants or animals) that need to be mastered by students;
- epistemological learning, that is knowledge relative to the characteristics of the scientific methodology relevant in field contexts, as well as to the (un)certainty of the science explanation and to the nature and role of models in (physics, chemistry, biology and geology) knowledge development;
- attitudes development, namely those related to respect towards the environment and towards science as well as scientific attitudes;
- interpersonal relationships, which have to do with respect to others, and cooperation with colleagues;
- contact with nature and real contexts, aiming at making students' aware of the complexity of the real world and the interactions that it comprises;
- questioning abilities, that is asking questions about nature and work contexts to understand, improve and take profit from them;
- extrinsic motivation, that has to do with fostering students' interest and curiosity towards real world work contexts.

As far as it is appropriately planned and organized, several of these objectives can be attained together within the scope of a single field trip. Success on attaining this goal depends on the activities planned to be carried out during the field trip and the way they are structured and implemented.

### 3. Types of field activities

As referred to above, field activities can help students to both attain diverse broad learning objectives and develop several competences. To succeed on doing so, they must have a structure appropriate to fitting those objectives. To differentiate among activities with diverse objectives and structure, Compiani & Carneiro (1993) use the following set of criteria:

- main learning objective to be attained through the activity;
- main teaching purpose, that can be formative (stressing the process of learning) or informative (stressing knowledge transmission or development);
- use or questioning of conceptual knowledge, as they can focus either on the use and preservation of students' conceptions and models on cognitive conflict and students' knowledge reconstruction;
- teacher's and students' roles, that can be student centered, teacher centered, student and teacher centered or guide centered teaching;
- dominant teaching logic that is, the logic that informs teaching process (that is, science or student logic).

When commenting on Compiani & Carneiro's criteria, Pedrinaci, Sequeira & García (1994) argue for the relevance of the teaching perspective for differentiating between field activities. According to these authors, the teaching perspective determines what is done and learned from a field activity. Taking together, these two sets of proposals seem to be useful although not enough to clearly distinguish among the diverse types of activities, as they do not make it explicit criteria like integration of the field activity in the teaching sequence. Hence, it seems that the different types of field activities can be differentiated from each other based on the following criteria:

- main learning focus: motivation, practical skills, and procedural, conceptual or epistemological knowledge

- underlying teaching and learning perspectives: transmission, guided discovery, discovery, constructivist, social-constructivist
- integration in the teaching sequence: before, during or at the end
- teacher's role: watch students, demonstrate, question students
- students' role: observe, perform, watch, solve-problems
- science skills and attitudes development: ignored, used, developed
- access to relevant conceptual knowledge: doesn't apply, given to students, 'discovered', constructed by the student
- role of student's previous knowledge: preserved, used, questioned
- availability of scaffold elements: no scaffold available, teacher and/or worksheet available
- acknowledged prevailing logic: science logic, student's logic
- interpersonal fostered relationships: none, student-student, student-teacher
- communication skills developed: questioning, answer, argument
- interaction with the environment: -intrusive, -non-intrusive

Table 1 shows a characterization of the types of field activities that may result from the use of these criteria and that are named after their outstanding educational objectives. In this context, outstanding objective means an objective that can be better attained through a certain type of field activity rather than through the others.

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Table 1. Characterization of the diverse types of field activities

Classification Criteria	Types of field activities						
	Motivating	Training	Illustrative	Guided observation	Inductive	Problem posing	Problem-solving
Main learning focus	Motivation	Practical skills	Conceptual	Conceptual	Procedural and conceptual	Procedural and epistemological	Procedural, conceptual, and epistemological
Underlying teaching and learning perspectives	Transmission	Transmission	Transmission	Guided discovery	Discovery	Constructivist	Social constructivist
Integration in the teaching sequence	Before	During or after	End	During	During	Before	Before, during, after
Teacher's role	Watch students	Demonstrate	Demonstrate or watch students	Watch students	Watch students	Watch students	Watch and question students
Students' role	Observe	Perform	Watch or perform	Observe	Observe and Perform	Observe	Solve problems
Development of science skills and attitudes	Ignored	Developed	Used	Used	Used and developed	Developed	Developed
Access to relevant conceptual knowledge	Doesn't apply	Doesn't apply	Given	Given	"Discovered"	Doesn't apply	Constructed
Role of student's previous knowledge	Preserved	Preserved	Preserved	Used and Preserved	Used and preserved	Used and (later) questioned	Accepted and questioned
Availability of scaffold elements	Unavailable	Teacher	Teacher	Worksheet	Teacher	Unavailable	Unavailable
Acknowledged prevailing logic	Student	Science	Science	Science	Science and student	Science and student	Science and student
Interpersonal fostered relationships	None	None	Student-teacher	Student-student	Student-student	None	Student-student
Communication skills developed	None	None	Answer	Answer	Argument	Questioning	Questioning, argument, answer
Interaction with the environment	Non-intrusive	Intrusive	Intrusive or non-intrusive	Non-intrusive	Intrusive or non-intrusive	Non-intrusive	Intrusive or non-intrusive

Despite the fact that an outstanding objective was associated to each type of activity it should be stressed that each activity may lead students to attain some objectives that are common to other types of activities. To illustrate this it can be expected, for example, that all types of field activities motivate students (Lock, 1998) and should promote their respect towards the environment. However, some field activities can be planned and performed just to raise students' extrinsic motivation towards science learning even though this type of activity makes more sense within a transmission, teacher centred, approach than within a student centred, constructivist, approach as the latter is more prone to generate intrinsic motivation than the former. On the other hand, although developing respect towards the environment should be an ever present issue, explicit action must be taken so that students develop respectful and protecting attitudes towards it when they do field activities.

In the whole, field activities have a diversity of main distinguishing objectives, ranging from the motivational ones to the problem solving ones, passing by the conceptual and the procedural ones. Table 2 shows the main

distinguishing objective of each type of activity characterized above, as well as a brief description of an example of each type of the activity.

Table 2. Outstanding objectives and examples of the diverse types of field activities

Types of field activities	Outstanding objectives	Examples
Motivating	To raise students' interest for an issue to be studied later on	Observe a river where dead fishes were found (before studying pollution causes and effects)
Training	To promote the learning of technics and the development of skills with diverse degrees of complexity	To learn how to use the compass in order to measure the slope and the direction of a geologic plan.
Illustrative	To strength previously acquired knowledge	Observe and analyse the types of rocks of the school surrounding to ascertain that they are those that were mentioned in the classroom.
Guided observation	To 'discover' or to ascertain something based on a worksheet.	To observe the process of industry ammoniac production based on a worksheet that makes it explicit the phases of that process.
Inductive	To observe and interpret in order to discover conceptual knowledge	To compare the types of plants that grow on sun exposed and non-exposed areas (to conclude that they depend on the exposure to sun light)
Problem posing	To develop an investigative spirit	To observe a place (e.g., an abandoned mine exploration) and to identify the issues that deserve being studied or worked out (to learn about or to solve some of them later on)
Problem-solving	To solve a problem	To find out the reason why the water from the Seven Oaks water source is turve.

#### 4. Field activities and problem-based learning of science

As it was referred to above, many people do not distinguish field work from field activities, and consequently they can hardly differentiate between potentially different learning opportunities that may arise from the diverse ways that field activities can be structured and integrated in the teaching and learning sequence. The effect of this is that they do not look critically enough to the activities that they include in a field trip, namely with regard to their probable effective learning outcomes. Besides, many people believe that having students doing whatever kind of field activity is good and means giving them the opportunity to do an investigation. This is not so as doing field work is not necessarily better than not doing it; its educational value depends on whether or not it makes a meaningful difference in terms of learning outcomes. In addition, and as it was argued above, doing activities in the field may mean carrying an investigation, consistent with a social constructivist perspective, or it may rather mean confirming what the teacher said, within a transmission and reception behaviorist educational framework.

Although it may make sense to do several different types of field activities (Scortegagna & Negrão, 2005), not distinguishing between them may nevertheless impair students from taking the chance of doing investigations. These are the most complex activities for students to do but they may lead to broader and deeper learning (Jaén & Bernal, 1993; Orion, 1993). On the other hand, they may also make the teacher feel more uncomfortable because he/she can no longer keep on 'telling knowledge' to students. In fact, if investigations are conceptualized as

problem-solving activities, then an analysis of the characteristics of field activities described in table 1, indicates that most of them do not fit that criterion. In fact, when solving a problem is at stake, the problem solver has to draw a strategy to overcome an obstacle that the problem statement faces him/her with. The obstacle may have to do with a real difficulty that has to be overcome or an immediate personal or social need that has to be fulfilled, but it may also have to do with an issue that requires deep understanding. Hence, motivating and training field activities are not consistent with the idea of problem-solving activities, as they are not organized around a problem. Illustrative activities are not consistent with problem-solving either, not only because their answers (solutions) are known beforehand but also because the strategy that should be followed to attain that aim is given and, consequently, there is no need to design a strategy to overcome an obstacle, as required by problem-solving.

Directed observation activities differs from Illustrative activities because in the former case the solution is not known in advance (opposite to what happens in illustrative activities) but the worksheet offers students the strategy to be used to get the *right* solution that is, the only possible solution. Inductive activities are more open but they still ask students to follow some general guidelines, deriving from some basic principles of scientific methodology, like observing, collecting data, draw conclusions and make a generalization. These guidelines lead students to a solution that hopefully is to be generalized. On the contrary, problem posing activities lead to problem statements rather than to problem solutions. Therefore, they fit the first student-centered phase of a PBL approach (Lambros, 2004), as they could work as a way of finding the problems to be later solved by the students, either in the field, in the lab, in the classroom, or wherever the relevant tools and resources are available. Finally, problem-solving activities require students to solve a problem to develop procedural, conceptual and epistemological knowledge. Depending on the phase of the teaching process that they are used, problems can work as starting points for learning or as tools for deeper understanding, or even as evaluation tools. If the former is the case, then problem-solving field activities are used as starting points for new learning, so that students will learn new knowledge (from their point of view) by working on a problem in order to get one or more solutions for it. In the other cases, the problem would come after new knowledge being learned and therefore, problem solving (but not problem based-learning) can take place.

Thus, both problem posing and problem-solving activities (if the latter are used at the beginning of the teaching and learning sequence) can fit a problem-based learning approach. Besides, problem posing field activities can precede the problem-solving ones, as the former can provide problems to be solved through the later, and therefore serve as scenarios for problem-based learning.

## **5. Using field activities for science problem-based learning**

Problem-based learning (PBL) has to do with learning new knowledge by solving problems (Lambros, 2004), that is by getting answers to questions. Those answers may be conceptual or procedural answers or they may be practical ways of overcoming an everyday issue. Besides, each problem may have an answer, two or more possible answers or no answer at all. In addition, problems to be solved can be given to students or students can be asked to pose them from some sort of scenario. In the latter is the case, the scenario needs to be appealing for the target students, so that they pose problems that they feel are worth being solved. In fact, afterwards, students are supposed to work on problems that they should feel worthwhile working on, in order to solve them, preferably, in small groups working cooperatively.

Thus, if PBL involving field activities is to be carried out, then two things may happen: either problems are given to students so that they can solve them through problem-solving field activities; or problems have to be posed by students, for example within the context of a problem posing field activity, and afterwards they can be solved within the context of a problem-solving field activity. In the latter case, at least two types of field activities would be carried out one after the other. However, it should be noticed that whatever the way problems 'appear', they are supposed to be solved before theory is taught, as they are tools for learning rather than tools for showing that theory is correct (Marion, 1999) or for evaluating students' learning.

When using field activities for science problem-solving is at stake, a field trip has to be organized. Due to the diversity of tasks that have to be carried out so that the aims of the field trip are accomplished, it is convenient to consider three phases: before the trip, during the trip and after the trip. Before the field trip, the place has to be selected, permissions for doing and attending the trip have to be obtained, the problem has to be understood by the students, and the activities to be carried out during the field trip have to be planned and prepared. It should be noticed that if problems come from a problem posing field activity, then this phase may require students to go out in order to perform a problem posing activity. This would enable students to pose problems to be taken back to school and worked out (analyzed, reinterpreted, etc) and then solved within the second part of the field trip. During the field trip, students are asked to carry out the activities previously planned, together with others that they may meanwhile feel as relevant to solving the problem(s) that are at stake. That may include *in loco* data collection and analysis as well as collection of sample materials to be taken to school to be studied, for example, in the lab. Collecting samples may be a requirement of the problem and a necessary condition for an appropriated study of the issue it involves. It requires the mastery of the appropriate technical procedures (that may be learned through a training field activity) so that the samples are not damaged. However, it should be taken as (an additional) opportunity for making students aware of the need to preserve the environment. Limiting the amounts of material collected may be a way of doing it. Afterwards, when back at school, students need to complete the activities done in the field and/or to do a balance of what was planned and accomplished. In addition, the solution(s) to the problem(s) have to be evaluated for their scientific, technological, environmental and/or social quality as well as for their fairness. Conclusions drawn by each small group from the activities carried out should be shared with and discussed by the class, so that not only students learn from their counterparts but also teacher can get some feedback about his/her students learning achievements. It may happen that work done in this phase reveals that a new trip is needed so that the issue can be completely understood and the problem can be solved. Thus, learning by problem solving field activities, may require a single trip, to solve the problem given to students, or it may involve two or three trips so that students can pose problems to be solved, collect the information (initially) required, and/or collect complementary information to solve the problem(s).

## 6. Final remarks

Several authors have emphasized the educational value of field activities (King & Glackin, 2010; Marion, 1999; Rebelo, Marques & Costa, 2011) but they are rarely used by teachers (Dourado, 2001; Rebelo, Marques & Costa, 2011) and when they are, the way they are structured and implemented is often inappropriate for taking most profit from them. A reason for that may lie in the fact that field trips are not distinguished from field work and from field activities and the educational diversity of field activities is not perceived either. Different types of field activities have different learning outcomes. Problem-solving activities are those that may foster the integrated development of a larger diversity of competences (Lambros, 2004) but they require competences that may be better developed within the scope of other types of field activities. In addition, they are those that give students the most active cognitive role as learners and therefore better prepare them for lifelong learning. Nevertheless, action must be taken to prevent that students learn more about the place visited than about the concepts that motivated the trip (Balci, 2010).

The argument that all types of field activities have a role to play in science education can be extended to other school subjects being Geography one of them. In fact, physical geography is similar to science, namely to geology and environmental science, as all of them share issues associated to large time scale and large dimension phenomena. They also share several curriculum themes and therefore can approach together several common problems, in an integrated way. Doing it this in this way will enable science and geography teachers to better prepare students to continue learning in the future as a citizen living in an ever changing society.

However, bearing in mind junior high school students' reactions to problem-based learning in the classroom (Leite, Dourado, Morgado, Meireles, Azevedo, Alves et al, 2013), it can be expected that students usually

classified as ‘good students’ may show negative reactions and anxiety towards problem solving field activities and that the weaker students may show a great enthusiasm towards them. Hence a balance has to be achieved so that all students keep appropriate levels of motivation and anxiety and can achieve the settled learning outcomes. Besides, teachers need to learn how to cope with their new role, of student supporters that they cannot ‘tell knowledge’ to them but that have to create conditions for students to actively learn new knowledge by solving problems outside the classroom. Besides, teachers need to select and promote the use of assessment techniques that fit the diversity of learning outcomes that is expected from the field activities carried out. As Dummer, Cook, Parker, Barrett & Hull (2008) have concluded, when field work is done, “clear assessment guidelines and assessment criteria are essential and many students do not appreciate flexibility in approach over and above detailed guidance” (p.473). Students need to know what is expected from them and teacher needs to have it clear so that he/she can provide appropriate support and promote the assessment of relevant learning issues done by the best informants, either student, peers or teachers.

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# From "telling" to "engaging": a brief study of the educational role of museum in China

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## Abstract

Along with Chinese economic and political developments, museum in China also needs to facilitate encounters between ideas, environments and objects, so as to fulfill its fundamental role of education, for school students and also for the adults. In this article, I introduce and discuss contemporary issues and practice made in the museum education in China, such as education program and activities for student group, various cultural workshop and demonstrations for a more complete learning experience. The challenges and the changes from the old paradigm of “telling” to “engaging” with cultural, historical and scientific concepts will specifically be addressed in respect of the educational role of the Capital Museum, China.

Keywords: educational role, museum education, the Capital Museum, free-choice education

## 1. The Educational Role of Museum and Its Visitors

The first section is dedicated to the exploration of the educational role of museums in modern context, through reviewing the definition of museums, their educational function and purposes. Then I briefly discuss museum visitors, including their nature, needs and expectations. With the case study of the Capital Museum in Beijing, China, the second section discusses how the museum operates the exhibitions and activities for children education, and how the school children involve the programs and activities hosted by the Capital Museum. In the last section, the attention is paid to the adult education in the museum, especially considering the free-choice education.

The role of museum has reformed frequently due to the cultural and social structure of each era. According to the contemporary definition of museum from the International Council of Museum (ICOM), “Museum is a non-profit permanent institution in the service of society and its development, open to the public, which acquires, conserves, researches, communicates and exhibits the tangible and intangible heritage of humanity and its environment of the purpose of education, study and enjoyment”. In this definition, one of the essential roles of museums is to educate the public based on the collections and the exhibitions of objects.

Education as a crucial museum function has been recognized long time ago. As Hooper-Greenhill (1991) points out: “During the nineteenth century, education had been the prime function of the museum. The ideal museum was understood to be ‘the advanced school of self-instruction’, and the place where teachers should ‘naturally go for assistance’. Although many museums and galleries were unable to achieve this ideal, this was a firmly held view. By the 1920s this conviction, held so strongly by nineteenth-century thinkers in so many areas of intellectual and political life, was under attack. A new generation of curators was less interested in the public

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use of museums, and more interested in the accumulation of collections” (Hooper-Greenhill 1991:25). In modern society, its educational purposes have become a priority and its educational goals have increased (Hooper-Greenhill 1999:3). Museums know most about history, culture, art, technology and so forth. Museums should become places of freedom allowing children and adults to discover traditions, to broaden their horizons, to enrich their minds and to develop a mature opinion of life. They are important public educational institutes that not only shape knowledge to the scientific community but also share it with all kinds of visitor with their exhibitions. In fact, sharing knowledge with the public is also an essential mission of a museum. Therefore, museum is an educational institute, “with a responsibility to create knowledge through the development and research of collections, and then to disseminate that knowledge through the provision of formal scholarly displays” (Graham Black 1999:1).

However, to provide knowledge to the visitors, it does not mean that the museums should simplify the way they exhibit the objects nor provide complicated and hidden meanings. The education function needs to be collaborated by both museums and visitors. On the one hand, by displaying the artifacts and contextualizing them, museums help visitors to get their own understanding of the collections in museums. On the other hand, while forming their own interpretation of the meaning of the artifacts, visitors learn knowledge and experience museums as well (Greenhill 2000, 124). Therefore, museums need to consider and respond visitors’ needs, demands and expectations. This has been recognized by museums. Particularly in recent decades, museums have increasing pressures for changing the approaches of presenting their collections to visitors, appealing their interests and matching their high quality requirements.

This is also an audience-centered strategy which means museums need to take into account of “the personal context of the visitor and the holistic nature of the museum visit” (Graham Black 1999:3). When planning exhibitions and programs, museum educators and planners should not only understand the different types and ages of visitors, but also know the demands and expectations of different type of visitors, and know how different visitor groups would interact with the museum, its collections and the activities.

Unlike the traditional museum audience who were used to the un-stimulating educational programs, twenty-first century visitors would prefer to participate, to learn, to question and take part as equals, rather than being “passive recipients of wisdom from on high” (Graham Black 1999:2). This means modern museums should not only provide information for education and research, but provides a much wider variety of activities including exhibitions, workshops, events and displays, to arise the visitors’ interest and match their demands (Burcaw 1997, 24).

Under this circumstance, museums have to transform their role from simply displaying objects or offering un-stimulate programs into promoting the audience’s active learning with interactive activities. This is actually a very important transition process from simply “telling” the visitors knowledge to letting them “engage” into learning, to transfer a passive study to an active learning experience. More and more museums incorporate this strategy as part of their educational purpose. In China, along with the economic development, more and more attentions have been paid on cultural development, and museums are also the important institutes to promote cultural development.

In the process to fulfill the education function, museums need to adjust their strategy according to the different type and ages of visitors and their needs. Many scholarly researches about the museum visitors have been done and there are also a lot of investigation and analysis on the targets. From the perspective of age, in this article, I prefer to generally divide the visitors into two major age-groups- school children who mainly visit museums in groups or families and adults who often visit museums by their own. On the basis of learning theories, in the following, I would like to analyze how museums in China attempt to meet these two types of visitor’s needs, demands and expectations and accomplish the educational role of the museum. For a better understanding of the development of the museums in China, I discuss these perspectives mainly through the case studies of the Capital Museum in Beijing (see figure 1).



Fig. 1. The Exterior of the Capital Museum, China, [http://www.capitalmuseum.org.cn/zjsb/content/2006-04/12/content\\_21830.htm](http://www.capitalmuseum.org.cn/zjsb/content/2006-04/12/content_21830.htm)

There are several reasons to choose the Capital Museum as example to demonstrate my arguments. Firstly, the Capital Museum is a large comprehensive museum in the Beijing area and it houses a large collection of ancient porcelain, bronze, calligraphy, painting, jade, sculpture, and Buddhist statues from imperial China as well as other Asian cultures. Although it is not the largest or most comprehensive museum in China, as a provincial and municipal-level museum, it has some characteristics which are able to reflect the current development and practices of the educational role of museums in China. Moreover, it opened in 1981 and moved into its present building in 2006. As it is housed in a newly constructed building and equipped with modern facilities for various visitors, to a certain extent, it can also reflect future development of many other museums in China.

## 2. Children Learning in the Capital Museum

Regarding to children education in museum, there is mutual communication and close connection between the museum and schools. As pointed out by Joseph H. Suina, “for school, museums serve as places where people collect, display and share fragments of the world in which we live” (Hooper-Greenhill 1999:105). The museums need to understand the different needs of different types and levels of school children so as to design programs that relate closely to that information.

This requires museum educators know learning theory about children in museums. G. W. Maxim describes that the young students learn through three modes of contact with material. The first type is through the symbolic mode. It is the most prevalent in elementary schools. But as most young children have limited experience, the symbolic mode is very abstract and too advanced for many elementary school students. The second type is the iconic mode as referred by Maxim. It involves the practice of representations of the reality through physical models, films and other means, so the students may get interaction with iconic material. The third mode is to learn from people and through events, ideas, and the use of authentic items (Maxim 1987:267-8). This is therefore an enactive form of learning experience. Students can learn best by experiencing the materials and ideas through touching, seeing, listening, smelling and tasting. So this is a quite different experience that students can rarely get from classroom where students usually passively get information and facts from textbooks. But museums which are rich with iconic and enactive learning opportunities can provide such experience for students.

This third mode has been applied by museum educators and planners of Capital Museum. They plan, arrange and inspire the activities with this purpose, while dealing with complex issues regarding the relationship between preserving and presenting the objects and the using in education. According to the degree of children's engagement into the programs and activities, I introduce and discuss some educational programs and activities hosted by the museum.

First and foremost, the Capital Museum provides many educational programs throughout the permanent collection. For example, one of the special programs and events hosted by the Capital Museum on May 18, 2013, the International Museum Day, is "The Little Pioneer Treasure Hunt". It goes like this: the children together with their parents spend a couple of minutes in the museum reception in order to become familiar with the museum spaces and get a form with instructions about the location and information of some "treasures", the valuable collections in the museum. After the children get the general idea about what they are supposed to do, their parents and the museum educators lead the children to the permanent collection. In order to find the "treasures", children are motivated to observe the objects and learn history and the related knowledge. In this leaning process, they also have lots of fun. Moreover, this activity also provides an opportunity for the parents especially those who are too busy to stay at home, to spend time with their children, to educate them, and try to broaden their horizons through the stimulating learning process.

Moreover, the Capital Museum also plans many interactive activities, such as workshops that are designed to provide children to recreate artifacts. For instance, there is a pottery room which regularly offers pottery class for children to learn how to make potteries out of clay and learn the pottery history in China (figure 2). Museum educators first show children the producing procedure, and then guide and assistant them to make the pottery objects. The process of making pottery involves knowledge of many disciplines and skills, such as Chinese traditional decoration and the firing skill. This allows children to learn Chinese cultural heritage and traditional art through learning how to produce the works by themselves, and enriched their sharing of knowledge and cooperation. Except for the pottery class, the Capital Museum also provides many other educational and interactive activities, such as making Chinese traditional fan, paper cuts and so forth (figure 3), for children regularly all year round in the museum. So this also offers children choices that they are allowed to choose to take part in those which are interesting to them and to freely attend these activities. By doing so, educators give children the feeling of power and command over their museum experience, and also increase the chances of their really understanding of the ideas behind the objects in museums.



Fig. 2. The Pottery Class at the Capital Museum, [http://www.capitalmuseum.org.cn/child/content/2011-06/16/content\\_30620.htm](http://www.capitalmuseum.org.cn/child/content/2011-06/16/content_30620.htm)



Fig. 3. The workshop for Children at the Capital Museum, [http://www.capitalmuseum.org.cn/child/content/2013-05/22/content\\_58108.htm](http://www.capitalmuseum.org.cn/child/content/2013-05/22/content_58108.htm)

Furthermore, the Capital Museum uses a very wide variety of approaches to provide comprehensive knowledge to children, not only about its collections, but also about some knowledge of its own architecture, facilities and even the moral behaviors through vivid stories which are made up by museum educators. Children can easily read them through the website of the museum. For instance, when introducing the function of the ceiling of the Capital museum, a dialogue takes place between a virtual character “Grandpa Dictionary” and two children, a boy and a girl. “Grandpa Dictionary” makes a metaphor of the ceiling as a big hat and explains to the children how the solar panels atop of the ceiling convert light into electricity. Embellished with vivid cartoons (figure 4), scientific knowledge and information of the architecture conveyed by these stories are more interesting and easier for children to learn and understand. And except for these stories, the Capital Museum also uses the Internet to provide many other interesting and stimulating programs for children, such as the on-line videos about the collections in the museum, various video games leading an archaeological expedition, the making of blue-white porcelain and so forth.

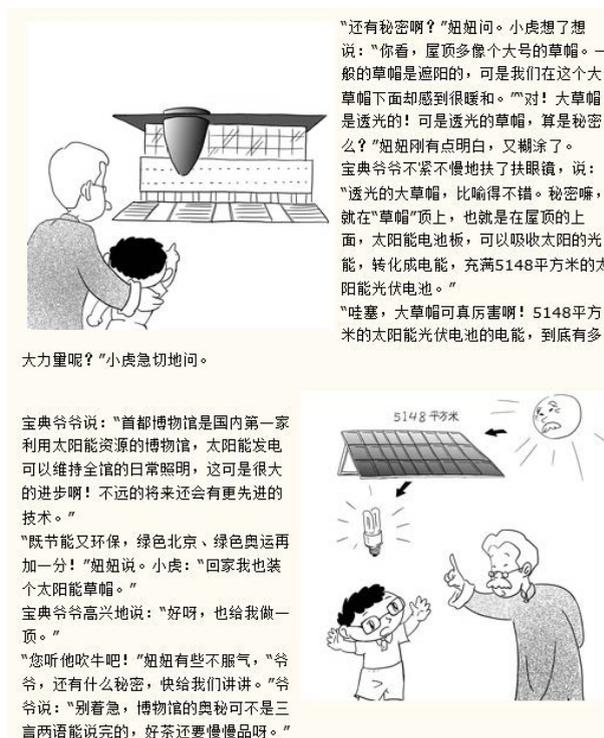


Fig. 4. Story Embellished with Cartoons on the Website of the Capital Museum, [http://www.capitalmuseum.org.cn/child/content/2008-03/13/content\\_23056.htm](http://www.capitalmuseum.org.cn/child/content/2008-03/13/content_23056.htm)

To inspire and motivate children to get involved in the activities of the museum and to engage in the collections and learning experiences, the Capital Museum also creates new exhibitions for children. An impressive example is the exhibition of school children's art works. In June 2013, "The Dancing Sprout: An Art Exhibition of Children's work in Beijing" (figure 5) is hosted by the Capital Museum, exhibiting various art works, such as calligraphy, painting, paper cuts, sculpture, masks and so forth, made by children in Beijing between age 4 and 14. It is a very creative and quite entertaining experience for children. Moreover, children get the opportunity to control the exhibition by choosing the subjects and displaying their own works. And this is a very important process of getting engaged in the museum's activities.



Fig. 5. Exhibition of Children's Art Work at the Capital Museum, [http://www.capitalmuseum.org.cn/child/content/2012-06/08/content\\_42082.htm](http://www.capitalmuseum.org.cn/child/content/2012-06/08/content_42082.htm)

Through the collections and the activities, on the one hand, museums provide knowledge and information to children; on the other hand, they also stimulate their academic and thinking skills, handing ability, understanding, values and attitude of life and the society. By participating in different programs children have the opportunity to not only obtain knowledge of the past, discover new things, but also learn to cooperate with other people and have discipline while in public spaces through the museum programs.

### 3. Adult Education in the Capital Museum

In addition to the children's education, the Capital Museum also focuses on adult education. In fact, the idea of adult learning in museums is not new. As early as mid-nineteenth century, a comment from the First Report of the Department of Practical Art, the government institution that originally ran the Victoria and Albert Museum, demonstrates this well: "A Museum presents probably the only effectual means of educating the adult, who cannot be expected to go to school like the youth" (Hooper-Greenhill 1999:137).

Adult learning is different from that of children. Compared with children, adults view and evaluate the objects according to their broader life experiences, established identity and understanding of the world, so their education is generally under a mature scope. As R. S. Grenier points out: "Adult learning has the potential to transform museum experiences into meaningful learning opportunities that occur in relation to sociocultural surroundings and stimulate the visitors' curiosity and active and reflexive learning through nonformal education, free-choice learning, and access to museum resources" (Grenier 2010:153).

Adults seek learning experience in museums related to their demands and needs, no matter for leisure time, values, education or other considerations. Adult's free-choice learning has been further interpreted that "the learner is intrinsically motivated by their desire to discover more about the world, gain information, and enhance their current understanding" (Grenier 2010:153). Therefore, museum should develop alternative approaches to respond the free-choice learning, and represent visitors with "smaller segments that are more easily processed and integrated into prior experiences and learning" (Grenier 2010:154). The Internet and other forms of new technology play important roles for adult's free-choice learning in museum. The Capital Museum provides

anytime, anywhere learning for visitors with detailed resources, information and educational material for study, research and entertainment purposes through the Internet and new technology its extensive databases.

For instance, on the website of the Capital Museum, there is an Internet forum called “Interactive Community”. Here, visitors can share their opinions on the collections and related issues, discuss the artifacts and involve into the development of the museum. And they can also download the online journals of the museum and other information of the exhibition, to choose the content they are interested and better learn knowledge. As a result, visitors interact with the objects more and better understand the concepts and the initial idea of the exhibition. In this way, the museum is not simply to present the objects to the audience but to make the audience part of the museum through the sources and learning programs. Museums as educational institutes offer opportunities for people to increase their knowledge and their experiences by combining education and entertainment.

Similarly, the Capital Museum also arranges some specific exhibitions for the adult visitors, not only limited within its own collections, but also expanding to the works made by the audience. For instance, an exhibition “The Beauty of Beijing, Beijing Spirit” (see figure 6) was held at the Capital Museum from February 5 to May 19, 2013. Like all the other exhibitions, it is also free to the public. In this exhibition, many shutterbugs’ works representing various aspects of Beijing and people living here are displayed. In this way, not only many visitors are engaged into the exhibitions with their own works, but also more and more visitors learn deeper the culture of Beijing through these works. And this also makes the museum no more a very high institute, but a public place close to the visitors’ life and they can have interaction and entertainment, and learn knowledge through participating the activities and programs of the museum.



Fig. 6. A Photography Exhibition at the Capital Museum, [http://capitalmuseum.org.cn/zlxx/content/2013-02/05/content\\_50040.htm](http://capitalmuseum.org.cn/zlxx/content/2013-02/05/content_50040.htm)

#### 4. Conclusion

As discussed above, the activities and educational programs hosted by the Capital Museum expand visitor's learning experience beyond the museum's door. From the highly structured study programs which are planned and delivered by the museum to less formal or free-choice learning experience that provided by the museum; from the simply displaying objects to the visitors' engaging including choosing and exhibiting their own works, the capital museum is taking a more sociocultural perspective which emphasizes visitors' experience in relation to its collections, museum context and the society, to fulfill its educational function. The exhibitions and programs will make visitors satisfy museum experiences and will also allow museums to maximize the inherent potential of objects to contribute to human growth and learning. By taking part in educational programs and activities in the Capital Museum and its website, the visitors, no matter children or adults, have the opportunity to learn knowledge, to share discussion, debates and social interactions. And this also expands the role of life-long learning of the museum.

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4<sup>th</sup> International Conference on New Horizons in Education

# From a tourist's conception to a graphic image A case study in practice-based research

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## Abstract

The focus of this article is the manifestations of the *spirit of place* and the visual narration thereof. I use woodblock printing to convey the mental images of my experience as a tourist in Prague. By setting my process within a discussion of narratology and semiotics, I divide my pictures into modes, each of which emphasizes different facets of the ambience of locality. In addition, each mode's method of visual narration differs from the others. The study evokes a discourse on the narrative possibilities of a still picture, paying special attention to symbols and metaphoric expression giving rise to connotations.

Keywords: practice-based research; still picture; graphic image; visual narration; spirit of place

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## 1. INTRODUCTION

Place is not just a particular location in a world—it is also a connection between the location and the person staying there. Mass communication, increased mobility, and a consumerism-based society have homogenized the world. As a consequence, many places don't tell us anything about their particular locality. Still, places are advertised by images that attempt to differentiate them. Often these images are stereotypic, offering tourists the same attractions again and again.

## 2. RESEARCH QUESTIONS

What are the possibilities for an entire still picture to tell about *the spirit of place*?

By which means can meaning be constructed?

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### 3. THEORETICAL BACKGROUND

The frame of reference entails a discourse between image creation and theory. The *spirit of place* as a starting point is a salient concept of humanist geography, with philosophical commitments to phenomenology. It draws on the personal experience of an experiencer. The spirit of place involves its topography and appearance, social activities, past events, and present situations (Relph 1976).

I am the creator of the pictures that tell about my experiments in Prague, Czech Republic. My background is in graphic design, so this research falls within the domain of visual communication design. It focuses on pictures used as a salient communicative tool by the designer. My interest is in exploring the nature of images. I see graphic images as constructed representations communicating in a certain culture (see Hall 1997). A wide variety of things are defined as the concept of image. All images are based on various similitudes, likenesses, or resemblances. Mitchell (1987) presents images as a genealogy tree. Using this approach as a metaphor, I transform my mental images into graphic images—concrete pictures that can be seen and touched (Ibid).

Meanwhile, I also see my illustration process as narration. The structuralist theory argues that each narrative has two parts: a story and a discourse. The story is the content of the narrative expression, while the discourse is the form of the expression. Narratives are structures that are independent of medium. They can be expressed in the form of different surfaces as verbal nuance, graphic design, or balletic movements. The process of expressing a narrative has been defined as “transformation” (Chatman 1978, 21.). I have taken on the challenge of expressing my narrative in only one graphic image. While poetry is the art of time and motion, a still image is the art of space, stasis, and arrested action from the perspective of narratology.

As a constructive illustrator, I understand narrating not only as telling about happenings, but more broadly as showing a state of affairs, depicting things, giving meanings, and expressing ideas (Nikula 2012). Influenced by the thinking of Yuri Engelhardt (2007), I see the constructing of my image as composing visual elements with certain properties within a meaningful space. I also ground my findings in a discussion of the grammar of visual design (Kress and van Leeuwen 2006 [1996]).

### 4. METHODS

After visiting Prague, on the basis of my experiences, I have brought out the contents of my mental images using visual means. In my illustrations, I used woodblock printing: I first carved motives in the wood, took away the areas that would remain white, and then coloured in the upper surface. Finally, the image was carefully transferred onto paper by hand. The method has many stages, which gave me time to reflect upon my experiences and to try to express them using visual means. During the process, I also produced different versions, starting with sketches and developing them into various versions—all of them not succeeded ones. These are documents that show my transformation process.

On the basis of my own material, I then produced a model of analysis to depict the structure of the pictures and the meaning they contain. For the *model for narrative layers*, I combined criteria from visual narratology and semiotics. I paid attention to the ways in which the elements refer to their target: icon and symbol. (All pictures are indexical in referring to my travel and illustration method.) I also took into consideration metonymic and metaphoric expressions. By using this model, I divided my pictures into different modes or ways of visual telling. In addition, colours and shapes carry connotative potential and expressive charge.

## 5. RESULTS

I divided the created pictures into modes as a method of visual telling. These presentation methods emphasised different facets of the experience of the ambience of locality, and their methods of visual narration also differed from one another. I present them with one example picture for each category.

### 5.1. Scenery. Space without living creatures



Fig. 1. Jewish cemetery. Scenery in Prague.

The first mode comes from the narrative theory. According to Seymour Chatman (1978), a narrative without an agent performing action is impossible. Therefore, I arranged one category of pictures with no living creatures. These are depictions of scenes or spaces where happenings could take place. In my sceneries, I refer to the town of Prague in an iconic way, showing the way things really are (Mitchell 1987). Iconicity is one positive property of images, based on a correlation with its object—at least some qualities are similar. Based on iconicity, real-world optical experiences can be imitated (Messaris 1997). For me, the images in this mode work as documents that are witnesses of my visit to Prague. But compared with realistic photographs, the illustration technique has left its mark—woodcarving adds its own connotations to the work. As an illustrator, I can take advantage of the style of lines, forms, and colours to show a variety of emotional feelings. Compared to detailed photographs,

these images are also simplified. They don't repeat all. But all the visual elements are meaningful as they are selected by the illustrator. The relationship between the meaning and the form is really a transformation, not a "registration" (Barthes 1986, 82).

Metonymy is a way of creating realistic impressions based on associations. When seeing one small part, the bigger whole can be traced (Fiske 1994, 128–129; Mitchell 1987, 27). One scene can represent the whole town or certain kind of city life. Metonymy as a rhetoric means enables tight expression. In my example picture, **Figure 1**, I have framed one scene that was interesting to me. I noticed that advertisers of tourist attractions have actually selected and presented many of the same scenes that were my favourites, but I couldn't rid these images from my mind through media presentations. My picture of a Jewish cemetery (Fig. 1) also put me thinking: Is growing grass alive—and are trees living? Because plants change the scenery so slowly, I decided to place this image in the first category. Generally, in a still picture, I can't see the border between events and non-events so strict. If I use visual elements referring to people's actions, then I can give the impression that something is happening even though we don't see any characters acting or events occurring. Still images have the ability to expand their stories outside of their frames and call forth a variety of emotional responses. In suggesting meanings, the role of the illustrator is salient.

### 5.2. Episode. People make it a happening

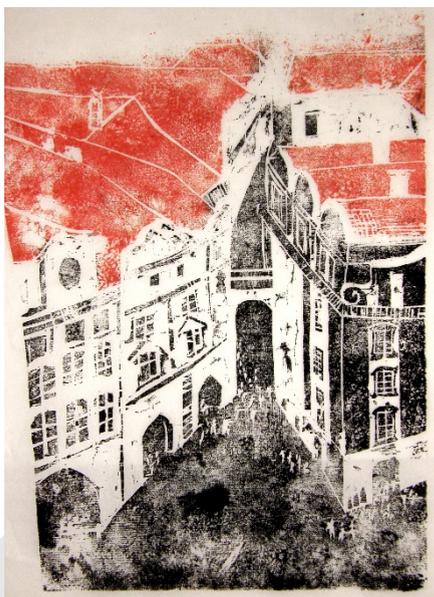


Fig. 2. Episode. I see the town on the tower.

During my first days in Prague, I got a message to my mobile phone: "Step up to the old town hall tower, so you see the scenery changing colour!" This actually happened! This moment stayed in my episodic memory and came back into my mind after the travel (see Glass & Holyoak 1986, 235). The moments in one's episodic

memory concern strong emotional feelings or are otherwise meaningful. In **Figure 2**, you can see what I saw from the town tower. Characters added to the streets reveal a chain of events (Chatman 1978, 34). The picture captures one moment of a happening and insists that viewers to interpret it so that the story before and after can also be seen. This image carries more meanings than the first one. The description in a still image, however, is based on composition in two-dimensional space, so it limits the representing of time-flow. The actions are emblematic and eternal (Goodman 1981, 106). But there are means that illustrators can use to show this, such as creating back and front areas in the picture surface. Also, a viewer's eyes can, to a certain degree, be led by arranging lines and forms of elements. By using contrasts in colours and sizes, attention is kept focused on the most important items. In my picture (Fig. 2), I used red to represent the characteristic of the roofs in the town. This colour refers to its target in an iconic way.

When I was later carving and printing this moment in paper, I compared my composition idea with the grammar of visual design (Kress and van Leeuwen 2006). In my picture, I am looking at the people on the street from high angle. But in this case, however, it doesn't mean that I am diminishing them (Ibid. 140). The angle here should be taken as a natural location. I am looking at people from far away, seeing them as a crowd. If I had taken a closer look at them, you could have seen what kinds of interactions were going on between the participants. This could be seen through vectors that show processes. Vectors are lines leading away from things, body parts, and gazes. The use of diagonal lines as vectors especially carries the idea of movement. Vectors also separate narrative images from conceptual ones (Ibid. 45–78). From this point of view, my graphic images are traditional narratives, but without time passing by as clearly as in written stories. The grammar of visual design consists of conventions for representing and interpreting pictures. I used these conventions intuitively, not by purpose, and noticed them afterwards. These conventions should still be considered as meaningful means in expressing ideas, and they carry narrative potential.

### 5.3. Etnofiction. New story comes from imagination



Fig. 3(a).

Puppets over a gothic tower.

Fig. 3(b). Kafka came to my dreams.

Whereas *episodes* call back moments that have been experienced, *etnofictions* create new reality. They have roots in real-world happenings, but in my imagination, the experiments are combined with other ingredients. Fictional elements come from history, mythic stories, literature, etc. All kinds of intertextual or intervisual material can be used (Nikolajeva & Scott 2006, 227–228). When these are combined as a part of a visual composition, a new story is born. In addition, non-existing fantasy creatures can be presented in a realistic way by using a linear perspective. They can be seen in a chain of happenings, as in the previous mode. But actually the idea of the *etnofictions* is to part from real life and approach towards imaginative world. To create the feeling of another reality, unnatural elements are part of the composition. Visual means can be used to violate the reality, such as unnatural colours and plasmatic forms, like in surrealist Dali's paintings. In **Figure 3(a)**, I changed the scale between two main elements, the tower and the characters. The puppets or historical artists, writers—whoever they even are—were placed in the upper part of the composition area. Yellow as a light colour lets them rise and shine in the sky. Kress and van Leeuwen (2006, 186–188) state conventions concerning upper and lower parts of a composition. Whereas the lower part is “real”, the upper is ideational, presenting something new. According to this statement, my composition strengthens the idea of an imaginative story. In addition, these information values carry narrative potential.

For **Figure 3(b)**, I combined ideas from Franz Kafka’s novel *Metamorphosis* with my experiments in a bar (which had a “U” in its name) in Prague. In this historical town, I often saw old uncial letters in commercial signs. I put a fly to drink in the inside of one letter. Kress and van Leeuwen (2006, 45–113) present two kinds of visual structures of representations: narrative or conceptual. My **Figure 3(b)** has much in common also with the conceptual structures, such as the flat surface in the beer glass and a lack of linear perspective.

#### 5.4. Comment. My own life involved in the story



Fig. 4. I faced challenges in my academic research.

**Figure 4** presents an event in Prague and consists of many kind of ingredients. First, there is a still scene in the back and living creatures in action in the front. One person is flying, which makes the event unnatural. This is at least an *etnofiction*. But because the flying character is me, the happening becomes a metaphor. Nelson Goodman (1976, 8) names this kind of constructing as “putting a layer of comment”. It is telling about my excitement and challenges in starting to make my dissertation. I am flying towards a statue, which symbolises a long history of cultivated civilization. I added a feeling of speed and emphasised the horizontal movement by carving direction.

I also enriched the surface with many quickly made details. That makes the expression chaotic and perhaps lets people see many meanings in it.

In this *comment* mode, the illustrator’s attitude and opinion are strongly seen. Tourists experiencing places can use their own inside stories as a part of their telling. We are actually “living our stories”, and new meanings get interfered in the previous ones (Bruner 1986). I have found metaphors to be as useful means of rhetoric in

representing personal meanings in my pictures. In the metaphorical expression, qualities are transferred from one to another by combining the usual with the unusual. Often, images of concrete physical things or situations evoke an analogous abstract concept (Messaris 1997, 9–10). Metaphorical dimension is one class of iconic signs based on similitude. Mitchell (1987, 10) classifies metaphors as verbal images in his image family, defining them as short descriptions that sometimes suggest nothing more than a recurrent abstract idea.

In my picture, there is at least one bird flying with me. This bird, the bridge, and the clouds can be interpreted as symbols. A symbol is a sign when it is used and understood as such based on convention or habit. Understanding of symbols also depends on the context; for example, colours can have symbolic meaning but often appear in the form of elements. Symbols have narrative power, giving rise to connotations. They are useful in packaging meanings. For this project, while the *episodes* came suddenly in my mind, the *comments* took more time to transform in my imagination and to find their visual form. The pictures in this mode were born last. These four pictures were presented as a part of an exhibition called “Poetic Metamorphosis” (2009).

## 6. CONCLUSIONS

Based on my own experience as a tourist, I have shed light to the concept of *spirit of place* seen from a tourist’s point of view. I found that I was unable to separate my pictures from the images used by advertisers, and they influenced my pictures in the first mode. After my travel, I presented my memories as *episodes*. In the *etnofiction* mode, old stories transformed into new ones and were enriched by my imagination. Artists are in a key position for creating new stories and refreshing the media imagery. Experimenting with places can give birth to new approaches to visual narratives, upon which the whole concept of *spirit of place* is based. Sometimes the meanings given for a trip to a particular location are more important than the place itself. In this case, the place serves only as a surrounding to personal meanings, as in my *comment* mode.

I started from the concept of *spirit of place*, and my images were developed in discussion with visual culture and theories of literature narrative theory and semiotics. I metaphorically added layers by adding more meanings stage by stage—starting from *scenery*, to *episode* and *etnofiction*, and at last to *comment*. I see this *model of narrative layers* as a part of my results. In constructing visual representations, the iconicity is a salient strength. It refers to many kinds of similarities from seeing a place with one’s own eyes to a metaphorical dimension. Many meanings are tightened in symbols. I have paid special attention to the ways in which symbols and metaphoric expression can give rise to connotations and thus increase the variety of meanings construed from a picture.

This study has evoked a discourse on the narrative possibilities of a still picture. My understanding of visual telling is very broad. I have arranged meaningful compositions by elements with certain properties. For me, visual telling is not within the limits of traditional narrative theory, such as place, characters, and events in time. Properties of elements carry potential for meanings and should be considered as the narrative potential of still images. In drawings, these meanings are further tightened because the illustrator selects all the elements. I find it easier to create metaphoric dimensions in a drawing than a photograph. The information values (Kress and van Leeuwen 2006, 186–188) concerning different parts of the composition should also be looked at as narrative

potential. These conventions effect the interpretation and way of reading pictures. When it comes to the differentiation of narrative and conceptual images, I view the border between these two very loosely. Narrative potential can also be seen in pictures without any vectors referring to events.

In my working process, I discovered that some salient concepts of narrative theory can still be adapted in visual transformation as principles of design. The first concept is coherency. As a producer of art, I create visual coherency between elements, using, for instance, colours and shapes. The second concept is thinking of gaps. Using gaps as a method of narration increases viewers' options for deciphering meanings and become more interested in the work of art. Gaps are essential and common for all narratives. I see the concept of gap as referring to the openness of images in interpretation, or, as Messaris (1997) puts it, "syntactic indeterminacy". This property puts power in images, especially those used for visual persuasion. Arguments put through images need not to be supported by words (Ibid. 219). Therefore, both composition in space and properties of elements should be taken into consideration when redefining the whole concept of "narrating" in the context of still pictures.

## 7. DISCUSSION

In this study, I do not define the communicative aspects, audience, or presentation medium of a picture. Instead, I focus on the beginning of the design process where an idea develops and begins to assume a visible form. My point of view is that of a visual communication designer, not that of a receiver or interpreter. The findings in this study are based on my own artwork and previous experiences. The graphic images in the first mode stand as documents for me, but viewers who have visited Prague would probably give their own individual meanings to them. A sketchy and rather realistic illustration style can invite viewers to fulfil my presentations with their own imagination and subjective interpretations. If the design work is very finished and detailed, then it is seen more as an input of the designer. In woodcutting the carving style and colouring allow variations in style from sensitive to rough. This illustration method adds its connotations and often pleasantly surprises me. It also enables me to simplify and thus compress expressions. Still, it is also disappointing when the printings are turned to their mirror image, such as in Figure 4, where the direction of flying was changed. In many cases, changing the left and right side of the image can be crucial for the meanings, as Kress and van Leeuwen (2006, 179–185) have stated. Regardless, the multiphase method matured my experiencing and brought out new personal meanings.

In this paper, I have concentrated on the modes presenting entirely static, still images. Placing my model of narrative layers into a discussion of the literature narrative theory, two other possible modes come to mind: *collage* and *chronicle*. They are options for future work, as *collage* actually combines many pictures gathered under the same theme from different perspectives and *chronicle* is actually a series of pictures, like comics, describing many stages of the same event. This would be closest to literary narratives of presenting happenings in time. However, by creating the feeling of metamorphosis, the idea of time passing by can still be presented in still pictures by visual means.

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4<sup>th</sup> International Conference on New Horizons in Education

## From mekteb-i tibbiye-i adliye-i şahane to present day an overview to pharmaceuticals education

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### Abstract

Pharmacy education in our country has started in 1839, with the constitution of ‘Mekteb-i Tibbiye-i Adliye-i Şahane’ in Istanbul. In the year 1909, associated with the establishment of the Darülfünun Medical Faculty in Istanbul, a School of Pharmacy, named as ‘Eczacı Yüksek Okulu’ got started the education. The courses of this school were transferred from High Pharmacy School of Paris. Since 1962, the Aforenamed School has continued its education activities as the Faculty of Pharmacy under the structure of Istanbul University.

Because of the insufficient graduation number of students from the Faculty of Pharmacy, some private institutions have received permission from the Ministry of National Education for being able to establish "Private High School of Pharmaceutics". After the first private school, established in 1964, the number of schools teaching pharmacy education has increased rapidly and the need for pharmacutists was tried to be satisfied. Today there are 26 higher education institutions teaching pharmacy in Turkey.

Keywords: Pharmaceutics, Lecturer, Mekteb-i Tibbiye-i Adliye-i Şahane, Army Pharmacutists.

### INTRODUCTION

It is generally accepted that the history of medication and pharmaceuticals has started with the first emerging humans and developed parallel to the evolving of the civilization. For centuries, pharmacutists were trained with a master-apprentice method and pharmacy was only a sub-branch of medicine until it has started to split up completely from the profession of medicine in the 18<sup>th</sup> century.

The pharmacy education in Turkey has started in 1839 with the establishment of “Mekteb-i Tibbiye-i Adliye-i Şahane” in Istanbul. The pharmacy education was conducted within the medical department of this school with a three year term. Associated with the establishment of the Darülfünun Medical Faculty in Istanbul, in the year 1909, a School of Pharmacy, named as ‘Eczacı Yüksek Okulu’ launched the education activities for the first time having been the courses of which were transferred from High Pharmacy School of Paris. The school which had been attached to Faculty of Science in 1933 with the University Reform Process was again taken under the structure of Medical Faculty in

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1944. After the year 1962 it has continued its education activities as the Pharmacy Faculty of Istanbul University.

## 1. THE HISTORICAL PROCESS OF TRAINING AND EDUCATION

In a contemporary manner in Turkey, the pharmacy education has started with Dr. Charles Ambroise Bernard (1808-1844), who was appointed as the director of Mekteb-i Tıbbiye (Medical School) in 1839. When Mekteb-i Tıbbiye was first established, it consisted of Tıbbiye (Medicine); Preparation Department (1-4<sup>th</sup> Classes), Tıp (Medical) Department (5-10<sup>th</sup> Classes), Pharmacy Class, Surgery Class and Ebe (Accoucheuse) Class (Baytop, 1995). The education has started with the students transferred from Tıphane (The former outdated medical school). The distribution of these students among the departments and classes was conducted according to the results they had from an initial quality assessment exam (Baytop, 1995). The education period varied according to the departments or classes. The initial 4 years of education period was conducted as high school level. The professional education was starting after the 5<sup>th</sup> class. According to the professions, the education period was designated as follows: Medical Department (for doctors) 6 years, pharmaceutics, surgery and accoucheuse classes 3 years (Baytop, 2000; Dölen, 2003). The students who were successfully graduated after the 3<sup>th</sup> year were obtained their diplomas and employed in the Army (Kahya, 1997).

The education and training activities in pharmacy education were conducted in French as in the case of medical education (Baytop, 1995). As academic staff, the instructors coming from foreign countries such as France and Italy, who had studied pharmacy or chemistry in their countries were employed (Baytop, 2000). While the education period was 2 years initially in 1839, it was extended to 3 years in 1840 for the new admitted students (Baytop, 1995; Özçelikay & Asil, 1998 ). For a long period, boarding military students were admitted to Mekteb-i Tıbbiye-i Adliye-i Şahane (Baytop, 2000; Dölen, 2003). The alumni among those were employed in the army (Baytop, 2000). After the year 1858, the school has started to admit civilian and day time (not boarding) students named as “Harici (External)”. These students had the chance to work privately after completing the compulsory 5 year service term. In 1893, the external (harici) students were also transferred to Mekteb-i Tıbbiye-i Mülkiye-i Şahane’s Pharmacy class and continued their education here (Baytop, 2000; Dölen, 2003 ).

The first students registered to Pharmacy class of this new school were subjected to the qualification exam after 2 years of education, since they were educated for a while in Tıphane (the former school) before. Only 2 of the students taking the exam could pass it successfully and were graduated in 1840 (Baytop, 1995). The alumni, successfully graduating from the Pharmacy class of Mekteb-i Tıbbiye-i Adliye-i Şahane were certified with a kind of 1st class diploma, authorizing them to be able to perform pharmaceutics as a profession anywhere in Otoman Empire. On the other hand, the ones trained by apprenticeship and could pass the exam conducted by “Nazır-ı Mekteb-i Tıbbiye-i Şahane and Umur-ı Tıbbiye-i Mülkiye” were certified with a 2nd class “icazetname (Licence)”. The 2nd class “icazetname” bearers were only authorized to open pharmacies outside Istanbul (Baytop, 1985; Baytop, 2000). After 1879, the differences between the 1st and 2nd class pharmaceutics were canceled and all was given the right to be able to institute pharmacies anywhere (Baytop, 2000).

But the above applications brought some significant problems as well. Especially, in the pharmacies run by the master-apprentice type trained pharmacists, every kind of material or substance was sold at retail or wholesale freely. To be able to take those kind of irregularities or corruption under control, a regulation named “Beledi İspençiyarlık Sanatının İcrasına Dair Nizamname” was passed on the 3rd of February 1861 but could only come into force in 1863. After this regulation went into effect, an order was brought to the pharmaceuticals profession (Baytop, 2000).

The 5th Chapter of this regulation was related to the pharmacy students. According to this chapter, to be able to be a pharmacy master, a training had to be conducted for totally six years consisting two terms each of which was three years long. For this purpose, the possible student must have obtained primarily an admission paper from Mekteb-i Tıbbiye-i Şahane and had to work together with a pharmacy master for three years. Fifteen days before completing the three year term, a stage/internship certificate had to be prepared by the pharmacy master and given to the student. The student must have applied to Mekteb-i Tıbbiye with that certificate and taken French and Arithmetic exams. The successful students during the exams were authorized to continue the lectures for the second three year term (Baylav, 1968; Yıldırım, 1999; Dölen, 2000). Only after completing also this second term successfully and passing the final exams at the end, the students would be given the diplomas (Baylav, 1968; Dölen, 2000).

As the course content, a program similar to Paris Pharmacy School was implemented at Pharmacy Class. As the main lecture resource, the copyright owned publication of French pharmacist François Dorvault’s “L’Officine ou Répertoire Général de Pharmacie Pratique” named book was used. Consequently during this period, the Ottoman pharmacy was influenced by the French school. (Baytop, 1995). The aforementioned resource was translated to Ottoman language by Dr. Hüseyin Sabri in 1874 and published with the title of “Düstur-ül-Edviye (The Law of Medicine)”. This publication stayed as the main resource of Ottoman pharmacists for years (Baytop, 2000). Besides this, the publication titled as “Kimya-i Tıbbi (Medical Chemistry)”, authored by Kırımlı Aziz İdris full filled an important place in the history of Turkish pharmacy literature. Kırımlı Aziz İdris Bey has developed a series of etymological rules in the translation of French terms into Turkish (Dölen, 1998; Dölen, 1999).

During the mentioned period, some of the lecturers were graduated from the French Pharmacy School. As an example, Antoine Calleja (Kalya Bey (1815-1893)), who had come from French, conducted the Inorganic Chemistry course for 47 years as an instructor (Baylav, 1968; Dölen, 1999). After Kalya Bey, one of his students and assistants Halepli Vasil Naum (1855-1913) was assigned to this post (Dölen, 1999). The Pharmaceutical Chemistry course was taught by Faik Pasha, after his graduation in 1855 for 40 years (Baytop, 2000). Since the education language in Tıbbiye (Medical Faculty) was in French, Kalya Bey has also conducted his lectures in French till 1869 and after than in Turkish. Kırımlı Aziz İdris Bey (1840-1878), who had put great efforts in changing the education language from French to Turkish, taught Kimya-i Uzvi (Organic Chemistry) in Tıbbiye (Dölen, 1999). During the initial years, the Nebatat (Flora/Botany) Course, which was taught by Dr. C.A. Bernard, was performed on the live plant samples (Baytop, 1995). During this period, education was implemented in a very basic level and the students were taught only sufficient French, which would provide them to be able to write a prescription and basic level physics, chemistry, botanic and religion courses (Baytop Turhan, 1985).

The "Ensiceyi Edviye (Tissue of Medicine)" Course, which was included in the lecture program after the establishment of "Eczacı Mektebi (Pharmacy School)" in 1909 and taught at the 3rd year of the program has been accepted as the first Pharmacognosis Course in Turkey. The course which was taught only for one year at the beginning was extended to two years in 1915 and began to be taught both at the 2nd and 3rd year classes (Tanker, M. & Tanker, N.).

The studies conducted by the pharmacutists during the time of Mekteb-i Tıbbiye-i Şahane were published primarily in the journals named "Journal de la Société de Pharmacie de Constantinople" and "Revue Médico-pharmaceutique", which were issued by a community named "Société de Pharmacie de Constantinople" (Baytop, 1995).

In Mekteb-i Tıbbiye-i Şahane (The Magnificent School of Medicine), which had an advanced scope accordingly, were located differnt departments such as a botanical garden, library, physics and chemistry laboratories, collections of mineralogy, hospital and a central pharmacy (Baytop, 1993). Unfortunately, the liberary of Mekteb-i Tıbbiye (Medical School), collections, nature history museum, physics and chemistry laboratories, herbariums and the "Nebatat (botanical)" garden, which had been created by long and painful efforts of Dr. Bernard were perished after a fire on 11 October 1948, because of a fire started in Linardi Street (Former Çiçekçi Street) (Baytop, 1985; Baytop, 1995).

## 2. EDUCATION AFTER "MEKTEB-İ TIBBİYE-İ ADLİYE-İ ŞAHANE (MAGNIFICENT SCHOOL OF MEDICINE AND LAW)"

### 1. *Mekteb-i Tıbbiye-i Mülkiye-i Şahane (The Magnificent School of Medicine and Law):*

A Pharmacy Class was instituted with the establishment of Mekteb-i Tıbbiye-i Mülkiye in 1867. The pharmacy education was conducted in a three year term here. While the pharmacy students were receiving the same courses with the medical school students during the first two years, after the 3rd year, the lectures were being seperated. Between the years 1872-1896 348 pharmacists were graduated from this school (Dölen, 2003).

### 2. *Şam Mekteb-i Tıbbiye-i Mülkiyesi (Damascus School of Medicine and Law):*

To satisfy the medical personnel gap in the country, a Pharmacy Class was established in "Şam Mekteb-i Tıbbiye-i Mülkiyesi", under the structure of Mekteb-i Tıbbiye-i Şahane in 1903. The qualification exams for graduation of the students, taught in this school, were conducted by the instructors coming from Istanbul (Dölen, 2003).

### 3. *Haydari (Haydarlı) Eczacılar (Haydari Pharmacists):*

Upon the education language of "Mekteb-i Tıbbiye-i Şahane" is changed from French to Turkish, the interest of the students in medical tarining was increased and pharmacy class students were also tried to follow the medical courses in Tıbbiye for being able to receive medical doctor diplomas. As the students passed from pharmacy class to Tıbbiye (medical school), the need for the pharmacists in the army was increased. This requirement was strongly realized during the Ottoman-Russian War. After this event, with a regulation passed on 9 May 1876, it was decided to train pharmacists practically. The soldiers, talented on this subject, were educated with a practical training and new pharmacists were educated with a method by reducing the content of some of the courses. The

pharmacists educated in this way were certified with a diploma titled as “Haydarî” or “Haydarlı”. This application was continued until 1896 (Dölen, 2003).

#### 4. *Eczacı Mektebi (Pharmacy School):*

This school has started its education on 6 October 1909 and continued until September 1925 at Menemenli Mustafa Pasha Konak (Residency) (Dölen, 2003). After the establishment of Pharmacy School, the stage obligation was organized as 1 year after graduation (Yıldırım, 1999; Dölen, 2003). “Tahlilî Kimya (Chemistry Analysis)”, “Analytical Chemistry” and “Pharmacognosis” lectures were added to course program in 1914 and “Hydrology” and “Organic Chemistry” in 1926 (Dölen, 2003). With the passing of the “Regulation About the Pharmaceutists and Pharmacies” in 1927, a two year stage obligation was come into effect, instead of the former three year practical training to be conducted at the pharmacies (Yıldırım, 2009).

After the University Reform of 1933, the Pharmacy School has continued its education activities under the structure of Faculty of Science. The conditions of receiving a pharmacist diploma was stated in the Article 3 of Ordinance for Pharmacy School, which was under the structure of Faculty of Science of Istanbul University as follows: “To be successful at the visa exams after the second, fourth and sixth semesters; at the final exam for graduation after the eighth semester and to pass the qualification exam after the stage period. Similar applications were applied when the school was organized under the Medical Faculty afterwards as well (Baylav, 1968). The 3 year education period was extended to 4 years after 1938-1939 and the program organized in this period was continued until 1947. The revised program in 1947 was continued until the establishment of Faculty of Pharmacy (Dölen, 2003).

The Pharmacy School, which has accepted only the mail students until 1922, started to admit female students after this year as well (Dölen, 2003; Naymansoy, 2010). Among the first alumni of this school, Ahmet Mustafa was assigned to Çanakkale Hospital and Kadri Süleyman to Maltepe Hospital and performed their professions in those public hospitals (Baytop, 1995). Although the first female student was admitted in 1924, she left the school in a short while. Fatma Belkıs, Fatma Bedriye and Ayşe Semiha, who were the first female pharmacists, registered to the Pharmacy Class of Medical Faculty in Istanbul Darülfünun (The predecessor of Istanbul University) in 1927 and graduated in 1930 (Dölen, 2003; Naymansoy, 2010).

#### 5. *Eczacılık Fakültesi ve Eczacılık Yüksek Okulu (The Faculty of Pharmacy and Pharmaceutics Higher School) :*

Although the pharmacy education in Turkey has started in Istanbul, the establishment of first Pharmaceutics Faculty came into being in Ankara in 1960 with the institution of Pharmaceutics Faculty of Ankara University (Naymansoy, 2010). So the first pharmacy faculty in Turkey was established with the Law number 156, on 12 December 1960, with the name of “Ankara University Pharmaceutics Faculty” in Ankara. Since the number of pharmacists graduating from this school is accordingly law, some private organizations such as Barıştıran Collective Company applied to Ministry of National Education and received authorization for establishing “Private Higher School of Pharmaceutics” (Baylav, 1968). As a result, the first private pharmacy school was established in Istanbul in 1964 (According to Dölen on 1 Nov. 1963; Dölen, 2003) with the name of “Istanbul Private Higher School of Pharmacy” (Baytop, 2000). Following this school in Istanbul, other private schools have also been established and implemented the same program of this first sample (Baylav, 1968; Baytop, 2000). However with the law number 1472, passed on 9 July 1971, these private

schools were publicised and with a later law named “Higher Education Institutions Regulation”, passed on 28 March 1983, all were transformed to Pharmacy Faculties (Baytop, 2000).

## CONCLUSION

To that end, fundamental transformations were conducted in pharmaceutics area and in its education as well, as in the case of almost all other areas or disciplines during the Republic period of Turkey. The Pharmacy Faculties, the first ancestor of which is “Mekteb-i Tıbbiye-i Adliye-i Şahane (Magnificent School of Medicine and Law)” established in Istanbul in 1839, almost all around Turkey today continues to their education in a permanently modernising manner. Finally, pharmaceutics as a profession, which is dominated by male professionals at the beginning, because of the Military School established initially, has been transformed to a sector, the education of which is being preferred by females increasingly today at the Pharmacy Faculties of bachelors level (Naymansoy, 2010).

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4<sup>th</sup> International Conference on New Horizons in Education

# Gender gap and stem career choices in 21<sup>st</sup> century American education

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## Abstract

Starting with the concern for teachers' differentiated attention to boys and girls in the classroom, continuing with the implications of the course taking patterns in middle- and high-school years for students interested in science, and culminating with the importance of guided teaching and learning for most students, it is important to understand the quest for a fair educational policy serving scientific and technological needs of tomorrow. This paper reports results of an exploratory study examining factors that might be associated with achievement in mathematics, natural sciences and engineering determining girls' career choices. Female students' attitude in 'hard core' sciences, teachers' beliefs and schools' institutionalized practices are accounted for in understanding STEM (science, technology, engineering and mathematics) choices. Students' beliefs, teachers' recommendation and the system of tracking are all important factors in choosing an in-demand science career. The participation in advanced STEM discipline courses, students' attitudes, as well as tracking are under scrutiny for the analysis of Mathematics and Natural Sciences undergraduate major choices of more than thirty students enrolled in a four-year college in Upstate New York.

Keywords: gender gap, science career, STEM disciplines

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## 1. INTRODUCTION

Under the last decade's auspices of accountability measurements, largely known as the *No Child Left Behind Act-2001*, countless efforts have been directed toward closing the achievement gap between students from different ethnic, socioeconomic and cultural backgrounds (Berends, Bodilly & Kirby, 2002). More recently, during President Obama's administration, the interest shifted toward a reduction of the achievement gap in science, technology, engineering and mathematics, the STEM disciplines. There is scholarly evidence that even though during the last decade the gender differences in mathematics and science education seems to be decreasing, male students still perform better on hard core sciences standardized tests (Mullis & Stemler, 2002). The male students are also more inclined to take advanced courses in mathematics and science at all levels, not only during the high school years. Interestingly enough, a survey conducted by the American Association of University Women suggested a high degree of correlation between the decrease in self-esteem of young girls and negative attitudes in both mathematics and science classes (Reis & Park, 2001). More recently, efforts have been made to encourage talented girls to attempt careers in mathematics and natural sciences; nonetheless the question remain if girls lag in these disciplines due to individual characteristics or external cumulative factors.

## 2. BACKGROUND

For a global perspective, the Third International Mathematics and Science Study (TIMSS) presents the international assessment outcomes and includes results of the mathematics achievement assessment and participation in advanced mathematics courses in 45 countries. Through the analysis of these outcomes, education researchers demonstrated that while gender differences in mathematics achievement were relatively minor at the elementary level, they started to increase in the final year of secondary school (Beaton, Mullis, Martin, Gonzalez, Kelly and Smith, 1996; Mullis et. al., 1997). In a similar study, the authors proved that mathematics self-efficacy and outcome expectations are predictive of students' interest in math and science courses (Lopez, Lent, Brown and Gore, 1997). The concept introduced in the aforementioned study constituted the basis for the conclusion formulated by Turner, Steward and Lapan (2004): both mother's support and father's support positively affected adolescents' math efficacy; nonetheless, only mother's support affected their math outcome expectations. In conjunction with the previously formulated conclusion another major finding was highlighted in the same study: "children who perceive that math and science careers are appropriate gender-equitable pursuits have greater math self-efficacy and greater expectations that math will be useful and valuable to them in their future careers" (p.48).

In order to understand what factors are associated with mathematics learning and achievement, from an international perspective, researchers focused on the following critical parameters: 1) personal variables, such as prior achievement, age, and motivation or self-concept; 2) instructional variables, such as amount, or quality of instruction; and 3) environmental variables related to home, teacher/classroom, peers and media exposure (Ercikan, McCreith, Lapointe, 2005, p.6). In the above-mentioned study, the authors try to answer two main questions: 1) how are the personal and environmental variables associated with achievement in mathematics for males and females in three developed countries, Norway, USA and Canada; 2) how are the personal and environmental variables associated with participation in advanced mathematics courses for males and females in the same countries. The results of the research were conducive to interesting conclusions. The factors not directly connected to schooling accounted for large (24%-39%) degrees of variability in mathematics achievement. Regarding personal variables, the confidence in mathematics was the strongest predictor of achievement for students from Canada and Norway. In the USA, parents' highest education level was the overpowering factor related to girls' success in science and mathematics courses. Student home environment was also a strong

predictor for female students' success in mathematics in all three countries. The study concludes that the strongest predictor of all of the variables for girls and boys attending advanced courses was students' attitudes toward mathematics.

Another important study addressed differential teacher attention to boys and girls in the classroom (Beaman, Wheldall, & Kemp, 2006). In an attempt to understand the gender gap in achievement the authors proposed a working model for any classroom. Under the proposed model, a more inclusive teaching environment, characterized by positive teacher interactional styles, is to be applied for testing higher levels of class engagement, which in turn may lead to greater gains in academic achievement for students of both genders. The study also concluded that under the existing circumstances of differing ways of gender response to contemporary educational contexts, it is deemed appropriate to re-engineer them in order to build equally effective teaching environments.

Another coordinate of minority student success is related to the school's ability of tracking/de-tracking (streaming). In a 2002 study, Yonezawa noticed that de-tracking attempts in any school system should be carefully implemented, in order to allow a 'selective flexibility'. Under the above-mentioned term, a teacher or counselor could recommend tracking and de-tracking of students, based on academic results. If a counselor (or teacher) thought a student belonged to a higher-level class, he/she would allow the student to transfer. Nonetheless, if the counselor would not anticipate the student's success in high-level classes, the school will deny the student's request (Mayer, 2008, p.17).

The present study analyzes the preponderance of female and male students in science oriented undergraduate majors leading to STEM careers, in connection to both internal and institutional factors.

### 3. METHODOLOGY AND RESULTS

An anonymous survey was distributed in the Department of Mathematics and Natural Sciences at a New York State College, during the 2010-2011 academic year. The content of the survey is presented in the Appendix. A total of thirty-two students (male and female) enrolled in the Physician Assistant, Physical Therapy and Chiropractor programs answered to the survey. As element of inquiry, the survey included questions such as: "How do you consider yourself in the following areas?", "Who influenced the most your current academic career?", "What is the major cause for your academic success?", "How many hours do you spend on average (weekly) for training?", "In middle/high school what was usually your teacher's perception about your efficiency?", etc. The first pool of twelve respondents, both male and female, were aspiring physician assistants. In this pool of respondents, amongst the five male students who answered the question "what is the major cause for your academic success?", three of them considered talent and luck as the major causes for their accomplishments. The other two answered the question acknowledging as a major determinant of their success the hours of preparation at key subjects in their areas of expertise. The seven female students who participated in the survey, all acknowledged as the most important cause for their accomplishments the hard work reflected in long hours of study. Among these seven female students, two also considered their success and interest toward a career in the medical field as being tightly connected to knowledge accumulated in previous courses and laboratories. In conclusion, it is important to notice that the majority of male undergraduate students attributed their academic success to talent and luck, rather than hard work and time invested in learning. Significantly, all girls considered the academic preparation and determination quintessential to their progress.

The second pool of survey respondents was comprised of twenty undergraduate students enrolled in academic programs in the areas of Chiropractic and Physical Therapy. From the eight female students, four mentioned as equally important for their academic success both the hours of weekly preparation and the courses previously taken in their areas of expertise. Significantly, none considered talent or luck as a significant factor of academic achievement. On the opposite, one fourth of all of the male respondents acknowledged luck and talent as important factors for success. Overall, the vast majority of male and female students in both pools highlighted the importance of weekly hours of training for exams and quizzes, between 15 and 18, or even more than 20. Nonetheless, female students considered that they were helped and supported by their teachers in middle school and high school only because they showed interest and dedication, and they were always well prepared for courses and laboratories. Even though almost one half of the male students work as hard as their female counterparts, they also ponder the impact of luck and talent in their professional training. Moreover, many interviewed subjects were in one way or another guided and supported through tracking (streaming) mechanisms during their middle school or high school years.

#### 4. CONCLUSIONS

The results presented in the current study support the previously stated hypothesis that in today's American education system, the student's success toward STEM careers relies mostly on the support and guidance provided by counselors and teachers. Girls' performances in STEM disciplines are preponderant in a school environment that encouraged prolonged effort in natural sciences and mathematics. In the recommendation process for advanced placement courses, many of the advantages of a biased societal mentality of innate abilities prevail in connection to performances and interest of male students manifested for the above-mentioned STEM domains. The female students that succeed in this environment usually work their way toward highly sought-after STEM careers, and their accomplishments are based on their common perception that prolonged training hours are required in order to keep up with their male counterparts.

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**Appendix F. Mathematics and Natural Sciences Survey**

1. What is your gender?    M    F

2. Ethnicity    Caucasian African Am.    Asian Am. Native Am.    Asian    Other

3. Nationality

4. Age

5. Are you?    Graduate Student    Undergraduate Student

6. Major

7. How do you consider yourself in the following areas?

Mathematics	good	very good	average	less than average	
Chemistry	good	very good	average	less than average	
Biology		good	very good	average	less than average
Physics		good	very good	average	less than average
Medicine	good	very good	average	less than average	
Environmental Sci.		good	very good	average	less than average
Engineering	good	very good	average	less than average	

**8. Who influenced the most your current academic career?**

Teachers          Parents                  Friends    Myself

**9. Undergraduate GPA**    Below 2    2-2.5    2.5-3    3-3.5    3.5-4

**10. Graduate GPA**                  Below 2    2-2.5    2.5-3    3-3.5    3.5-4    N/A

**11. What is the major cause for your academic success?**

Talent    Luck    Hours of preparation    Lessons in class    Courses previously taken

**12. How many hours do you spend on average (weekly) for training?**

0-3    3-6    6-9    9-12    12-15    15-18    18-20    More than 20

**13. Are you better at:**          Theory                                  Laboratories

**14. What other activities were you part of in middle school when training for the following subjects?**

	Tutoring	Gifted programs	Special Projects	Advanced Placement	College Prep.	After-school	Other* Explain
Mathematics							
Chemistry							
Biology							
Physics							
Medicine							
Environmental							

Engineering							
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**15. What other activities were you part of in high school when training for the following subjects?**

	Tutoring	Gifted programs	Special Projects	Advanced Placement	College Prep.	After-school	Other* Explain
Mathematics							
Chemistry							
Biology							
Physics							
Medicine							
Environmental							
Engineering							

**16. In middle school, what was usually your teacher's perception about your efficiency?**

	Math	Chemistry	Biology	Physics	Medicine	Environmental Sciences	Engineering
<b>Good</b>							

<b>Average</b>							
<b>Very good</b>							

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17. In high school, what was usually your teacher's perception about your efficiency?

	Mat h	Chemistry	Biology	Physics	Medicine	Environmental Sciences	Engineering
<b>Good</b>							
<b>Average</b>							
<b>Very good</b>							

17. In middle school, what was usually your teacher's attitude toward your interest in:

	Mat h	Chemistry	Biology	Physic s	Medicine	Environmental Sciences	Engineering
<b>Support</b>							
<b>Non- support</b>							
<b>Indifferent</b>							

18. In high school, what was usually your teacher's attitude toward your interest in:

	Mat h	Chemistry	Biology	Physic s	Medicine	Environmental Sciences	Engineering
<b>Support</b>							
<b>Non- support</b>							
<b>Indifferent</b>							

**19. Were you tracked in middle-school?**

Course s	Mat h	Chemistry	Biology	Physics	Medicine	Environmental Sciences	Engineering
Low- level							
Avg.- level							
High- level							

**20. Were you tracked in high-school?**

Course s	Ma th	Chemistry	Biolog y	Physic s	Medicine	Environmental Sciences	Engineering
Low- level							
Avg. level							
High- level							

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# Good stories: using metaphors to teach philosophy

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**Abstract**

Courses that introduce students to philosophy, especially to freshmen, can be a challenge to teach. One of the problems is that while philosophical ideas are often quite abstract, beginning students are often concrete thinkers. One way to overcome this obstacle without making the course less challenging, is to introduce abstract ideas—such as those found in metaphysics, epistemology and philosophy of mind—through the use of metaphors and other literary devices that compare each abstract philosophical concept to something more concrete. For example, *reality* is discussed as air, fire, shadows; *knowledge* as dreams, blank slates, and information processing; *minds* as chariots, bundles and computers; *God* as an artist, a perfect human and belief as a wager; and the *meaning of life* as a rock, a middle path and a leap of faith. There was a total of thirty various philosophical metaphors used in this course. After the metaphorical description of the concept, and only after this, does the instructor offer a more literal explanation of the text. With their knowledge of the concrete story as a foundation, students seem to grasp more readily the underlying abstract concept when it is described literally. Assessment of this approach was through instructor observation, student self-reports and the creation of their own metaphors. Overall it appears that the use of metaphorical thinking first promoted *better* learning in this beginning philosophy course.

*Keywords:* Type your keywords here, separated by semicolons ;

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## 1.1 Introduction

Many philosophy professors find that teaching freshman philosophy courses presents a considerable challenge. For one thing, students often have little exposure to philosophical ideas before entering college. This may be less true in Europe, but is all too often quite true in the States. So philosophy seems to most beginning students to be quite unlike the courses they focused on in high school, such as history, literature or science. Unlike these fields, the philosophical search for truth is less a search for facts, and more a search for the

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interpretation or meaning of facts. If scientists could build a robot that was functionally identical to a human person, for example, would this mean that it was also a person, that it had rights, that it would be wrong to destroy it? To take another example, if we are conscious of the world only after a great deal of neurological processing of sensory input, does this mean that the world we experience is simply the way that world appears to us? That the “real” world is not the world of our daily experience, that it may be quite unlike what we think it is?

While most students find such questions interesting, even fascinating, many of them struggle with the process of trying to solve them. This is not only because they have little background in philosophy. Rather, it has more to do with the type of questions that philosophers raise. The heart of it is that philosophical problems are quite abstract. Questions such as: What is real? How much can I know about the world? What kind of a being am I? Am I the same person now that I was a year ago? What should I strive for in life? These and others are not exactly the sorts of questions that arise in everyday life. While a few students arrive at college able to think abstractly, and do very well very in beginning philosophy courses, most do not. Their abstract thinking skills are often sorely underdeveloped. They may be able to understand, remember, organize and discuss facts quite easily--they are good concrete thinkers--but they are not used to thinking abstractly. It is my belief that this is the main reason why they struggle with complex philosophical ideas. It is not because the material is new to them or because they are not bright enough or because they have been poorly prepared for higher education. It is rather because they have not yet developed their abstract thinking skills.

As a reaction to this, many professors teach courses that place more importance on facts, especially courses in applied ethics. This is fine and often quite helpful in developing students' reasoning skills. Debating such issues as capital punishment, abortion, euthanasia, world hunger, and the like is extremely important. However, since many students take only one philosophy course, I think that they miss out on an essential part of a liberal arts education if they are not exposed to basic philosophical issues. So the question becomes how best to teach beginning philosophy students, the majority of whom are concrete thinkers, to understand basic philosophical ideas, the majority of which are quite abstract.

One answer, the one developed in this paper, is to make abstract ideas more concrete. One way to make them more concrete is to discuss them through stories that use models, metaphors, analogies, similes and other such forms of speech. For convenience, I will simply classify all of these literary devices under the general umbrella of “metaphors”. Through their use, abstract ideas are made more intelligible by comparing them to what is more familiar to the student. In the course that I designed about thirty of these stories are introduced, stories that may be found throughout the history of philosophy and into current times, some timeworn and some new. Their purpose is to compare the unfamiliar with the familiar, so that students have initial access to difficult philosophical notions. Once they get the general idea, once they get some sense of the problem, a more refined analysis can be introduced, one based more on literal and not metaphorical understanding.

The readings for this course are primary source materials, selections from the writings of well-known philosophers. Each selection introduces a metaphorical account of a philosophical idea. After class discussion, students are given readings that analyse the problem in a more literal way. Most of these readings come from one of my books, *Thinking Critically About Philosophical Problems*, Wadsworth, 2001. While the idea of using metaphors to discuss philosophical ideas is not new, an entire course based on so many of them is new. The goal is to examine the belief that most students will better understand philosophy if it is introduced as a collection of “good stories”.

## 1.2 Course Design

The course was divided into the following six areas, which represent standard philosophical problems that might be discussed in an introduction to philosophy course. The metaphors used in each area are listed and will be selectively discussed in this paper.

### **Reality:**

*Presocratics:* Reality is water or fire or air

*Plato's Cave:* Everyday reality is like shadows on the wall of a cave

*Descartes' Dream:* Reality could be a dream

*The Matrix:* Everyday reality is a virtual reality

*The Phone Call:* Experience of the world is like a phone call

### **Knowledge:**

*Socrates' Midwives:* True knowledge is like remembering

*Plato's Divided Line:* Knowledge is like a divided line

*Descartes' Evil Genius:* Our beliefs may be like universal deception

*Locke's White Paper:* Knowing is writing on a blank tablet

*Kant and Copernicus:* Knowing is constructing

### **Mind:**

*Plato's Chariot:* The mind is like a chariot

*Descartes "Cogito":* The mind is not like the body

*Minds and Computers:* The mind is like a computer's software

*Searle's Chinese Room:* Understanding is not like computing

*Chalmers' Zombies:* The mind is not like a machine

**God:**

*Feuerbach:* God is like a perfect human

*Paley:* God is an architect

*Stoics:* God is the mind of nature

*Newton:* God is like a watchmaker

*Campbell:* God is our higher self

**Ethics:**

*Plato's Ring:* True morality is like an invisible person

*Aristotle's Golden Mean:* Being moral is choosing the mean

*Bentham and Hedones:* Being moral is measuring pleasure

*Hardin and Lifeboats:* Morality is like a lifeboat

*Thomson's Violinist:* Abortion is like a violinist

**The Meaning of Life:**

*Hindus and The Wheel:* The meaning of life is like escaping from a wheel

*Taoism and Water:* The meaning of life is like the flow of water

*Kierkegaard and Abraham:* The meaning of life is like the choice of Abraham

*Nietzsche and the Overman:* The meaning of life is like the death of God

*Camus and Sisyphus:* The meaning of life is rolling a rock

**1.3 Metaphorical and Literal Approaches**

It may be helpful to examine a few metaphors and compare the use of them to introduce a philosophical concept with a more literal approach. Let's begin with what I call the "Phone Call" metaphor. The literal issue concerns the nature and knowledge of reality. Ever since Thales got the philosophical ball rolling, philosophers have claimed that there was a distinction between appearances and reality. The way the world is experienced by

me through my senses may not be the way it really is in itself. During the Modern period of philosophy this distinction was often argued for in the following way. What I experience through my senses is not reality itself, but my perception of reality. Today this argument is more forcefully made when cognitive scientists point out that we are not conscious of what we see, hear, taste, etc., until the brain goes through lots of processing; until reality has become part of our consciousness. If this is the case, then we cannot claim to know reality directly, but rather have to make inferences about its nature as the cause of our experience.

Not all philosophers share this perspective, however. Some, often called “Direct Realists”, have claimed that we do know reality directly through sensation. How can this be if all we get from the world in vision for example, are light waves that stimulate rods and cones on our retina, whose patterns are then encoded in our optic nerve and transmitted to the brain for considerably more processing - all of this before we become conscious of what we see. How do we know that we encode and conserve the very nature of reality through all of these changes in our central and peripheral nervous systems? It certainly seems that other species with different sensory equipment perceive the world differently than we do. What makes us believe that we alone experience reality as it is?

There are many sophisticated linguistic arguments that support this view, but they are beyond the ability of beginning students to understand without a great deal of background. So the literal defense of direct realism would be difficult. Instead, the phone call metaphor helps students at least to realize how direct realism might be the correct view by comparing what happens in a phone call to what happens in sensation. After all, grandma’s voice on the other end of my landline goes through all sorts of transformations as well, from movements in her larynx, to air waves, to vibrations in a speaker, to fiber optic encoding of her voice, to speakers on the other end and air waves, and so on. Yet the same voice that began this causal process pops out at the other end of the line, a voice conserved through all these changes. In the same way, it is argued, I am not aware of my sensations, but rather I am aware of the world through my sensations.

Another helpful metaphor comes from Camus’ discussion of “The Myth of Sisyphus”. A literal approach to the question of the meaning of life might identify several types of answers under the headings of Theism, Naturalism and Humanism. Students often find such discussions emotionally sterile and fall back on their own pet beliefs without much reflection. In attempting to explain the meaning of life as it would be for Sisyphus, however, they feel the reality of rolling that rock up the hill eternally. Sisyphus was a mythical character whose punishment by the gods was to roll a huge boulder up the mountain, only to see it then roll back down. This he repeated for the rest of his life. Like Sisyphus, students can see there lives as rolling their rock every day for no ultimate purpose (get up, go to work, watch television, have kids who do the same, and so on), or see that there is a purpose (keep the rocks on the mountain to build a cathedral), and finally to see that the meaning of life is what they make of it through their choices. In this way the question becomes meaningful to them. In fact, as part of their final exam they constructed their own metaphor about the meaning of life. We will see how they did in the next section.

#### **1.4 Student Metaphors**

Assessing student learning is always tricky business, but especially so in this course. How are we to tell if students learn better by having complex, abstract ideas first introduced metaphorically and only later in a literal manner; or whether the literal explanation alone would serve better. It would be helpful if there was a control group to teach literally, for example while another comparable group gets to use metaphorical thinking first; but there is no such group. So we are left with just my observations of how well they learn complex philosophical ideas, as well as their self-reports about how much metaphors helped them to understand. These two items will be discussed in the next section. In the meantime, there is a third element that might offer some insight into this approach to teaching philosophy, the construction of their own metaphors. This last item concerns especially an assignment in which they were to construct a metaphor which might help someone else understand an idea. They were to think creatively, as a philosopher might, and invent a metaphor about what life meant to them. We had already discussed the issue in class, so they were familiar with the myth of Sisyphus and were to use that metaphor as their guide--something to agree with or deviate from. Here are some examples of what they had to say.

One student rejected both Theism and Naturalism and found Camus to have a “terribly pessimistic outlook.” Instead, she invites us to think of the meaning of life as a “wave”. Life should be thought of “as a series of motions or a cycle of meaning-making. Creation of individualized values, goals, or purposes gives one motivation, and a desire to continue to create meaning. This constant cycle of creation and achievement is a perpetual motion that keeps meaning suspended: while we do not serve to chase a meaning outside of ourselves, it is up to the individual to create the reason for living. It is a cycle of perpetual motion that not only requires but at the same time produces happiness, motivation, purpose and meaning.”

In another metaphor a student says that life is like being a pioneer. Sounding a bit like Nietzsche, he says, “To live a meaningful life you must not be afraid to live against the norms of society, you must carve your own path and decide for yourself what is right, and you must choose to live despite the inevitable fate that all humans must face--death. In a sense, you must be like the pioneer. You must venture out on your own and travel through uncharted land, creating a new path as you go. ...He is the master of his own life.” Another student compares life to dining, especially the balance that ought to be part of the food served and the value placed on each course--some much more important than others.

Other examples include comparing life to a journey on the ocean, sometimes rough and menacing, sometimes serene and beautiful, with the rough parts just as essential to happiness as the calm ones. Another thinks of life as a box of assorted chocolates, with the freedom to choose which ones to eat. Still another thinks of life as the stages of a flower, each one to be accepted as it is, with a legacy of seeds to be left for the growth of the next flower. Then there was the infinity symbol view of life, where we might “cross and curve across each line, but always stay on the same path.” One student used the metaphor of a fully grown tree that provides benefits to others to express the meaning of her life, while another sees life as like fireworks. “Just like how the fireworks bring colors to a dark sky, bringing happiness to other people and caring for those who are significant in their life will bring happiness to them and a larger, more ‘colorful’ world around them will be visible.”

Perhaps the most thoughtful metaphor was created by a student who sides with Camus about the absurdity of life. For the “absurd” man there is no meaning to life. He is like an infant who crawls out of his house and gets lost in his own very large backyard. “Because of his struggle to comprehend the immeasurable and immense terrain that surrounds him --all of its sights, its sounds and the things he cannot yet even begin to

conceptualize--the infant begins to cry in frustration due to his own inability to understand....He has a feeling of otherness--of separation and of disconnection.” However, while finding no objective meaning to life the absurd man does accept this fate of his and goes on to live according to his own purposes and goals, infusing his own subjective meaning into his life by the choices he makes.

### 1.5 Student Comments

Clearly, in this creative thinking assignment some students were more creative than others, but all seemed to get the general idea that metaphors could be helpful cognitive tools. In fact, metaphorical thinking plays an essential role in many fields, especially the further away from observable facts the subject matter roams. Think of all the various models used in physics, for example, to help us understand things such as electrons, curved space and the speed of light. In a similar manner, think of psychological explanations of the soul or mind, that use metaphors comparing minds to such things as the state (Plato), warring parties (Freud) or computers. Even in our daily lives we use metaphors to describe abstract notions such as time (it is fleeting) and space (it is like a box). Some believe that almost all thinking is metaphorical, since everything we think about we categorize as like something else. As interesting as these broader questions are about the role of metaphorical thinking, the focus here is on the narrower issue of using metaphors to understand central philosophical ideas. The question is whether or not it is a better learning experience to introduce philosophical ideas first through the use of metaphors and only later to discuss them in a literal sense, or whether it is best to skip the metaphorical understanding and go right to the literal analysis. Mindful that students often say what they think the professor wants to hear, this is what a representative sample had to say when asked directly about this style of learning.

1. I feel having a metaphor is a great way to introduce a theory, it puts what you are about to examine into perspective.
2. Metaphors simplify the terminology that philosophers use and refer back to, so that the big idea does not get lost in the complicated nature of philosophical theories. Using metaphors adds intellectual and emotional thoughts to alter the reader’s mindset.
3. Metaphors also help when it comes to visual learners versus people who can listen to something and understand it. Some people understand things better in visual ways rather than just listening or reading. This is when metaphors come in handy. The purpose of a metaphor is to paint a picture in someone’s head so that they can better understand what is being said.
4. Within philosophy metaphors allow abstract ideas to be more concrete and readily accessible. After interpreting a metaphor one can understand a more accurate, direct interpretation of a philosophical view.
5. I think that if the writers were to just cut to the chase and give the reader the literal explanation of the meaning and purpose of life, or whatever concept is being discussed, it would not be very beneficial to anyone. I believe it would limit everyone’s thinking and people would not be as willing to expand on the concepts that are being talked about or create ideas of their own.
6. Philosophy is a very unique area of study and is often next to impossible to grasp in regards to direct interpretation of difficult texts. Because of this I feel that metaphors are an incredibly important tool to explain the controversial and abstract ideas covered and explored through philosophy. I would classify metaphors in philosophy to not only be recommended but also required when new material is introduced.
7. Metaphors might let the audience remember the philosophical idea more because it was told in a story. Stories can affect people in an emotional way and so they would remember the idea a lot more. People

seem to remember and understand things better when they are compared to something familiar or a more simple idea.

8. The use of a metaphor or story to represent an idea before explaining the literal meaning of the story can be a way for the reader to formulate the same idea that the author has managed to come up with. If the reader is able to come to the same conclusions as the author did they are more easily able to understand the idea and relate to it, then if they were given a literal explanation of the idea.
9. Metaphors are good ways to put the philosophical idea into perspective because the reader can see it in a way that makes the idea more relatable. However, a good balance of the text and the metaphor would be the best way to teach a philosophical idea because students learn differently. Some need the raw idea in front of them while others need to be exposed to the metaphorically. I sometimes liked it better when I read the literal interpretation first but in terms of stimulating critical thinking, the metaphor did a better job in the long run.
10. If the metaphor accurately and precisely conveys the concept to the reader it is appropriate to use it, but often forced metaphors do not completely do justice to the concept the writer is trying to convey. In this case, the use of metaphor only confuses the reader and pulls their focus away from the main concept. I found this to happen in the reading we had about John Locke's blank tablet theory about the nature of the mind. I thought it would have been just as effective if he just said that the mind is formed devoid of prior knowledge at birth and that we learn everything we know. I would have understood the concept just as well without the blank tablet metaphor.
11. Personally, I like to learn about the literal meaning of a concept and then get introduced to a metaphor that may be more relatable. When I hear the story I already have knowledge of the concept and usually then come to the 'Oh, I see', moment.

### **1.6 Concluding Remarks**

As is clear from the last two student quotes, using metaphors prior to literal explanations is not for everyone. These two students out of the twenty in the class preferred the more traditional approach. It was interesting that they happened to have studied some philosophy prior to this class, and were more confident in their ability to think abstractly. Most, however, found what worked best to be placing the metaphorical interpretation prior to the literal. My own experience tells me that by using this latter approach I was able to introduce more complex, abstract ideas more effectively. It is not easy to get eighteen year old students to seriously question some of their basic philosophical beliefs without doing so. Using Descartes' 'dream' metaphor, for example, allows students fairly easily to question the existence of the world, as using the 'Matrix' metaphor makes it easier to question its nature. The 'mind as computer software' metaphor allows students to learn more easily what Kant claimed about knowledge and reality, while the 'ring of Gyges' story allows them to question the purpose of morality.

If one goal of an introductory course is to teach some content, another is to teach habits of thinking, the habits especially employed by philosophers--critical and creative thinking skills and the habit of questioning basic beliefs. Most philosophy courses enhance critical thinking skills, but examining and creating metaphors also help to develop creative thinking skills. Some of the great discoveries in science, philosophy and other fields have come from comparing two seemingly unrelated areas and finding that one illuminates the other. In addition to critical and creative thinking, thinking like a philosopher also involves what may be what this course best models--identifying and questioning basic beliefs or assumptions. I believe that using metaphors to introduce philosophical ideas contributes a great deal to the development of this skill as well.

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# Higher education and development: the role of private higher education institutions to accomplish fundamental purposes of the republic

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## Abstract

This paper discusses the relations between higher education and development, focused on the investigation of the role of private institutions to achieve fundamental objectives of the Federative Republic of Brazil. It is analyzed the changes in the landscape of higher education in the country, as from the ascension of private institutions. It is also conducted an analysis of the powers of the Brazilian state as regulator of the sector, seeking subsidies that allow the assessment of the measure recommended intervention of the Ministry of Education, indicating some points which seem to be excessive and contrary to constitutional systematic.

*Keywords:* Higher education; private institutions; development.

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## 1. Introduction

*“Education is the most powerful weapon which you can use to change the world”*  
(Nelson Mandela).

“Development” is a centerpiece issue since 70’s decade, and it has conducted Nations and international organizations overall into economic, juridical, social, historical, and cultural deep analysis, which aimed to the creation of favorable conditions to its full realization.

In Brazil, this issue was added to priorities roll, and reached specific constitutional determination level which was 1988 Constitution. Besides establishing an extensive list of rights to population, it also prescribed fundamental objectives to be achieved, of which development played leading role. However, the simple reference in Constitution seemed not to be enough to its complete consummation, which infers country was not able to promote all necessary transformations and remains branded by social stress resulting from exclusion and privation of human satisfaction means.

Undoubtedly, there are several obstacles deriving from distinct orders that make even harder development effectuation and sustainable concretization of further Republic objectives. In face of such a challenger scenario, which reveals an expressive conjunct of demand and privation, superior education plays final role for the removal of barriers aiming to the termination of actual stage on behalf of a consistent step.

The latest years were marked by some significant evolutions on Brazilian teaching, most likely related to transformation of superior education institutions, which were philanthropic at origin, into social organizations and public entities of private nature with profitable purposes. This reconfiguration occurs since public system is not capable to absorb the superior education access high demand from population, in quantity and quality perspectives. As consequence, private institutions take leading role as social actors and must be ready to absorb this demand in order to improve social inclusion.

What is the role of private superior education institutions to the concretization of fundamental objectives of the Republic? The possible answers for this question are raised from the examination of relations between superior education and development, such as the analysis of Brazilian State role before this sector. This debate transits by the discussions about its regulation. In the midst of possible fundamental questions there is one that

should be highlighted: at what degree is recommendable the intervention of Education Ministry at superior education market?

## 2. Higher education and development

“It is high time Brazil had the challenge to improve the quality of our education. Knowledge is decisive factor for the social and economic development, such as for sovereign affirmation. How many outstanding professionals Brazil misses because we did not give them proper access to education?” (Luis Inácio Lula da Silva, 2004)

It is undeniable that “the idea of development is in the midst of world vision that prevails at current era” (Furtado, 2000) and the classical conceptions (reference 4) have been replaced by humanity and social views (Locatelli, 2005). On the opposite, is equally indubitable that its promotion is a huge commitment that draws forth several hindrances from different orders. The societies are largely still incapables to appease conditions to the fulfillment of fundamental human needs. That issue maintains an unacceptable hiatus between achievable and accomplished in means of quality of life indicators. Thus, it is possible to conclude that development (or its lack) is one of biggest problems of this epoch, most likely in countries as Brazil, where its realization, by the way, turned into specific constitutional determination (Wald, 2011).

The Brazilian Constitution does not expressly determine which form of development desired and even the instruments to effective it. The interpretation of other devices merely assists the raise of relevant values by the constituent while in his pursue process (Locatelli, 2005). Thus, through a critical and systematic enshrined orders analysis on Constitution, it is possible to figure out that an adequate conception of Brazilian development indicates the need it gets social inclusion role. Also, it is required development is equally distributed between country regions, and generate qualified jobs vacancies, which will make income and welfare gut feelings to population. A development that signals a brighter future, which would be able to reduce the unacceptable gap between the realizable and achieved in the field of fundamental rights, where higher education is of utmost importance, and should be considered a priority issue as “it is not possible to think of raise of citizens that would fulfill nation needs, or even the economic and social development that it requires without taking it into consideration, regardless of the model that has been proposed as a paradigm” (López, 2011).

As per Chaves (2012) thoughts, the regrets (as per previous reference) of former President Lula in 2004, at the time of National Education Counsel Team induction ceremony, remains alive and requires public and private politics that could break loose that block sustainable evolution and qualification level of education processes in Brazil. Upon the analysis of superior education indicators of Brazil it is inferred that country has about 12,5% of workers with superior education degrees, while in South Korea and Japan it reaches 40 e 45%, respectively. It

also warns Brazil holds 6 engineers for each 100 thousand habitant while the US and Japan hold 24 and 25, respectively. Then it can be concluded “indicators are perverse and level of competition of country is quite low.”

According to Aurelio Portuguese Dictionary, to educate consists of “raising natural individual aptitude (...) developing his intellectual faculties (...), to instruct, to teach”. Thus, education, regardless of its level, as a mean to the development of psychic, intellectual, and moral capacities of a human being enlarges horizon of human knowledge and expand his potentialities. The higher education, as representat of most elevate level of education, paly main role to the promotion of development. It can be straight linked to the process raise by Sen (1999), in the meaning of dilation of real freedom that people enjoy and the elimination of restrictions that are imposed, which reduces their choices and social, politic and economic opportunities of rational actions.

Plainly, reaching higher level of superior education means progress, evolution, integration, justice, welfare, quality of life, which also signifies the achievement of fundamental objectives of the Republic. Its accomplishment is closely related to the increase of opportunities that are granted to people to access superior education on quality and quantity basis. As consequence, it will incentive the production of combined transformation that will afford people to experience dignity of life in its essence. In regards of this subject, it is stated by National Education Plan for 2001-2010 the following:

It is not possible for a country to aim to development and independence without rising up a rich superior education system. . In a world where knowledge outweighs material resources as a factor of human development the importance of superior education and its institutions is quite relevant. In order to enable them to accomplish its educational mission, institutional, and social, public support is crucially needed. (National Education Plan. 2001-2010)

In Brazil, the development will depend on the establishment of an appropriate institutional framework, which reflects the operating efficiency of the education sector, making it virtuous to achieve the common good and general interest, in order to raise a definitive factor for the success or failure of the Brazilian model. This process should be guided by the collaboration between state and community, and between state and market (Schapiro & Trubek, 2012), which demand task force for the raise of a development strategy, in order to ensure higher levels of expansion of superior education public and private so that role of private superior education institutions is widespread as well as Public intervention on this sector. It can be inferred that State and private institutions are not antagonistic or substitutes, but essentially complementary.

All in all, the expansion of superior education is absolutely essential to a sustainable development, as well as for the achievement of major objectives of the Nation. Brazil will not take standout presence in the new international order whether its levels of education do not get improved, most likely taking into consideration

superior education scenario, in which private educational institutions should be taken as one of the main actors of development. Therefore, these combined actions will generate social progress and evolution.

### **New institutions in higher education in Brazil**

It would not be possible to figure out the current state of higher education in Brazil without checking facts and statistics related to indicators of their achievements and transformations over the past decades.

In 1970's, 1/3 of the system was private, and 2/3 was public. In 1980's, the reality changed to 77% covered by private sector, which reached over 78% in 1998 (by INEP / MEC data). The numbers for 2001 showed that 86.8% of the institutions were private, which reached 88.3% in 2010.

The quantity of higher institutions between 2001 and 2010 had a significant increase: 71%. This increase is affected due to growing number of private institutions (74%), whereas the increase in the number of public institutions was 52%.

In the period 2001-2010 there was about 110% enrollment increase in higher institutions, and, although there was also an increase in public institutions enrollments (74%), the most significant increase in private area entrance meets their grown movement referred above.

The admittance number in higher education institutions increased by 109% in 2000's decade, of which almost 78% were covered by private institutions.

According to INEP (Anísio Teixeira National Institute of Educational Studies), enrollment is the sum of the student application to a higher course equal to attending and formed numbers, while the number of incomes is the sum of student bonds to a higher course that refers to the same year Census was raised, or 2010.

In terms of graduation, the 2010 Higher Education Census shows that there was an increase of 44% of graduates from public institutions, totalizing, in 2010, 973.839 graduates, while private schools achieved a 197% increase in the number of graduates, reaching 783.242 graduates in 2010, which represented 80% of graduates in general.

Given these numbers, which reveals significant growth of both graduates as well as registered and enrolled numbers, the role of education, ie, the higher education institutions - especially private ones -, can be considered a factor of social emancipation, in aid of construction of citizenship. The new private higher education institutions, public entities private in nature, should be seen not only as institutions that provide technical

knowledge for the labor market, but also, and especially, as places of empowerment and building of an including society, contributing to the formation of citizens capable of making their own circumstances.

**The role of private higher education institutions in achieving the fundamental purposes of the Republic: inwards new paradigms of corporate social responsibility**

As per Sen and Kliksberg (2010), the role that should be played by private institutions in contemporary society is under constant changing in recent years, evolving from a vision which defended the purpose of generating profit for its owners - only to whom it would might concern - in direction to its responsibility, in a perspective that goes far and indicates a paradigmatic rupture in relation to previous conceptions, in regards of their high social responsibility.

In the Brazilian Constitutional Law, the social function of the company was raised to the status of constitutional principle, by the recognition of increasing importance exerted by particular that begins to be seen as relevant instrument for the achievement of the fundamental purposes of the Republic. On the other hand, free enterprise needs to be reconciled with the other principles and values enshrined in the Constitution (Amaral, 2008). Certainly, this concept transforms individuals into social actors in the development process and gives them relevant papers, which go beyond the mere pursuit of their own economic interests, in favor of the ability to meet increasingly social demands remarked in Brazilian society on daily basis. In other words, free enterprise must remain committed to ethical values, and focused on the preservation of human life in all its fullness.

In this sense, one of the biggest challenges to private higher education institutions is the decentralization of its campuses, in both locally and regionally national perspective. The presence throughout the national territory is a vision which consolidates the ideal solution for expanding the opportunities of access to higher education, previously restricted to the main centers, for significant portions of society in places hitherto excluded. When approaching higher access possibilities to people, logistical issues related to difficulties and costs of displacement, rather an almost insurmountable barrier, fall considerably. Decentralization undeniably contributes to one of the main needs of the country: the reduction of social and regional inequalities. It also collaborates to its links with society.

Another of its commitments is focusing on quality, with solid training models, tailored to the needs of education and specialization, and focused on research and scientific initiation. By the way, with no quality, it is

clear that near location and low price will not work. However, it is also correct to affirm that if quality is achieved, but there is missing location and prices Brazil will not win the new heights of development, so it will not be "open" to anyone who wants to access higher education. Once maintained as determinant, enhanced by offering courses with the same standard of quality in different locations, shifts and schedules that maximize resources and manpower available, the gains of its decentralization will be aligned with the fundamental purposes of Republic, in accordance, therefore, with the roles which they should play.

It is also important to highlight the pursuit of employability of its students in a competitive world by new sensibilities and skills. The covenants are essential in order to allow the pick-up of students and graduates, respectively, for internships or jobs related to their fields of knowledge, thus linking the study with work, and enhancing the activities performed by its students and alumni in society.

All of these challenges, and others, should guide the actions of private institutions in their commitment to higher education in Brazil, as from the recognition that they should not only meet their particular interests, but also the interest of the whole society.

### **The regulatory intervention of the Ministry of Education and the challenges to concretization of fundamental purposes of the Republic**

In Brazil, there are currently a number of problems that generate negative impact on the pursuit of development, among which excessive regulatory intervention by the State which, under the pretext of searching for education qualification, has mistakenly imposed unjustified barriers to the sector in some cases, focusing on their analysis, merely rhetorical discourse, instead of taking into account Brazilian reality.

In the field of higher education, the intervention is performed by SERES - Department of Regulation and Supervision of Higher Education - which is a department from the Ministry of Education that is in charge of regulating and supervising public and private institutions. That regulatory public agency imposes some limitations which aim to combine and harmonize their activities with collective interests.

Regardless of the technique to be used, state intervention is legitimate only when directed to the achievement of public interest, and with a singular purpose which is the persecution of social welfare. In other words, it is imperative that the role of the government aims to guarantee effect to the values enshrined by the Constitution. Thus, the question which arises is the intensity of such an intervention, as well as raise of its fair measure, in order to adjust it to the value of freedom, which is an inviolable right granted by Democratic State Law.

In an education perspective, the intervention of the Ministry of Education at some restricted sectors seems to be excessive and contrary to constitutional systematic, especially regarding some issues related to the evaluation of higher education institutions.

*Evaluation of the evaluation: for a fair appraisal of higher education system.*

The evaluation of higher education institutions has been one of the most significant points of intervention in educational sector. It was established by the Ministry of Education to infer the quality and excellence of the courses in general. It is particularly important not only for the consequences set out in the parameters created by the Government, but mainly for the impact on the expansion of higher education in Brazil, from which it is emerged the need for permanent reflections and discussions about its progress.

The main mechanisms for evaluating higher education institutions created by the Ministry of Education are the index of courses – which is called IGC – and the preliminary concept of course - the CPC -, which have been raised as key indicators to the state and, by extension, to media and market. Through the IGC, the Government grades educational institutions, ranging from 1 to 5, with "feathers" as accreditation of institutions, closure of courses, and restricted spaces. The CPC is resulted from a calculation that takes into account issues such as the performance of the students (55%), the infrastructure and organization of the course didactics (15%), and faculty members (30%). According to this criterion, whether doctors attendance in courses reaches 15% (+7.5% related to the physical attendance by of masters +7.5% for teachers in full devotion), they will represent over 50% of the assessment of faculty members.

As per Chaves (2013), these criteria lead to inconsistencies while evaluating 6.8 million undergraduate students in the face of such an important attribute assigned to doctors. Taking into account the synopsis of higher education in 2011, which states 30,400 undergraduate and 1700 doctoral courses, as well as 107,000 of docent doctors (30% of total), of which 70.9 million (66.3%) are in public universities, it is highlighted that private higher education institutions, with 4.9 million enrollments (73.7% of total enrollment), and only 36,000 doctors available (0.7% of their undergraduates), would face an inevitable trend of low valuation of its faculty, as consequence of the very impossibility of meeting the parameters imposed by the Ministry of Education. The author also criticizes the National Assessment of Higher Education - SINAES – in regards of its determination concerning differences between Universities and Colleges, as well as regional inequalities in economic and social perspectives, which failed while considering that states as Acre and Roraima have no Ph.D. courses available. In addition, there are some states as Amapá and Rondônia that hosts only one doctorate in ecology and parasitology, respectively. Mr. Chaves warns that in the entire northern region it is held 56 doctoral programs, while only the

University of São Paulo holds 147. To make general scenario even worse, there are other states as Alagoas, Sergipe and Piauí that do not hold any doctorates in management, law, physical and IT subjects.

He also points out the need for more doctors graduations by public universities side. This lack is drastically missing in most poor states. Meanwhile, it could not be filled by private higher education institutions because they would get even lower grades in those states that doctoral graduation is not in place so far. As result, private institutions would be subject to “reprobation” by the Ministry of Education, what would affect their reputation as educational institution. Thus, the establishment and maintenance of criteria evaluation, which should be consonant with current reality concerning formation of doctors in Brazil is urged. It is mandatory that huge social and economic differences between regions of country are taken into consideration, followed by the concentration of doctors in southern regions of Brazil, which reaches 75.5% of total number of doctors of the country.

The author concludes that the evaluation is essential to qualification permanent process, especially when referred to higher education because of its importance for development. However, the same quality that is required from evaluated parties should be also requested by the instruments raised for their evaluation. Given the absence of fairer parameters, the evaluation is distorted, confused and, therefore, do not properly qualify institutions. On the opposite, it constituted an obstacle to the achievement of fundamental purposes of the Republic.

## **Conclusions**

The statistics and data presented in this paper demonstrate a reconfiguration in Brazilian higher education sector, since its activities became to be exercised primarily by the private sector. The role of these institutions as means of development factor grows in importance with definitive scope in the concretization of further purposes of the Republic. This relevant role requires from the institutions highest levels of commitment, ethics and social responsibility at all. It requires that their activities have to be stimulated permanently. Besides, this initiative must be understood as national project, and State should act as inductor of the new order, aiming to the raise and maintenance of such an institutional arrangement that suits to sustenance of development purposes.

In the face of this scenario, it should be put in place permanent reflections on regulation and supervision of sector, given the importance of private institutions for the development. It is unquestionable that State plays an important role as regulator. In this sense, it is imposing that Brazil reevaluates some aspects of intervention under the pretext of searching for qualified education. In some cases, it is erroneously imposed unjustified barriers to the sector, which is distorted focused on their analysis that is a mere rhetorical discourse that is far from Brazilian

reality. It is clear that it plays a reverse role to the development and realization of other fundamental purposes of the Republic. It is essential that regulation contributes to maximization of potential of the private higher education, and supports the achievement of most important interests and needs of society.

The Brazilian regulatory model should be conciliator in its essence. It should guarantee elementary basis to the promotion of indispensable intervention that should be ruled by the following premises: i) just the most elevated level of access to higher education will be able to promote the evolution and welfare feeling in overall country; ii) the concretization of fundamental purposes of the Republic should not dispense the effective participation of private higher education institutions. All in all, they do play definitive role for the achievement of constitutional purposes, and also for the social practice of value projects of Brazilian society in general.

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# High school paper textbooks usability: leading and satisfaction

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**Abstract**

The work shows the research results of dependence of generated dissociated texts spatial structure satisfaction degree from a text spatial characteristic. The randomized sample was composed of 50 student age people from Institute of Professional Education and Information Technologies of the Bashkir State Pedagogical University, Ufa city, Russian Federation. As the only independent variable which characterizes spatial organization of the text the leading was used - total 13 grades from 0.8 to 2.2. The text printed on white paper substrates was reviewed by respondents with constant light conditions. The dependence of the page spatial structure positive assessment frequency from the leading has a maximum in range of 1.35–1.85. The ranking method offered allow to reveal the internal structure of assessments. In the field of low leadings a consensus assessment was observed in the range of 0.8–1.6. In the field of high leadings assessments were polar, therefore a bimodality was observed.

Keywords: Education, Leading, Qualimetrics, Text, Usability

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**Introduction**

The problem of creating human-oriented products exist in almost all spheres of human activity. It is especially sharp in education. This is related to the fact that the effectiveness of the learning depends on the usability of its carriers. Currently, electronic and paper media are competing with each other. Despite the rapid development of information technology the paper media, however, is still very important in the learning process. According to ISO 9241 (1998), the usability is the effectiveness, efficiency and satisfaction with which specified users achieve specified goals in particular environments. In this work the question of high school textbook texts quality assessment is considered in terms of usability. The usability of texts is closely related to their readability. Readability is a property of the text material which characterizes the ease of perception of it by a man. The readability of text is related to it spatial organization. The analysis of researches in the field of readability of texts shows insufficient scrutiny of issues related to finding the best representation of the spatial characteristics of textual information. In this work text leading is selected as the only one independent variable of spatial structure of texts. Thus, the research of perception of the spatial characteristics of the type page area on the example of leading seems to be actual. The aim of the research was to investigate the student age people perception of the text-based information from the leading. The research was conducted by direct interview and questionnaire. It involved 50 respondents, which are mainly made by the students of the Institute of Professional Education and Information Technologies of the Bashkir State Pedagogical University and Ufa State Aviation Technical University.

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## 1. Readability overview

### 1.1. Readability and main features of text and font

The main readability criteria of specific typographic sample is reading speed of this sample. The measure of readability is the time in which one can read the text, or the amount of text that can be read over a period of time. Also readability is one of the major advantages of a good (“readable”) font. The readability of the font is determined by speed, i.e. quickness of perception, and the readability of individual characters, and the text as a whole, as well as the accuracy of comprehension without undue stress and fatigue. When reading due to a readable font the eye pressure doesn’t increase (Glushkova, 1987), the attention concentrates mainly on the information itself, rather than the means of transmission. So it is advisable to choose a set of quality and legible fonts to text typing on the prepress stage, as well as the correct choice of other text typing parameters and layout.

Readability of font is influenced by: form of font characters, typographic composition, font definition, font clarity. Necessity of obeying the readability requirements caused by psychophysiological characteristics of man, manifested in the process of reading and understanding the text (Smirnov, 2007). Question of the font size influence on legibility in a coherent text is well studied and confirmed by practice. Most readable font size for the text connected to adult skilled readers is the size of 10 points (Dubina, 2004). Smaller font sizes are read with a lot of stress when placing signs. If the font is too small, the reader is often "lost line": having read to the end of the line, hardly finds the beginning of the next. With too large font sizes line, by contrast, are shortened, resulting in some of the transitions to the next line.

Line length also affects readability. James Felichi (2004) gives several ways to determine the optimal length of the line: it is equal to 1.5-2 lengths of all lowercase alphabetic characters line length; optimal length line should contain 9–10 words on average consist of 5 letters each; the minimum length of the line is 27 characters, the optimum length is 40 characters, the maximum length is 70 characters.

This work is focused on another spatial characteristics of page, the leading. Leading factor is calculated by dividing the line spacing to the font size (in points). Line spacing - the distance between the baselines of the text. Baseline – an imaginary line along the bottom edge of the main element of character. In Fig. 1 shows the basic lines of text, and the distance between them.



Fig. 1. Line spacing

### 1.2. Readability researches

History of readability research dates back more than 100 years. In 1885, Cattell (Cattell,1885) attempted to assess the readability by tachystoscopic measuring of the recognizability threshold. Tachystoscopia is allow to determine the minimum time required for recognition of characters, words, groups of words. Based on these studies, Cattell placed lowercase letters of the alphabet in their degree of recognizability in sequence. Sanford (1987) had repeated studies, but using a different font, he received another letter order. This suggests that the fonts do differ in their recognizability. Pyke (1926) summarized the results of studies of readability. Report noted

the fragmentation of research and the lack of a systematic approach to the research of text recognition and readability. Pyke himself singled out 15 readability criteria and the first was reading speed. Based on the analysis, Pyke concluded that readability is not to be confused with the letters and words discernibility, it should be studied separately from the discernibility. He proposed to assess the readability by comparing the text read with that is understood when read. Thus, it was concluded that the readability should be judged not by the disparate characters, but on the examples that contain meaningful text. Then there was the question of the speed of reading. The reading speed means the amount of time which takes to read a particular text. First reading speed as a readability criteria was proposed by Weber in 1881, but actually became considered after the Pyke's report. Tinker and Paterson (1929) got the following results: text of capital letters read by 11.8% slower than typed with upper and lower letters; italics not slow reading speed, if used short; bold no less readable than light, and sans-serif fonts are not inferior to the readability of serif fonts; fonts from a size 8 to 13 are equally readable with a size optimal for a given length of the string.

In the USSR the research of a comparative readability of fonts was conducted in 30-40's. of XX century in OGIZ research institute, in 50-60s. of XX century in the department of movable types of Polygraphmash institute. Artemov V.A. (Artemov, 1933) proposed to distinguish the concept of visibility and readability of font, as readability significantly affected by the certain physiological reading characteristics of the reader, while the visibility of the font depends on the quality of type faces and features of the person's vision. In 1973, in the Moscow Polygraphic Institute Geshev (Geshev, 1973) and Kolosov where investigated the effect of font size, string format, inter-word spacing and leading on the text readability. It was concluded that the optimal value of inter-word space is constant and independent of other factors. The optimal value of the font size and format of the string is the smaller, when the font is more readable. (Tokar, Zilbergleit, Petrova, 2004) Also since the late 19th century, there have been many studies on the optimal line length for printed publications made, but the ideal solution has not appeared. Wide paragraph gives the best results in reading speed, but eyes get tired faster. In a long line, the eye has to overcome a greater distance, making it harder to find the following line (Vakorin, 2005). Readability is also associated with the color. The human eye is much easier to perceive colored letters on a colored background (Teksheva, 2008). If we collect the results of research, it is possible to draw some conclusions (see Table 1).

### *1.3. Description of some known methods*

Noted to the facts listed above objective methods of readability surveys have been formed. They can be divided into two groups:

1. Methods which aimed primarily at researching legibility of words, individual characters and their combinations:

- a) tachystoscopia;
- b) determination of the threshold distance;
- c) determination of the illumination threshold;
- d) optical measurement of visibility.

2. Methods that are relevant to the research of reading:

- a) measurement of the reading speed;
- b) registration of eye movements during reading;
- c) registration of blink frequency;

d) counting the number of errors when reading aloud.

Table 1. Researches to determine the optimal length of a line of text

Inverstigator	Optimal length of text line, cm	Notes
Weber (1881)	10.0	Maximum line length 15 cm
Tinker, Paterson (1929)	7.5–9.0	Used black text on white paper, size 10 pts, Paragrphs with length 18,5 cm read slower than the others
Cohn (1883)	9.0	Maximum line length 10 cm
Duchnický and Kolers (1983)	18.7	Line 18.7 cm read faster by 28% than 1/3 of the screen - 6.2 cm
Dyson and Keeping (1998)	18.2	Used text 12 points. Tests have shown that reading speed increased along with the number of characters per line. The slowest readable text length 10 cm
Youngman and Scharff (1998)	20.0	Used text 12 points. 20 cm have been optimized for speed reading, but users preferred length 10-12.5 cm
Bernard, Fernandes and Hull (2002)	24.5	Used text 12 points. This test did not reveal any difference in reading speed between the three sizes - 24.5 cm, 14.5 cm and 8.5 cm. But adult users choosen 2 shorter lengths.

Tachystoscopia allows to determine the minimum exposure time required to recognition of characters, words and groups of words. The disadvantage of this method is the fact that sometimes parts of images are detected before the end of the exposure, thus suggesting the correct answer. This method is more suitable for assessing the distinctiveness of individual characters, than to measure the readability of solid text. The method of determining the threshold distance. The set of some signs placing at a certain distance from the observer, so that he could not recognize them. Then they are getting closer to that range until the observer begins to identify them correctly. However, this procedure is suitable for the selection of fonts for posters, signs, ads, urban orientation system, where a few words have to be read from a distance. Method of optical measurement of visibility is used with an optical device, which measures the visibility of images from a common to read distance. Changing the lens focusing, the observer determines the point at which the image is recognizable. The result is approximately corresponds to the threshold distance. In the method of the research of the reading process to count the number of errors the subject must read the text aloud, and the experimentally found that the rate of such reading would be about three times slower than reading silently. Therefore, in this method, as the readability criteria it should choose not text read time, but the number of errors recorded in the reading process. But at the same time reading aloud is not typical and is not familiar to most skilled readers. Errors when reading may be due to the forced text pronunciation. The value of eye movements registration method in reading is that as a result of its use some features of the process of reading have been set. As a result of experiments conducted by S.E. Taylor (Taylor, 1966), (Taylor, 1965), it was found that the speed of reading is characterized by a large individual variation even among subjects with the same reader's qualifications.

The most objective and functional method of readability researching is considered to be method for reading speed measuring. It is to determine the time of reading a connected or disconnected text of a given size. Another embodiment of the method is to determine the number of characters read by the subjects over time (Tokar, 2011). And this method is used in this work. In this research, the text reading speed was adopted as a main criterion of specific printing solution in the hard copy version readability. When considering the various leading readability some contradictions that have led to finding the optimal ratio spacing for printed and electronic texts have been found. It's attempted to identify the laws relating the perception of the text and its spatial characteristics.

## 2. Sampling and procedure

### 2.1. Sampling

As respondents 50 students (age 20-22) were selected. The experiment was conducted in daylight once a week in the classroom of the Bashkir State Pedagogical University, Ufa city, Russia. As a stimulus material 13 dissociated (meaningless) texts of 1000 characters were specially generated. It was made to eliminate the cognitive aspect from the perception which could affect the reading speed. Texts were placed to individual pages with different leading values and under identical set of other (knowingly readable) parameters: font Times New Roman, font size 14 points, margins 2 cm, indentation 1.25 cm, justification for the width of the page, text color is black, paper color is white. Selected leadings (according to MS Word) shown in Table 2. Stimulus material was printed on writing paper A4, 80 g/m<sup>2</sup> by laser printer KMBizhub C220. The average line length was 164.84 mm and 73 characters (include spaces). In addition line spacings and leadings on all pages were measured by microscope with a metric ruler, and metric leading factors were calculated (see Table 2).

Table 2. Values of line spacings and leadings on the samples

Leading (by MS Word)	0.8	1.0	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	2.0	2.2
Line spacing, mm	4.56	5.66	6.21	6.80	7.35	7.95	8.54	9.04	9.64	10.18	10.78	11.33	12.50
Font size, mm	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50
Calculated leading factor	1.01	1.26	1.38	1.51	1.63	1.77	1.90	2.01	2.14	2.26	2.40	2.52	2.78

In the experiment the perception of the paper printed text patterns has been evaluated. Respondents were asked to read the series of 13 variants of stimulus material with a comfortable for themselves speed, without gaps or repetitions. Reading time of each page was controlled with stopwatch. Once reading of each 13 texts is completed, respondents made notes on the reverse side of the sheet: pleasant or unpleasant there was to read the text. After reading all of the material respondents, freely looking through, without paying attention to the content, laid out sheets left to right on a table in ascending order of perception comfort of the spatial structure only. Then every sheet was numerated by number from 1 to 13 according to the order in which the sheets were laid out. Thus, the number "13" was assigned to the most satisfied text (text with most perception comfortability).

### 2.2. Data preparation and processing

For the preparation for processing of data obtained during the experiment Microsoft Access 2007 was used. The file structuring the data obtained was created in the program. Values of time spent on reading the text of 1 000 characters were transferred to the values of reading speed in characters per second. For data processing a parametric and non-parametric statistical tests were used (Serpik, Yagudina, 2010). When processing results Z-test and non-parametric Mann-Whitney U-test was used and calculated in Statistica 10.

### 3. Results and discussion

#### 3.1. The satisfaction of texts

For drawing the plot of dependence of printed text satisfaction from leading (Fig. 2) the proportions of responses "nice" were calculated. According with the curve on the plot it can be concluded that the maximum located in the interval from 1.35 to 1.85. It is assumed that the maximum expressed implicitly due to insufficient data. To check the statistical significance of the observed differences a z-test was conducted 6 times. Proportions corresponding to the leadings of 1.5 and 1.7, 1.4 and 1.8, 1.3 and 1.9 with maximum proportion of leading 1.6 where compared.

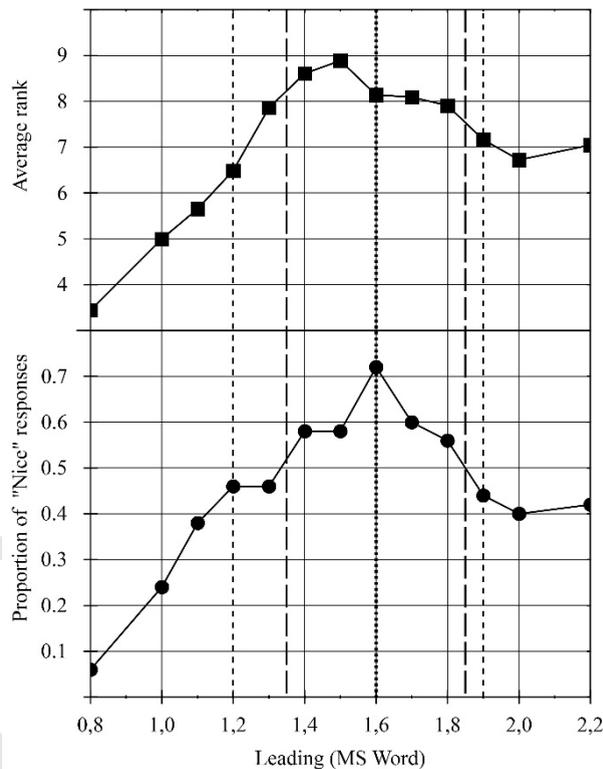


Fig. 2. Dependences of satisfaction from leading

That calculations were made to find the proportion of "nice" responses, in which achieved p-value would have been less than the given significance level  $\alpha = 0.05$ . Thus desired proportions corresponding with borders of interval of leadings from 1.35 to 1.85 have been found. This result confirms the assumption that the probability of a positive assessment of the spatial structure of the page on leading has a maximum. In particular, the observed maximum located in the interval (1.35-1.85).

#### 3.2. Ranking procedure

In the last stage of the experiment respondents assign ranks from 1 to 13 to texts in ascending order of perception satisfaction of the text spatial structure. Table 3 shows the matrix of rank frequencies. Ranking procedure has revealed the internal structure of rates: the table shows that in the "high" leadings the bimodality is observed. The presence of bimodality talks about the differences by some sign within the sample.

Normally, the average rank calculation is incorrect, but in this case it was used to evaluate the best leading, because distribution appeared bimodal. For further calculations the values of average ranks, standard deviation (SD) and coefficient of variation were determined. Table 3 shows that the lowest coefficient of variation and standard deviation match the leading 1.5. The dependence of average rank from leading shown in the plot in Fig. 2. The plot shows that the maximum is reached at the point corresponding to the leading of 1.5. Such it's concluded that the most satisfaction of text perception found with leading of 1.5. Fig. 3 shows a 3D bar chart constructed on the basis of the matrix of rank frequencies (Table 3). The diagram shows that the best unimodality achieved with leading of 1.5. This shows the least variation in estimates, i.e. most consensus of opinions among the respondents.

Table 3. Matrix of rank frequencies

	Leading												
	0.8	1.0	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	2.0	2.2
<b>1</b>	<b>0.63</b>	0.02	0.02	0.00	0.02	0.00	0.00	0.02	0.00	0.05	0.02	0.05	<b>0.16</b>
<b>2</b>	0.07	<b>0.35</b>	0.05	<b>0.14</b>	0.05	0.02	0.00	0.02	0.02	0.00	0.02	<b>0.12</b>	<b>0.14</b>
<b>3</b>	0.02	0.09	<b>0.33</b>	0.02	0.02	0.02	0.00	0.07	0.07	0.07	0.05	<b>0.16</b>	0.07
<b>4</b>	0.02	0.09	<b>0.12</b>	<b>0.19</b>	0.05	0.09	0.02	0.00	<b>0.12</b>	0.05	<b>0.16</b>	0.05	0.05
<b>5</b>	0.00	<b>0.12</b>	0.09	0.09	<b>0.21</b>	0.09	0.02	0.05	0.02	0.09	0.09	0.09	0.02
<b>6</b>	0.05	0.02	0.07	0.09	0.07	<b>0.14</b>	0.09	0.09	0.07	0.05	<b>0.16</b>	0.05	0.05
<b>7</b>	0.02	0.07	0.05	0.05	<b>0.12</b>	0.02	<b>0.26</b>	<b>0.12</b>	0.05	<b>0.12</b>	0.05	0.05	0.05
<b>8</b>	0.05	0.02	0.07	<b>0.16</b>	0.02	0.00	<b>0.14</b>	<b>0.19</b>	0.05	<b>0.12</b>	0.07	0.09	0.02
<b>9</b>	0.00	0.07	0.02	0.09	0.07	<b>0.19</b>	0.09	0.09	<b>0.21</b>	0.09	0.02	0.02	0.02
<b>10</b>	0.02	0.02	0.07	0.00	0.07	0.05	0.02	<b>0.12</b>	<b>0.23</b>	<b>0.16</b>	<b>0.14</b>	0.02	0.07
<b>11</b>	0.00	0.02	0.05	0.07	0.07	<b>0.12</b>	<b>0.14</b>	0.07	0.07	0.07	<b>0.14</b>	<b>0.16</b>	0.02
<b>12</b>	0.05	0.09	0.00	0.07	0.09	0.09	<b>0.12</b>	<b>0.12</b>	0.05	0.07	0.07	0.09	0.09
<b>13</b>	0.07	0.00	0.07	0.02	<b>0.14</b>	<b>0.16</b>	0.09	0.05	0.05	0.07	0.00	0.05	<b>0.23</b>
Average rank	3.40	5.00	5.70	6.50	7.90	8.60	8.90	8.10	8.10	7.90	7.20	6.70	7.00
Standard deviation	4.03	3.4	3.31	3.16	3.51	3.31	2.46	2.97	2.94	3.18	3.09	3.87	4.78
Coefficient of variation	1.17	0.68	0.58	0.49	0.45	0.38	0.28	0.36	0.36	0.40	0.43	0.58	0.68

To determine the interval of leading which contains maximum average rank the Mann-Whitney U-test with significance level  $\alpha = 0.05$  was used. The sample corresponding to the leading of 1.5 was compared in turn with the samples, relevant to nearby leadings (1.2, 1.3, 1.4, 1.6, 1.7, 1.8, 1.9). This procedure was similar to the procedure of proportion comparison. Thus, it can be concluded that the maximum average rank lies in the range of leading from 1.2 to 1.9.

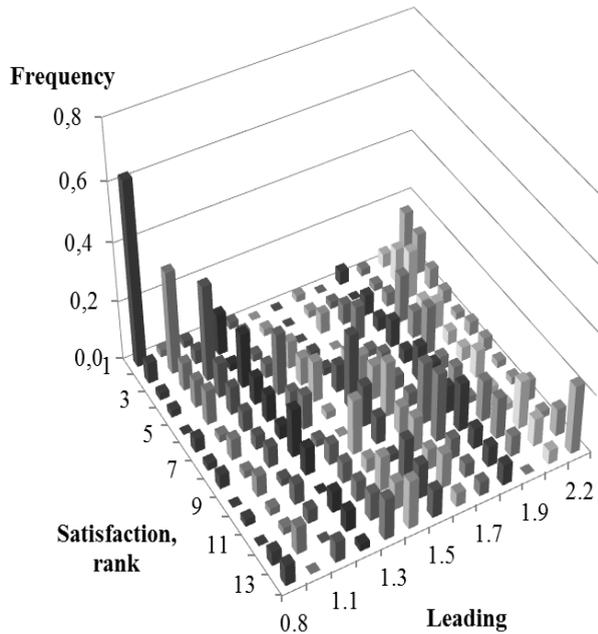


Fig. 3. 3D bar chart constructed on the basis of the frequency table

#### 4. Conclusion

When considering the question of usability with various leadings some contradictions have been found. It has led to the need to find the optimal leading for textbooks. We attempted to identify the features relating the satisfaction with perception of the text depending from its spatial characteristics.

The analysis of the literature led us to the formulation of hypotheses: the probability of a positive assessment of the spatial structure of the page varies with a leading variation. To test the hypotheses experiments with 50 student age respondents were designed and conducted. Then developed a method of processing the data, allowing to obtain the valid conclusions in terms of research objectives.

Analysis of the text perception data and using Z-test showed that the page spatial structure positive assessment probability on the leading has a maximum in the interval from 1.35 to 1.85. To verify this conclusion the Mann-Whitney test has been used. With this criterion the interval of leadings 1.2-1.9, which contain maximum average rank relevant to the leading 1.5 was defined.

The text spatial structure perception data ranking method also helped to identify the sample heterogeneity caused by differences on the unknown attribute inside the sample.

Results of the research can be used to optimize the texts makeup in education in order to facilitate its perception, which will improve the quality of information assimilation. Because the text perception is culturally conditioned it's very important to conduct the same research in different culture media and for different languages.

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4<sup>th</sup> International Conference on New Horizons in Education

# How can i be a better teacher? Development of Finnish adult pre-service teachers' pedagogical thinking.

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## Abstract

Adult students with experiences of teaching have often certain views about good teaching and a teacher. One of the most important roles in teacher education is to support future teachers to develop their pedagogical thinking systematically. Teacher's pedagogical thinking comes up in her/his actions and reflections on the teaching and learning situations. This article is based on research project which aims at to find out pre-service teachers' progress in pedagogical thinking during three different practicums in Adult Teacher Education Program. The article will describe this thinking process during the first practicum which is carried out after three months studying.

*Keywords:* practicums, adult teacher education, pedagogical thinking

## 1. Introduction

The teachers' thinking is concretely seen in their operation, words and actions. The teacher has a great amount of so-called tacit knowledge, in other words, the knowledge acquired through the work and which is not easy to explain exhaustively to others. According to Toom (2006), theoretical information as well as practical experience gained through the teaching-learning situations are needed in acquiring tacit knowledge. One of the tasks of the teacher education is to direct students to grow into the teacher's professionalism and that path of growth every student must travel by themselves. With the help of supervision it is safe to go along this path and everyone's professionalism can develop from their own starting points. The teaching practices provide the students with the opportunity for developing their own teacher's professionalism. The development of the pedagogical thinking is a process, which is not yet promoted by the information that has been received solely from research but external guidance is needed for it. As teacher educators we are interested in those processes through which especially the adult students' professionalism develops.

Kokkola University Consortium Chydenius is an independent university-level teaching and research unit located in the region of Central Ostrobothnia that is affiliated to the University of Jyväskylä that operates under the auspices of the universities of Jyväskylä, Oulu and Vaasa. The Department of Education in Kokkola is the only permanent department in Finland which offers adult education for primary school class teachers. Kokkola University Consortium in co-operation with the Faculty of Education at the University of Jyväskylä, arranges continuation courses leading to the degree of Master of Education and qualification as a basic school class teacher. These courses are particularly aimed at persons studying through the Open University, those contemplating a change of career and those changing the emphasis of their studies in education. The annual intake of adult students for training as primary school teachers is 40 persons. All the students are required to have prior university studies and teaching experience (min. 4 months). That is why the average age of the students is about 33-39 years. The studies last for 2 to 2.5 years, depending on the agreed individual study plan. All the students in our education programme have some completed studies of the pedagogics and work experience from the teacher's profession. So one can think that they are not so-called novice teachers but they have routines which

have been formed through the experience and theoretical knowledge, based on which they have formed their theory-in-use. Indeed our research differs in that regard from the earlier studies of pedagogical thinking that our target group consists of adult students of different ages and educational backgrounds.

The transforming and developing of a teacher's own professionalism requires considering one's own operation and its foundations. The consciousness of oneself as a teacher develops, in which case the questioning and restructuring of own assumptions begin to increase; the pupil centeredness and interaction with the pupils strengthen. Our objective is to train pedagogical thinkers and reflective teachers who want to develop their teacher's professionalism also in the future.

The objective of this article is to describe the class teacher students' start level in their pedagogical thinking at the beginning of the first teaching practice and its development throughout the practice according to the level model of the pedagogical thinking developed by Kansanen (1993).

## **2. Theoretical frame of reference of the study**

According to Kansanen (2004), the thinking is pedagogical when it is connected to the goals and objectives of the curriculum. The pedagogical thinking is also how the teachers justify their solutions with the help of the theory. It is a question of the teacher's pedagogical system of beliefs, information resources and theory-in-use behind it. The teachers will become conscious of the foundations of their solutions at the latest when they are being asked about them. (Syrjäläinen, Jyrhämä & Haverinen 2004). In the background of the teacher's pedagogical thinking affects the teacher's personal theory-in-use. The theory-in-use can be generally understood as thinking which directs the teacher's work. Different assumptions about the teacher's thinking and of information which directs the teacher's action are included in the theory-in-use. As a concept, the objective of the theory-in-use is to also take into consideration the teacher's practical knowledge in addition to the scientific knowledge. Argyris and Schön (1982) see the theory-in-use included in the theory of action which directs the actions of a person. The theory of the operation can be divided into theories supported by the person (espoused theory) and the theories-in-use. With the help of espoused theories the people explain their own operation but they may be conflicting with the theories-in-use. Tacit knowledge is assumed to be included in the theory-in-use. The tacit knowledge includes assumptions about oneself, the others, the conditions and about how the own operation, its consequences and the present situations are connected. The human being is seldom aware of their own tacit knowledge. Thus a view of the information can be linked to the theory-in-use, according to which a human being knows more than they can indicate with words and more than can be seen in their action. At most, the theories-in-use can include all the assumptions which are related to the everyday life of a human being about themselves, other people and the objects and phenomena of the environment. The theory-in-use can form in two different ways. A part of the forming of the theory-in-use is a straightforward accumulation of experiences. The old parts of the theory-in-use are replaced by better and wider particles thus strengthening the theory-in-use. The second view on the forming of the theory-in-use applies to the change in the basic assumptions in the background of the theories-in-use. However, a clear conflict between one's own intentions and the consequences of the operation is needed for the change in the basic assumptions of the theories-in-use. However, it is to be noted that the theories-in-use are quite permanent. Human beings try to maintain their old theory-in-use to the very last. In order to operate effectively, human beings must be able to trust their theory-in-use and to operate accordingly. (Argyris & Schön, 1982.)

The concept of the theory-in-use defined by Argyris and Schön (1982) has also been used by Osternan and Kottkamp (2004) as well as Ojanen (2000). Partly parallel concepts which describe the teacher's thinking have

been used for the theory-in-use, such are, among others, the Practical Knowledge by Elbaz (1983) and Johnston (1992), the information that has been bound to the operation (Knowing-in-Action, Knowledge in Action) by Schön (1987) as well as Ethell and McMeniman (2000), the teacher's pedagogical thinking and knowing (Pedagogical Knowing) used by Patrikainen (1997) and Husu (2002) and the teacher's personal practical knowledge (Personal Practical Knowledge) used by Connelly and Clandinin (1995). These share in common the fact that the thinking which directs the teacher's work includes mainly practical knowledge instead of the scientific information.

In addition to the theory-in-use, also the routines direct teacher's thinking and operation. Routines have been accustomed to be opposite to the reflective thinking already since the times of Dewey. However, for the teachers they are a means to manage the tasks ahead. Realizing the significance of these routines and the operational models awakens the need for the new contents or for emphasizing the existing ones. (Jyrhämä 2002.)

Could the routines be utilized as a basis for the pedagogical thinking and would it be possible to develop pedagogical thinking best by reflecting on the routines? The teacher's professional development is seen in the routines. With the help of routines the young teachers can try new solutions and find the suitable ones for themselves whereas the expert teachers withdraw from the routines and think about the suitable solutions. The teacher can develop through the routines by reflecting them professionally, by changing them and by giving them up. The teacher's process of professional development appears as a rhythm of stabilization and experimenting with the new, as regression and standstill. The teacher's thinking can be developed through the routines, in which case it is thought that the routine is practical solution with a principle in its background. The pedagogical principle is seen in the operation as a routine and on the other hand the routine is verbalized on the basis of a pedagogical principle. Verbalizing of the routines helps the teacher to understand the objectives and values which come true in the teaching. The teacher forms a routine consciously when making pedagogical choices which in turn gradually leads to the establishing of the teacher's ways of thinking. The professional growth as a teacher requires the teacher to encounter the new, which stirs the desire to reform the thinking and to change the routines. When the teacher's new thoughts are seen in the operation as routines, the change in the pedagogical thinking will probably be permanent. (Hellström, 2008.)

The level model of the teacher's pedagogical thinking by Kansanen (1993) (Fig.1) is based on the ideas of König. Kansanen (2004) divides the teacher's pedagogical thinking into three levels, of which the first is an action level. This level means the pedagogical practice containing the planning and evaluation of the teaching. The teacher makes the decisions situation specifically depending on the basic teaching skills. The second level is the level of object theories which refers to the object theories which the teacher has formed, in other words the theories-in-use which direct the teacher and which have formed through the earlier experiences. At this level the connection of the theoretical concepts and models to the teaching event is thought about. The teacher needs theoretical expertise and the critical evaluation of contents. The third level of thinking is the level of the metatheory. At this level a final analysis of pedagogical decisions takes place. So the teachers analyze their object theories, draw up syntheses and consider the reasoning. The questions of value in the education are central because through them the starting points for the values have to be sought after.

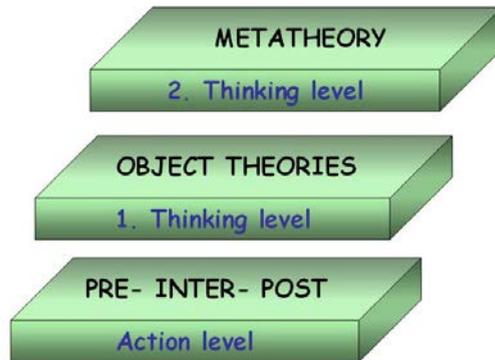


Fig 1. Teachers' Pedagogical Thinking (Kansanen, 1993)

These thinking levels are continuously in the interaction amongst themselves thus the theory and the practice integrate. The practice develops through the analysis of reasoning and on the other hand, the examining of the operation develops reasoning.

### 3. Target group of the study and research materials

We examined the starting points of the adult students' pedagogical thinking and development in the first teaching practice in the spring of 2013 in our study. In this teaching practice the curriculum is emphasized as the foundation for teaching and educational activity as is the organization of teaching according to the different levels of development of the pupils. The length of the teaching practice is one month, of which one week is for observing the class teacher's and the pupils' work and three weeks for the students to work as the class teacher themselves. The teacher of the class acts as the second supervisor during the practice with the senior teacher of the university. The first tutorials concerning the practice will begin a month before the beginning of the practice.

#### 3.1. Target group of the study

The 12 students who were supervised by the researchers and had begun studying in January 2013 were marked off as the target group of the study. The students' work experience is focused on the class teacher's work (to grades 1-6) of which all the students chosen for the education had little more than two years on average (24,6 months). They had over a year of other teaching experience (13,5 months). So altogether they have more than three years of work experience on average. Of the 40 students only eight (20%) students did not have any experience of working as a class teacher. For most (60%) the length of the work experience is between four months and four years, but 20% of the students have even more than four years. The target group's (n=12) length of work experience or the lack of it was almost similar to those of the whole class (40 students). The average work experience for the ones participating in the research was over 3 years and only two students did not have any experience of the

class teacher's work at all.

### *3.2. Research material*

With the supervision, the development of the pedagogical thinking can be influenced in many ways. In this article we have not studied the significance of the supervisor but we concentrate on describing the level of the students' pedagogical thinking with the help of the students' written theories-in-use and learning diaries. Before the teaching practice, the students wrote their own theory-in-use, in which they described their typical teaching event. The purpose of the description was that the students realize their own significant matters which direct their work as a teacher. Based on the theory-in-use, a discussion in which the student's strengths and areas that needed developing as well as personal aims set for the practice were thought about. The objective was to make the student aware of their current routines and beliefs which are related to the teacher's professionalism and of thinking which directs their own operation. Immediately after the first tutorial in March the students began writing their own personal learning diary and continued until the last day of the teaching practice. The purpose of the writing was to think and to evaluate own experiences on a daily basis and use them to find new points of view and points of contact with what has been learned and experienced previously. For the students, the learning diary was a tool for examining their own thinking and learning, structuring, developing and for building the professional identity.

### **4. The method of analyzing the research material**

The research material was analyzed with the help of the content analysis. According to Berelson (1952) the analysis of the contents is a suitable research technique for objective, systematic and quantitative description of the contents of the communication. The content analysis can be used to study linguistic materials, in which case an attempt is made to analyze contents and structures which are related to the phenomenon to be examined with the help of classification of contents. In the content analysis the subject of the examination is usually either originally in a written form (for example the theories-in-use and learning diaries written by the students) or material transcribed into a written form (for example the interviews). Based on the material the systematic and comprehensive description is aimed at. The description is made for the contents or structure of the material to be analyzed. In this study a material based content analysis has been used, which means the formation of content categories from the research material, in other words from the students' theories-in-use and from the learning diaries.

## 5. The analysis of the research and the findings

We analyzed the theories-in-use and the learning diaries written by the students by content analysis. First we analyzed the students' theories-in-use to two main categories using the NVivo program; learning situation and good teacher's professionalism. The learning diaries were analyzed by classifying and by dividing statements written by the students by theme into two main categories; planning, teaching-learning situation containing especially the interaction in the teaching situations. Next we describe the results emerging from the students' theories-in-us and the learning diaries.

### 5.1. The students' theories-in-use

The students examined in their theories-in-use the learning situations they had concretely implemented and described the properties of the good teacher's professionalism. From these two descriptions the main categories of theories-in-use were created.

#### **Learning situation**

The students generally described the learning environments of learning situations as versatile and pupil-centered. The conception of pedagogics and the conception of learning were significantly distinguished as factors which affect the learning situations. In the conception of pedagogics the teacher's set of values, cooperative skills, comprehensive support for the individual pupil's growth and the idea of a safe adult came forth. In the conception of learning a constructivist theory of learning was emphasized. The students strongly brought out the learner's active role in the learning situations. On the other hand, a part of the target group experienced that they were only moving towards a constructivist conception of learning.

*"My own teaching style with the preschoolers is moving towards the constructivists learning styles. According to the constructivists theory of learning the learner is an active individual who creates and edits information. (Student 5)*

The students emphasized the learning atmosphere and the teacher's role in connection with the learning situations. The significance of especially an educator /the teacher emerged as a creator of the positive learning atmosphere. In addition to the teacher, the interaction between the teacher and the pupils and between the pupils as well as the working methods and the teacher's conception of learning were mentioned as factors contributing to the learning atmosphere. The teacher was seen both as an educator and as an instructor of learning situations.

*"The educator also creates the atmosphere for the situation with the way they operate and with their presence. (Student 5)*

*"My own role was a directing, circulating observer, a helper of ideas, an enthusiastic participant!" (Student 2)*

In connection with the curriculum, the conception of learning in the curriculum, the objectives and the approaches were brought out. Especially, the students searched for the support from the curriculum for their conception of learning, for the objectives and the approaches. In enabling the learning the target-oriented working, the provision of the time for the learning and interaction with the peer group and the teacher as well as active structuring of information emerged. The child-centeredness and the objectives of teaching and learning were also mentioned in connection with the learning situations.

*"The teacher should choose the methods of teaching according to how well they promote the studying and teaching which is in accordance with the objectives of the teaching." (Student 6)*

*" In my opinion, the teacher's educational work and teaching should always be child-centered. (Student 6)*

### **Good teacher's professionalism**

In connection with the descriptions of learning situations the students' views on the good teacher's professionalism emerged clearly. The teacher who develops oneself emerged strongest. Openness to new ideas and ICT-skills were seen as the properties of the teachers who develops themselves.

*"I am not set in my ways but want to learn and to develop as a teacher. Things can be done in many ways, sometimes you must wake yourself up by looking at the matters 'from outside the box.'" (Student 4)*

It was experienced that the good teacher's professionalism gave room for the active role of the pupil. Some of the students saw that they still have to develop their role as a teacher who gives room for the pupils.

*"I want to direct pupils towards being active, to creativity and to a certain kind a criticism. It is important that the pupils realizes matters and significances spontaneously by themselves." (Student 12)*

The teacher's ability to combat stress was brought out in connection with the busy working day and in connection with the different situations of interaction such as when meeting difficult parents. The curriculum as a foundation for the teacher's work, the versatile approaches, the permissive atmosphere, paying attention to different learners and the cooperative skills were also mentioned. The importance of the curriculum was emphasized both generally and from the evaluation point of view.

*"And here we get to the importance of the core Curriculum. It requires a great deal of the teacher to, when necessary, withdraw from the teacher's manual based teaching tradition of the work community!" (Student 6)*

The versatile approaches were considered to promote the learner's active role. The cooperative skills were emphasized especially from the point of view of a home-school cooperation. Furthermore, the cooperative teacher was considered to support the pupil's positive development as a human being and as a learner.

*"The gifted teacher is able to uplift and strengthen the individuals met at work –whether they are pupils, parents or colleagues - through the interaction." (Student 7)*

The creation of the permissive atmosphere in which the pupil has a right to show both joy and the feelings of disappointment, was mentioned as the property of the good teacher's professionalism. The teacher is an adult who listens and sees the child. The good teacher's professionalism also pays attention to different learners and learning styles. The organisational skills and the teacher's role as an supervisor emerged only once as a property of the good teacher's professionalism.

### **5.2. The learning diaries**

In their learning diaries the students thought generally about the growth in the teacher's professionalism and what it requires of them. Particularly those who had little work experience, thought about whether they are able to change their thinking.

*"What does the teacher's professionalism require? Do I have enough ability and motivation for it? I have already admitted to myself that "the growth to the profession" will require a long and in parts even a heavy journey." (Student 7)*

On the other hand, it was experienced in spite of the work experience that the mind was open to the changes. The students were ready to give up their routines and to test new solutions. At this stage it is indeed important that the student meets something new which strengthens the desire to reform their thinking.

*"I regard as my strength the fact that I have been allowed to work in short term supply posts and thus have not been forced to be the prisoner of my own pedagogics but to begin on the field with a very open mind. I have such no deep-rooted image of my own operation that I would not be ready to develop or to change." (Student 1)*

Next these considerations will be described a little more in detail from the points of view of planning and teaching-learning situations.

### **Planning**

All the students (n=12) had written some thoughts about the planning in the diary. The planning was considered important from the point of view of the fluency of the teaching and all the students told that they had understood the importance of the planning. Most of them described the points which are to be taken into account in the planning and their development in the planning at a general level. It was possible to see the widening of the perspectives related to the planning already after the first week of teaching practice.

*"What could be most essential in the planning of the future lessons? There are at least as many questions and insights as earlier but their contents have widened a little. (Student 7)*

To some students the significance of the planning opened in a new way, in which case they emphasized the setting of objectives and their significance in the learning situations. For these students the starting point for the planning changed from the activity to the objectives themselves. These students considered, among others, how planning can support paying individual attention to the pupils.

*"The lesson plan should be as methodically versatile as possible but as clear in its aims as possible. Thus it is possible for the teacher to differentiate the teaching to respond to the different learners' needs." (Student 6)*

*"My present conception is that efficient teaching is of a kind in which the teacher has known how to make the right observations of the pupils' needs (knowledge, ways of learning, interests ...) and knows how to integrate them into the objectives of the curriculum." (Student 7)*

The students also thought about the effect of their own human perception on the planning. They thought about how hearing the pupils' voices would also be important in the planning. The planning began to be thought about as a shared possibility of the class to affect the learning situations, not just as the matter for the teacher.

*"One had to learn to plan the lesson so that it is target-oriented learning. It was so opening and freeing to understand that I must plan my every lesson so that I promote the learning of the child. Realizing this helped me also to build my own teacher's professionalism in a brand new way. My own humanist conception on human being also strengthened; the pupil's voice can and indeed should be heard in the lessons and in planning of the lessons. Why cannot one ask how the pupils want to study a theme. Based on the ideas which have come from the pupils it is possible for me to plan my lessons so that I will fulfill the task which is given to the school. When the pupils are heard, their well-being at school and also outside it increases. (Student 1)*

This student found it also important that the pupils can plan teaching by themselves and enjoy what is being done. A humanist conception of a human being can be perceived in the background, and from that the student's set of values is also conveyed.

### ***Teaching-learning situations***

Teaching-learning situations were described a lot in the learning diaries. These situations that were described were significant in some way from the point of view of the learning. The students explored courageously outside their own strong area to experiment and to extend their knowledge and thought and realized well the reasons for the successful lessons.

*"My teaching practice lessons were not in my own strong areas. This was my conscious choice because I wanted to challenge myself. It, of course, was laboursome but also rewarding indeed!" (Student 6)*

*"My last lesson, the second mathematics half-group lesson went even better because I had practised to open and to explain concepts in more detail. (Student 7)*

*"The lesson (physical education) left me with a positive feeling. I had thrown myself fully in the world of drama, narration and physical education. In my opinion I managed to inspire pupils. The narration served as a good linking element throughout the lesson. The narration also helps me to keep the group better under control." (Student 4)*

The students thought much about those points which made the learning situations better and more functional. In this context, the matters to which the students had tried to pay attention beforehand and which in their opinion affected the success of the learning situation come forth. Through new information and experience some students had created their own new models of teaching, which they thought about in the diaries.

*"The experience was really educational because I noticed how I got additional ideas for implementing on a second lesson and could see how simply a place for the lesson can affect the effectiveness of certain methods. (Student 7)*

*"..how to get the pupils to concentrate and above all to get them excited about grammar for 90 minutes? The solution was a work station method, in which the pupils were allowed to circulate at their own pace completing different tasks in connection with the word classes. The method of work was not familiar so the amount of preparation was surprising. Therefore I can indeed state that the teaching experiment was extremely educational and rewarding." (Student 7)*

*"Setting out the structure of the lesson on the board was a big help to myself and to the pupils. The progress and structure of the hour took shape better. (Student 4)*

The students also reflected their own theory-in-use with the lessons that were carried out during the practice. A student described an environment and science lesson as corresponding with her own theory-in-use. A student had consciously aimed to pay attention to the thinking in the background of the teaching.

*"My own theory-in-use succeeded best in the environment and science lesson. The pupils had a problem-solving activity, they carried out experiment in a group and reported the findings at the end of the lesson. At the beginning of the lesson there was a short, teacher-led introduction and giving of instructions but after that the pupils themselves were allowed to be in the major role of the lesson." (Student 6)*

The students paid attention to the interaction between a teacher and the pupils. The students experienced generally that they were strong in the interaction between a teacher and the pupils. Especially providing space for the pupils and for the interaction between them was regarded as important.

*"In my own lessons I approached the child as I have got used to approaching the child. I went near the pupils in many situations and let them understand that I am willing to hear them and above all I am willing to take their learning forward. (Student 1)*

*"In my lessons I tried to be more of a supervisor than the teacher who talks throughout the lesson. Perhaps I could have been even more quiet sometimes! I aim for the pupils to be active themselves. I wanted the pupils to work mainly in pairs or in group tasks. (Student 12)*

The students often thought about the teacher's role in the teaching-learning situations. Most students wanted to move from a traditional teacher's role towards the role of the supervisor. In the learning situations the teacher's role had also been thought about a lot. The subject of the consideration was the teacher's role in relation to the pupils' role. Many students had a desire to move the focus to the pupils' active role from the teacher-led teaching.

*"Many matters such as learning environment affect the implementing of teaching situations but, in my opinion, the mental presence of the teacher is just the most important. The teacher's role is to act as a kind of a supervisor when the pupil meets new information." (Student 7)*

## 6. Conclusion

In the theories-in-use the start situation of the students' pedagogical thinking was distinctly seen. The students thought, among others, about the teacher's role, individuality, learning atmosphere, interaction, conception of learning, in other words one can say that their thinking included already many dimensions of the teacher's professionalism. The students' conceptions were based on the information (their own teacher experience) that was received through practice and an attempt was made to justify this information through the general knowledge of pedagogical theories. As Jyrhämä (2002) states, the student can have vast knowledge adopted at a theoretical level and have it connected to the own theory-in-use but it can be challenging to adapt everything to the teaching situations. The students were aware of the theory which dominates in the background but were not yet able to think about the connection between the theoretical concepts and methods, and the teaching event. The descriptions of learning situations were mainly the descriptions of pedagogical practices. The students had yet not reached the level of the object theory as stated in the model of Kansanen.

It can be said that by writing down the theories-in-use, the students became more aware of their own significant matters which are related to the teacher's pedagogical thinking. They wrote as though their own ideal description of the teacher's professionalism, which was seen in the theories-in-use in the descriptions of the good teacher's professionalism. They brought forward the teacher who develops oneself and the pupil's active role. According to the results the students were aware of a prevailing view on education and learning. However, it had not yet become fully concrete at a practical level.

It was possible to perceive clearly common themes which the students raised as the subject of the examination, in the theories-in-use and in the learning diaries. For example, the significance of the teacher's and the pupil's role and the individuality were dealt with in both. The students realized matters that were originally significant to them before the practice and delved into these matters again during the practice. For many, the pedagogical thinking deepened from the description of the theory-in-use to considering the reasons and to the critical evaluation of the teaching event. What earlier was described as important was concretely brought out in the practice and matters were thought about through the theory and given justifications. For example, the aims were seen as important already before the practice but during the practice their significance enlarged to include

paying attention to individuals and above all they began to direct the whole planning process. The theories-in-use often showed a constructivist theory of learning, either as dominating or as the ideal, but only through the teaching practice the students experienced what it means in practical work. The students began to implement their own conception of learning more during the practice and gained concrete experience from it. These teaching experiences helped students to create new solutions and thus extend their thinking that way.

It is important that the teaching practice is begun as soon as possible after the beginning of studies. According to Niemi (2005), the firm connection between the theoretical studies and the teaching practices provides innumerable opportunities for the confluence of a theory and practice. Our study showed that by working this way the reflective skills of the students and their critical awareness developed during the practice. In their learning diaries the students began to think clearly more about the reasons and arguments which affect the creation of a meaningful learning situation. In the diaries, the description on the action level of the pedagogical thinking as well as the thinking on the level of the object theory can be perceived but the thinking on the uppermost level remained minor. The teacher's role was begun to be examined more critically, which was seen as the students' increased why-questions. The teacher's actions began to be justified as target-oriented and it was reflected in the values in the background. When thinking about interaction in relation to the pupils and between the pupils, the students got to the level of the metatheory. According to Kansanen (1993) the examination of the values and moral conflicts which emerge in the interaction belong to the level of metatheory.

According to the results, the development into being a better teacher takes place by reflectively examining one's own operation by writing theories-in-use and by justifying the learning diaries. This way the students' practices in teaching develop and on the other hand the reflective examination of the operation shapes reasoning and increases the consciousness of their own operation. Being aware of the routines and of the matters significant to themselves distinctly helped the students to extend and to deepen their thinking to the level of object theories. In the students' learning diaries critical evaluation towards their own operation and consideration of theoretical models were seen which tells about their use of theoretical expertise.

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# How can teacher's pragmatic speech help to initiate and develop the sense of verbal interactions of language learners?

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## Abstract

Pragmatic speech effect of foreign language teacher on his teaching project specifies indeed, the ability of the learners to initiate and develop the sense of verbal interactions in target language. Teaching action works most of the time through linguistic interactions performed in our context in French and Turkish as teaching languages. In this approach are involved two vital didactic concepts, thanks to which, learners can have good command of a new language: context and inference. This is the reason why we study the pragmatic aspect of language teacher since we search to increase teaching effectiveness in university classroom.

Keywords: Pragmatic speech, teaching and learning a new language, linguistic interactions.

## 1. INTRODUCTION

When teaching, the teacher uses many helpful techniques serving to build up the ways to introduce a new lesson matter to teach and continues his/her teaching discourse in order to improve in his/her teaching task. For this purpose, the most important tool of the teacher is apparently the language through which he/she communicates with the students. Especially in the field of foreign language teaching, the teacher's speaking action imports in his/her communicational behaviors as well as the strategies he/she privileges. In other words, the teacher's linguistic style helps to produce his/her didactic action. With this in mind, we are going to try to analyze in this article, the contribution of a pragmatic teaching discourse to the learning process of a foreign language learner. In that intention, some theories will help to show how linguistic interactions together with their derived archetypes, are connected in a teaching and learning act.

It is possible to establish a conceptual connection between mental representations of a teaching act and the didacticism of the person who is in charge of teaching in a classroom environment. The language used by the teacher mostly provides the didacticism in question. Therefore, the language used when teaching and the teaching phenomenon itself (here, teaching French as foreign language) are complementary facts as it is of evidence. In that sense, they are apt to realize the teaching and learning relationship in a mutual manner. In this perspective, teaching pragmatism can be defined as follows: it is a fact of pragmatism of verbal exchanges occurred between speakers and it's strictly related to the convention concept. As defined by Herman (1980, P.265) the convention notion is *the representation of pragmatic strategy and its internalization is mutually known, accepted by the interactants*. In fact, we can accept that speech pragmatism contains mostly traditional language forms and those

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forms serve to develop a certain application of the knowledge. Vernant (2009) says that *co-speakers construct together a common image of their world*. In the classroom, co-speakers are the teacher and the learners. Therefore it is necessary to see the teaching action of a new language via the teacher's professional practice as pragmatic didactic discourse.

As mentioned by Bachman (1990), language familiarity includes, as the incorporation of the knowledge, *Organizational knowledge* and *pragmatic knowledge*. Organizational knowledge involves the code of the language. In other words, it refers to having some knowledge on grammatical, morphological, structural and syntactical elements as written in grammar books. Nevertheless, it does not mean compulsorily that this kind of knowledge, brings to the user the capacity to produce the language as a skill, even if it exists in the knowledge storage of the user and even if it serves to understand the organization of the language. On the other hand, pragmatic knowledge let the user be communicational, understand meanings since context, make anticipation and inference, get the figurative meanings. Therefore, pragmatic competence procreates a sociolinguistic skill which is extremely important in language learning. Quite rightly, Llorca (2000, P.93) says in his article that *competence may be accepted in its Chomskyan formulation as a static and permanent state in all human beings, regardless of whether they are using their first or second language, whereas communicative language ability will be applied to speakers' ability to use a given language, with a special emphasis on second language use*. In addition, it is important to consider language level of the students. In order to clarify better the pragmatism notion, let's see the essential points on which the notion is constructed.

## 2. PRAGMATICS : ESSENTIAL ASPECTS

### 2.1. 2.1 Context and inference

Provided that all kind of interactions get significant in a logic frame, all speakers select words to spend, into an enormous terminology baggage. This conscious selection is undeniably mindful because it is made as a result of a specific speech issue as well as some particular conditions of which both (or all) speakers involved are aware. Therefore, every speech act is realized in and for a special situation; otherwise, speakers would not understand each other. This is an implicit agreement, named equally speech convention, between speakers, as a transparent rule proving reciprocal understanding. It means that the subject of the interaction together with the situation is so-called context. When a pragmatic speech appears, logic is as well established via context. The formula is certainly simple: no context, no meaning just for acting in response. That's why the notion of context is vital.

*Language is not only code* states Fishman (1977, P.21). Language becomes meaningful when introduced in a context, a social group and a given situation. Afterward, its limited capacity of reflecting sense turns out to be full of potential. In other words, the code which is grammatical content of the language, involves only concrete aspects such as structural, grammatical, syntactic and lexical characteristics. The other facet is the insubstantial side, abstract and fully expressive. For Moeschler (2001, P.99), context notion has a very important role in the production of interlocutory acts. The context contains *the whole of the information which all makes relevant the statement of the speaker*. As a result, the expressivity of verbal interactions comes from the context they belong. Meanwhile, situations with slight context can ultimately exist however even there, speakers stand in some physical conditions frame: some persons, somewhere, interacting on some subject, recognized or not. Moeschler (ibid, P.98) points out this matter: These types of models are called *completives* because the context fulfills the role of completing the sense of the interaction content. That's why Moeschler (ibid) says that *the context is the whole information making significant the discourse of an interacting person*. In other words, context is a promising element as it reflects the inference especially when teaching and learning a new language. Context

awareness supplies partly the comprehension. Even though a language learner hears a word or an expression for the first time, he/she can infer a sense thanks to the knowledge of the context of the interaction. In this way, the learner assumes or guesses cognitively through a reasoning process. Sperber and Wilson (1989) study this point with their theory of pertinence. The theory of the relevance such as it is developed by Sperber and Wilson resumes the center of the theory of Grice: the central purpose of the human communication is to recognize, thanks to a cooperative effort, the communicative intention of the interlocutor. This theory is based on the model of inference, models according to which a speaker is going to supply to his interlocutor a number of indications which, situated in parallel with the context, are going to allow to the interlocutor to deduce the intention of communication.

In this perspective, inferences appear in contextual situations between speakers. To exemplify, let's imagine the teacher says: "I have good news for you"; the students answer by asking "so, can we leave now?" What is the relation which easily makes a coherent dialogue these two incoherent sentences? The relation is that, the day before, the teacher and the students discussed if the next day would be considered as half day holiday. When everyone is aware of the context, the content of the interactions can be cut down however the signification is never reduced in a non-sense. Everyone understands the same thing and the same details: a kind of verbal agreement is settled out because every one has a contextual background. As shown in this example, inferences are contextual when verbal interactions are in question. Therefore, grammatical indications are not always necessary or sufficient to produce a signification. That's the characteristics of the pragmatic speech and it's a didactic tool which is able to assure the familiarization with a foreign language when it is regularly applied with simplicity in a classroom environment.

In a second example, Paul (the student) asks the teacher: "When shall we start the course in the afternoon?" The teacher answers: "I don't need the viewer today. Thank you". The speech acts seem to be irrelevant but speakers communicate successfully. For those who know nothing about the context, it is impossible to make some inferences. In fact, the speech acts in the example take place on a Friday and are situated in a classroom ritual: The teacher uses visual devices for his language course each Friday and Paul is the student who helps the teacher to arrange visual devices each Friday. In this specific situation the interaction depends on ritual behaviors. Therefore, context is powerfully able to allow speakers produce inferences. The difference between an inference and a hypothesis is determined by the context. A simple estimation without knowledge of the context is a hypothesis. On the other hand, an estimation based on the knowledge of the context is an inference and is situational. This means that this kind of pragmatic inferences can be considered as pertinent.

## 2.2 Values of teacher discourse

Among the types of discourses used by the language teacher when teaching, imperative speech takes frequently place. As a result, imperative speech uses a conative language in order to be injunctive. In the classroom and during teaching period, the teacher uses instructional speech acts with imperative conjugation mode as *follow-me on your book, page 25; take note please; don't forget the essays for tomorrow; present your paper briefly; try to remember the expression; can you read please; let's discuss now this point; if you translate in Turkish what would you find then?; be attentive; more effort please; look for it in the dictionary; finish the work till Monday; show-me the title; go on please*. Those examples are valuable in classroom context and between the teacher and the students who are dealing with the same work. The reactions of the students, in return, are in accordance with the directives of the teacher. They do what the teacher asks them to do. The students have the role of associates of a verbal statement. Thus, repeated and diversified interactions flow up usually and get installed into language learner's mind. So, this kind of speech act fulfills the perlocutory function of the language since students respond correctly with appropriate verbal and gesticulating attitudes. Vernant (ibid) calls

*the engageants*, this kind of sentences because they engage the speech act partners to direct or indirect comprehension. The *engageants* build up an engagement of mutual understanding.

Till now, the examples we analyzed provide direct understanding. We just meet again the inference notion when indirect understanding exists. The teacher says: *this is really easy for you; exercises are well done.* . The students react: *let's don't wait for a week; let's begin to study the new subject now.* The students infer that the teacher would like to accelerate the didactic rhythm and they propose to learn the upcoming matter. This is a production of inference made available by the words of the teacher. If the interaction would not be appealing, the students would not react. Therefore, we can suggest that teacher's speech has the power to drive the student to interact as well as it stimulates the teaching and learning act, which is a motivating fact in all didactic process.

Meanwhile, as mentioned above, speech acts differ from situation to situation. Provided that learning motivation comes also extrinsically from teacher's stimulation due to his speech acts, many contributions are mainly assigned to engageants. So, they bring out the didacticism of the teaching act by:

- Drawing the student into the language by stimulating his curiosity
- Creating an instinctive need of interaction within student's comprehension trial
- Providing memory indices, a kind of clues for the student because he often imitates his teacher expressivity and those repetitions are necessary for keeping in mind language-specific properties
- Developing student's anticipation and annotating capacity in foreign language
- Inciting a cognitive learning strategy in favour of inferential findings.

As a result, locutory or perlocutory speech acts, when they are regularly repeated in a same/similar context (foreign language courses) and situation (teaching and learning a foreign language), like a language teacher does in his teaching process, have pragmatic aspects, which are very important for the learners. Pragmatic facts are communicational dimensions of a language besides its linguistic code. The code knowledge is important especially in writing abilities and is undetectable from foreign language teaching and learning. The pragmatics' specificity is that it is able to teach how to communicate, how to speak familiar language, how to be understood and to be comprehensible. Particularly when foreign language teaching action is realized in an environment without native language teachers, as in our context in university, teacher's pragmatic speech in the target language becomes more and more functional.

### 3. HOW DOES PRAGMATIC LANGUAGE TEACHE?

#### 3.1 Didactic relationship

Teaching activity concerns the teacher and the learner as well as learning activity involves the same two performers. The teacher teaches in order to help the student to learn but he cannot learn in his place. He can only show the ways, the instruments and the strategies to use. In the mean time, knowledge, as a matter to transfer by the teacher towards the learner and as a matter to acquire by the learner, is the didactic substance between them.

When we model the didactic relationship structured by Houssaye (2000), we find out these three dimensions: teaching, learning and knowledge. The original title in French is *triangle pédagogique*; Chevallard (1985) calls it *didactique triangle* and as many other educational researchers, we mention it because we believe it explains the complicated relations that a language teacher and a language learner are handling. Teaching process, learning process and knowledge itself are preconditioned facts for the founding of a didactical process. The contribution of these facts to the pragmatic communication between the teacher and the learner is operational with regard to

didactic activity. So that, at the end of this interference, didactic activity gains success or fails. In other words, the student does learn or contrarily, he does not. The system depends on how the teacher presents the knowledge, how he takes into consideration the learning styles of his students and how his pragmatic discourse appeals the learner to get closer to the knowledge. **Conversely, the student's role is equally important.** Is he dealing properly with his responsibilities and settling himself in position of learner? Namely, is he making necessary efforts, paying attention, using necessary cognitive, metacognitive and social-emotional strategies advised by the teacher and/or targeted by himself?

In language learning, when the teacher integrates in classroom ritual interactions as ritualized and diversified words, sentences, expressions in target language, the learner feels progressively approached to the language he learns; he gets familiar with a new language sound; he tries repetitively to give sense to words and sentences, he frequently finds the opportunity to imitate his teacher intrinsically or extrinsically. Therefore, using pragmatically the target language, enables the learner himself creating an inherent learning climate. This event is also a kind of establishment of a learning aptitude and of an acquisitional skill. The phenomenon in question provides to the learner several linguistic abilities to perform in target language, as summarized below:

- Adapting himself to the learning environment of a new language
- Developing comprehensive capacity
- Interpreting and getting the meaning of indirect and elliptic speech acts
- Being appealed to respond which conducts to reacting verbally
- Building unconsciously mimetic competence
- Decreasing his feeling of linguistic incapacity
- Changing his position from being simply a receptor versus being producer

### 3.2 *Learning blank spaces*

Ideal teaching process promises in result ideal learning outcomes. Meanwhile, we wonder if the idea of an ideal teaching process is completely found somewhere. In consequence, we don't know if exhaustive learning outcomes exist. Seeing that teaching and learning process is multidimensional, the relationship between teaching and learning acts is far away of being simple. As teaching practitioners, we can only state that we always witness some average blank spaces in the mind and performance of the student. Therefore, we do our best to obtain optimal learning outcomes. In return, the situational context of a language classroom is a place where the occupants wait for the apprehension of knowledge, for its analysis and its synthesis. After all, they usually expect to have a language competence in a so-conditioned environment the reason why teaching and learning atmosphere (classroom) can be considered as a likely natural didactic location. Brousseau (1998) already indicates that, as if a didactic contract is signed between the teacher, the learners and the knowledge, there is currently an implicit agreement which brings out the learning performance.

Even if we know, due to our experience, that learning and teaching blank spaces occur in didactical process, we however consider this educational situation as typical when it reflects a minimal portion of the didactic transfer. As far as we continue to let available the pragmatism of teacher speech in coherent educational situations, the accomplishment of learners cognitive tasks are promoted better and better. So, when the teacher uses regularly and professionally a pragmatic call in target language toward his students, it contributes much to didactic process and fill out the blanks in favor of didactic agreement.

In conclusion, learning blank spaces are never entirely reduced and there is always a missing part of the knowledge the teacher tries to transfer to the learner. It can be partly recovered by some compensating strategies

used by the learner, such as academic self-management: repeating, exercising, researching, asking questions and help, revising and concentrating. To this tridimensional relationship, we would like to add, as a didactical support, the repetitive pragmatic speech of the teacher, able to implement in learner's cognitive conscience additional and complementary knowledge which makes smaller blank spaces.

### *3.3 Language classroom: pedagogical components*

Let's consider three elements necessary to realize a didactical situation in language learning: the knower (teacher), the candidate (learner), the information (knowledge). The knower is the coach; he trains, instructs and informs the candidate. The candidate needs and requests to reach the information. The information tells about and describes the knowledge. Afterward, we will underline the way the information turns out to functional knowledge.

The information is the tool enabling the candidate to understand and to produce a different language than his, in written and verbal forms. The information does not come by itself but by the pragmatic competence regarding the teaching language. All details involved in teaching language depend on this pragmatic side. Without this aspect, grammatical and theoretical issues can be certainly apprehended however taking an active part in sensible ways for expressing and understanding a language rather than having fixed unassociated knowledge, would be impossible. Ellis (1994, P.407) proposes that learning is environmentally driven and learners need very little in the way of innate knowledge. Therefore, when a language user candidate is trained in such a pragmatic communicational speech acts environment, his candidacy improves as his language learning level improves until he becomes an intern. Being a language learner intern means having abilities to communicate via the target language, at different levels. In that case, the candidate gets in touch with the knowledge because not only he knows it but he also uses it.

In learning environments like ours, where the target language is not used at all, except the course content, where the teacher explains everything in the mother tongue of both the teacher and the students, language teaching process becomes slow and related learning process becomes more and more restricted and useless. Meanwhile, this situation does not signify that the mother tongue should be excluded from the teaching and learning process. Especially at the beginning level and in situations where troubles occur, when complicated points have to be cleared up, the use of mother tongue in teaching process is crucial and solves problems.

In this perspective, language teacher better uses the target language when communicating with and teaching his students. It is particularly necessary to establish a natural communicational ambiance for transporting the information from the teacher to the learner rather than creating only an artificial area full of theoretical knowledge. If, most of the time, as a habit, the mother tongue is used as the vehicle to transport the information, the link between the language to learn by the learner and the information used to do so, would not be transparent and smooth. This fact would afterward constitute a major barrier to the growth of student's cognitive capacity.

### *3.4 Teaching process via pragmatic speech*

Paying attention to the effects of didactic relationship (3.1), learning blank spaces (3.2) and language classroom (3.3), we can see that pragmatic speech helps pedagogically teaching process. First of all, this kind of teaching process describes, expresses and explains the knowledge in a more obvious and visible way. In a pragmatic speech, the teacher tells about what to teach and learn, what to use and how to use. Secondly, the teacher adjusts and standardizes his/her teaching action vis-à-vis his/her learners' learning attitudes and skills resulting from these strategies. Taking into consideration classroom observations, the teacher can decide to repeat

a lesson, explain again a notion and revise the exercises; he/she can illustrate the lesson matter; rearrange the work to fit the learning level of the students. At the third step, the teacher feels advanced on his/her teaching process and sees how the learners learn and apply the knowledge. He/She notices that a part of the work, which looked hard at the beginning, starts now to look easy. That's why the students know furthermore to a certain extent, the knowledge. We can call this situation of recognition, the transference of the knowledge, enabled and getting lighter. So, the knowledge is at this moment mobilized in a sense of recovered and improved in the mind of the learners. The fourth step consists on using this knowledge for creating authentic productions: the learner is able to synthesize the knowledge and to get an appropriate skill.

All this process is in fact derived from the pragmatic teaching style using the target language. Facing all the time a similar process, repetitively and constantly, make seize the facts of "how to do" and "how to be" in the target language and culture. Thus, the distance run by the knowledge between the teacher and the learner gets smaller. Consequently, it is conceivable that pragmatic speech in teaching foreign language has a diminutive role concerning the disproportion between teaching act and learning act since teaching act appears easier while learning act demands more time and effort. As a reality, we know, after all, that the teacher is experienced but the learner is apprentice. It is true that this asymmetry, as apprenticeship, cannot be erased in the situation of organized learning and that the places of learners and teacher are not exchangeable. The teacher is exactly considered as a key figure of the process of teaching and learning. Pragmatic speech in language classroom creates a didactic nature and combines this nature to normal teaching features to maximize the process of acquisition.

In that case, the effect of the pragmatic speech in the teaching process points out two important works: the work of the teacher and the work of the students. The teacher does not only expose the knowledge, the problems and the resolutions like written in a book but takes the responsibility for proposing situations where the student as a learner could be able to construct a knowledge by asking a question in target language and searching for its answer. The pragmatic side of the teacher constructs here a kind of reorganization of the context and recontextualization of the knowledge. Once effectuated, this can lead to the repersonalization of the knowledge by the learner. Recontextualization and repersonalization are two important processes to built and memorize new knowledge.

On the other hand, the student should not only learn the definitions, theorems and techniques, memorize, retain, know methods but should also be able to expose his inabilities, create or resolve a syntactical, structural, lexical or semantic problem, discuss the subject, produce answers as approaches, comparisons with mother tongue and formulations. The student should try to prove the ways he learns and show their pertinences.

The above-mentioned process reminds Socratic maieutic dialectic method, which is a technique engendering knowledge by asking motivating questions via pragmatic speech. The difference is that, in a classroom, environmental conditions are also taken into consideration. Definitely, we have a student who is already adapted to a specific teaching-learning situation. So, teaching-learning situations formed inside a pragmatic speech milieu helps a lot to be more and more adapted to a new language. In such manner, what is new and unknown becomes progressively usual and known. This is not only a linguistic interaction between the teacher and the students but also between the students and the classroom environment because this specific environment is mobilizing cognitively the knowledge of the student.

Teaching a language is in fact a pragmatic art. How to teach without using the targeted language itself especially when we teach a foreign language? Consistent and permanent pragmatic speech acts, interactions and intercommunications in language learning context, are a strong teaching institution apart. Lhote (1995, P.82)

mentions that *being a good listener in foreign language, it is at first to observe the behavior, the attitudes; it is to try to get the accentuated elements which are inevitably connected to the theme or to the way an interlocutor is situated with regard to him/her*. This notice explains indeed, how the style of the teacher is characterized by regular alternations between didactic interventions and those to maintain the interaction with students. Teacher's speech style regulates the teaching and learning process.

### 3.5 Regulating teaching and learning

As one of our many pragmatic classroom interactions, it would be useful to revise a practice recorded during a collaborative and playful classroom work. We practice a vocabulary game similar to scrabble in order to deal with French vocabulary, grammar and orthographic competences of the students. The teacher, acting as a guide, helps the learners to amplify the puzzle. Three groups of four students, with level B1, are playing the game. The game is on the screen via Internet connection. The mother tongue of the students is Turkish; they learn French since three years and they know English as another foreign language. Here are a part of the interactions in question. Speech acts in French of the students are partially erroneous. We give in parentheses the translation in English.

- (1) Student 1 – Il y a un mot en moins ici. (There is a missing word here)
- (2) Teacher – Comment ça? Il y manque quelque chose? (How can it be? Anything is missing there?)
- (3) Student 2 – Pas de mot. Il y manque une lettre mais... (Not a word. A letter is missing but...)
- (4) Student 1 – Une lettre oui mais comme a, e, i. (A letter but like « a, e, i »)
- (5) Teacher – Une voyelle donc. (A vowel then)
- (6) Student 2 – Oui parce que avant il y a c et c. (Yes because there is c and c before)
- (7) Student 3 – Il devient occ. Deux c. (It becomes occ. Two c)
- (8) Teacher – Ça fait quoi alors exactement? (That makes what then exactly?)
- (9) Student 1 – Ça fait occuper. On peut faire verbe occuper. (It makes « occuper ». We can make the verb « occuper »)
- (10) Student 2 – Non, nous ne pouvons pas. Il y a la lettre a suivant. (No, we cannot. There is a letter following)
- (11) Teacher – Ah! Il y a un a qui suit! Attention là. Peut-être que ce n'est pas un verbe. (Ah! There is one « a » which follows. May be, it is not a verb.)
- (12) Student 3 – On forme un nom. Occupation. (We construct a noun. Occupation)
- (13) Student 4 – La case qui suit c'est p. C'est difficile. On trouve quoi par p? (The case which follows it is « p ». It is difficult. What can we find with « p »?)
- (14) Teacher – Pas grand chose alors? Bon. Continuez avec un préfixe si vous voulez. (Not much then? Good. Go on with a prefix if you want)
- (15) Student 5 – Préfixe. Pré. Je trouve pré pour mettre devant occupation. (Prefix. Pre. I find « pre » to install in front of « occupation »)
- (16) Student 1 – Ça fait préoccupation. (It makes « préoccupation »)
- (17) Student 6 – Mettons un s après pour pluriel. (Let's add an « s » after for the plural)
- (18) Teacher – A la fin? Pour le pluriel? Pourquoi pas! Bonne idée. (At the end? For the plural? Why not? Good idea)
- (19) Student 3 – A la fin du mot. De cette façon, on obtient un mot plus long. (At the end of the word. Thus, we obtain a longer word)
- (20) Student 4 – Plus de points alors. C'est nous qui gagne. Nous gagnons! (Much more points then. We win)

In this empirical sample, we can observe how the teacher is able to regulate the teaching-learning moments by implementing and conducting pragmatically a mental exercise. Furthermore, verbal communication between students themselves and between the teacher and the students is mostly important. Let's analyze the sequences.

- Interactions (1), (2) and (3) are complementary. Interaction (3) shows how student 2 seizes from his teacher's words (interaction (2)), the correct way of talking and how he corrects the wrong way of talking of student 1.

The students are imitating the teacher and thus, they are completing their missing knowledge. This mimetic competence is vital for the transposition of the student to the position of a learner.

- Interactions (4), (5), (6) and (10) are as well complementary. In those interactions, words like “letter” (interactions (3) and (4)) instead of “mot” (interaction (1)), are used by the students. When one of the students forgets a word, the other one reminds. The interaction helps them activating their knowledge stored up in their mind. Pragmatic speeches allow the accumulated knowledge to be mobilized.
- Interaction (5) remembers the right word “voyelle” and in interactions (6) and (7) we see how the meaning is implicitly and completely understood by students 6 and 7.
- Interactions (7), (8), (9) and (16) demonstrate how the utilisation of “devient” turns out smoothly to the utilisation of “ça fait”.
- Interaction (12) gives to interaction (9) a corrective feedback: student 3 uses the sentence “on forme” as a paraphrase towards interaction (9) “on peut faire” performed by student 1.
- In interaction (10) we see the wrong use of “suivant”. However, in interactions (11) and (13) the correct form appears. In interaction (11), the teacher repeats in an implicit and corrective approach, the words of student 2 (interaction (10)). Interaction (13) proves that the interaction (11) has got the power to teach furtively the use of the relative pronoun “qui”.
- In interaction (14) the teacher gives slightly an idea using the word “préfixe”. Even hearing the word “préfixe” has been sufficient to be creative enough and discover the word “préoccupation” for student 1 in interaction (16).
- Interactions (17), (18) and (19) reinforce the use of “à la fin” instead of “après”.
- Interactions between students, like interactions (19) and (20), underline the use of the comparative and superlative “plus”.
- Interaction (20) shows how speaking freely and fearlessly is a way of being autocorrective. In that interaction, student 4 says first “c’est nous qui gagne”. But, he thinks he makes an error. That’s why he says “nous gagnons” just then.

As affirmed by Pennac (2007), *the teacher needs to know to play with the knowledge. The game is the respiration of the effort, it’s another heartbeat; it does not harm the seriousness of learning; it is the counterpoint. Beyond all, playing with the lesson matter means improving more in the matter.* Pragmatic speech is a good tool for reaching the stated aim.

#### 4. TOWARDS A CONCLUSION

The virtues of the pragmatism in foreign language teaching find their justifications in the familiarization aspect as a teaching outcome. Familiarization is adaptation. It is a primary aptitude that a foreign language learner should acquire because a new language arrives together with its authentic linguistic and cultural characteristics. It is not possible to treat the new language as identical to the mother tongue of the students (Turkish in our situation). Languages and cultures may certainly have similar features which are helpful for learning a new language. However, points which are not parallel abound. They seem distant, inaccessible, difficult to get. When a foreign language teacher is able to teach using pragmatically the target language, distance and inaccessibility may disappear or decrease. The learners get adapted and familiarized. That is a serious reason to facilitate the learning.

The first rule of automatic (in a sense of habitual) foreign language learning is to be regularly exposed to authentic speech acts. Finally, interactants manage to understand each other and learners imitate the teacher. Learners enrich more and more their knowledge and their skills. The teacher’s skill adhere, in a mnemotechnical

and mimetic way, to the learner's cognition and it becomes step by step a skill belonging to the learner. This linguistic phenomenon is developed by the comprehension of the context. Besides, the context brings the inference. To be able to make inferences due to the context means to comprehend the language, to handle it and to communicate into that language. In this way, the memory's blindness is converted into awareness.

*Communication research perceives teaching as a process of oral communication where a commonness of understanding is created between a sender and a receiver. The process consists of a sequence of events whose desired effects on the receiver can be arranged [...].* states DeLozier (1979). As indicated by DeLozier (idem): 1. Getting and maintaining attention/awareness 2. Gaining understanding 3. Developing or changing attitudes (e.g., toward the topic being taught to create an atmosphere for learning) 4. Learning 5. Action (application of the material learned) are the results as desired effects. As a foreign language teacher, we play the role of sender. What we send is the knowledge (for us, French language). The receiver is the student. We believe and see that sending pragmatically in French language the knowledge, by taking into account and regulating the level of the language acts and by paying attention not to exceed the didactic and pedagogical limits of the learner public, will mainly achieve a success in teaching and learning process of a new language.

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# How do teachers evaluate their training on the new Portuguese language curriculum in basic education?

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## Abstract

This century has brought upon significant changes in Portuguese language curriculum in Portugal; one of those was the approval of a new syllabus for basic education (Reis, 2009). In order to help teachers understand the new curricular guidelines and change their teaching and assessment methodologies, the Bureau for Innovation and Curriculum Development organized a training program which involved teachers from the various schools, educational cycles, and regions of Portugal.

Some were from the Portuguese Autonomous Regions of Azores, and they became responsible for conducting the training process in the archipelago, under the supervision of the Regional Secretary of Education and a university professor.

That training process started in 2009 and it was organized in three phases. Phases one and two lasted from 2009 to 2011. They involved approximately eight dozens of Portuguese language teachers from eight islands of the archipelago and half a dozen of formers. The process included classroom training and distance learning, planning tasks, didactic material construction and experimentation, as well as peer work in schools. The third phase lasted from 2011 to 2013. It was mostly based on peer work in schools, under the supervision of the teachers who participated in the previous phases.

This process is now being researched in order to analyze teachers' representations on its organization, relevance, impact and constraints, as well as on the new curriculum guidelines (changes, adequacy and demands).

It uses a mixed methodology based on content analysis on documents produced by the teachers who participated in the training process (portfolios, reports, and didactic sequences) and their testimonies on online forums, as well as on a questionnaire, test results and a study case.

We here present some preliminary results on how teachers evaluate the training process based on content analysis on their individual reports.

Keywords: teacher training, curriculum changes, Portuguese language curriculum.

## 1. INTRODUCTION

This has been quite a busy century on what concerns language education in Portugal. Since 2001 the ministers of educational affairs have appointed several work groups whether to produce new syllabus for Portuguese language classes in secondary education (Coelho, 2001-2002) and basic education (Reis, 2009)<sup>†</sup>; or to establish the essential competences Portuguese language classes should promote in basic education (ME, 2001)<sup>‡</sup>, and the

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<sup>†</sup> In Portugal, basic education is organized in three study cycles (1<sup>st</sup> cycle includes grades 1 to 4, 2<sup>nd</sup> cycle comprises grades 5 and 6, and 3<sup>rd</sup> cycle incorporates grades 7 to 9) and secondary education comprises grades 10 to 12.

<sup>‡</sup> The *National Curriculum for Basic Education – Essential skills* was subsequently repealed by Order 17169/2011, December 23.

learning goals it must achieve (ME, 2010), and the curricular goals it should pursue (MEC, 2012); or to change the linguistic terminology (Decree 1488/2004, December 24), and adjust it a few years later (DGIDC, 2008); or to establish the use of the Portuguese Language Spelling Agreement in schools (Resolution n. 8 of the Council of Ministers, January 25, 2011)<sup>§</sup>.

Not only there have been many changes in the area as those have been significant and challenging for teachers, even more because they are not always consistent. For example, the curricular framework for Portuguese language in secondary education (Coelho, 2001-2002) clearly moved away from the literary and cultural trends that lasted for long in language teaching in Portugal and embraced a communicative approach, not without some discomfort and contestation in the media by some scholars and national individualities<sup>\*\*</sup>.

The curricular framework for Portuguese language in basic education shows however that there is no real consensus on the goals the area should pursue, for as it claims for an “(...) effective presence of literary texts in language teaching, valued as testimonies of an aesthetic legacy, not to be treated as mere typological cases similar to others with less cultural density (...)” (Reis, 2009, p. 5), it states that language classes should value “(...) essential aspects of language use: understanding discourse, verbal interaction, reading as a regular and critical activity, correct, multifunctional and typologically differentiated writing, and linguistic analysis with metacognitive purposes” (Reis, 2009, p. 14).

In fact, the area has been quite volatile depending on political ideas and decisions that sometimes reinforce the role of education in developing fundamental skills, as the Portuguese language framework for secondary education (Coelho, 2001-2002), or the National Curriculum for Basic Education (ME 2001) illustrate; others focuses primarily on the acquisition of knowledge and content, as the Curricular Goals for basic education indicate (ME, 2012).

In short, these have been challenging times for mother tongue language teachers in Portugal. Such turmoil demands constant updating and great commitment and resilience. Acknowledging that, the heads of education both on a national and a regional level have organized some training programs to help teachers cope with curricular changes and improve the literacy levels in the country.

It was so between 2007 and 2010, when the Ministry of Education carried out the National Program on Portuguese Teaching – PNEP (Order 546/07, January 11). Involving only teachers from the 1<sup>st</sup> cycle of education from the continental regions (Madeira and Azores were not included), PNEP was based, on the one hand, on the training, by college and university professors, of school teachers, who then became responsible for carrying out the formative process of their colleagues in their schools/groups of schools, through theme sessions on language teaching issues and tutorial sessions, in which they supervised their colleagues’ work in classes, through observation and analysis<sup>††</sup>.

<sup>§</sup> The *Language Spelling Agreement* was ratified by Portugal, Angola, Brazil, Cape Verde, Guinea-Bissau, Mozambique, São Tomé and East Timor, in 2008.

<sup>\*\*</sup> On this issue, you may read Dionísio & Castro (Orgs.), 2005, or Mira Leal (2012).

<sup>††</sup> On PNEP you may read Raposo (2010).

Another example of such training programs was the 120 hour course promoted by the Bureau for Innovation and Curriculum Development between October 2009 and May 2010. This Training Program for Formers on the Portuguese Language Syllabus for Basic Education (Reis, 2009) involved 150 Portuguese language teachers from the 2nd and 3rd cycles of basic education from all over the country, including Madeira and Azores. The course was organized into four modules, combining distance learning, through an e-learning platform, with classroom training in Lisbon with the authors of the new Portuguese language syllabus for basic education (Reis, 2009) and experts in didactics and linguistics from Portuguese universities.

### *1.1. Teachers' training on the new Portuguese language syllabus for basic education in Azores*

Six teachers from the Autonomous Region of Azores took part in that training program, and were then appointed by the Regional Secretary of Education to undertake the training of their peers in Azores in order to prepare them for the implementation of the new Portuguese language syllabus for basic education. Under the scientific supervision of a professor from the University of Azores, the Regional Commission for the Implementation of the Portuguese Language Syllabus for Basic Education designed a training program adjusted to regional specificities (territorial discontinuity and financial restraints) and curricular guidelines, namely the Regional Curriculum for Basic Education and the Regional Reading Plan.

The training program implemented in the Azores was organized in three phases. Phases one and two directly involved around 80 teachers from the 1<sup>st</sup>, 2<sup>nd</sup> and 3<sup>rd</sup> cycle of basic education from 8 of the 9 islands of the archipelago, and indirectly many of their school peers who participated in working sessions in schools. Phase three took place in schools and involved the teachers who were teaching the new syllabus under the supervision of those who had directly participated in phases one and two.

Phase one took place in school year 2009/2010. It included 50 hours of classroom training and 70 hours of distance learning, as well as working sessions in schools, organized and conducted by the teachers involved in the program in ways found fit to each context. This phase aimed mostly to help teachers understand the organization of the new Portuguese language syllabus for basic education, its key concepts and principles and methodological options, as well as to promote sharing and discussion between teachers on teaching principles and methodologies, both in classroom training, sessions in schools and on the e-learning platform.

For classroom training teachers were organized into three groups according to their geographic location. Even though there was a common action plan for all groups, it was then adjusted to each group's needs, concerns and difficulties. That led to different group dynamics, as well as to the organization of complementary initiatives, such as a workshop on the new linguistic terminology with experts from de University of Azores.

Classroom sessions involved the analysis of the new syllabus as well as didactic materials provided by the Bureau for Innovation and Curriculum Development, such as annual plans, didactic sequences and Guides to implement the syllabus on Reading (Silva, Bastos, Duarte & Veloso, 2009), Writing (Niza, Segura & Mota, 2010), Oralcy (Silva, Viegas, Duarte & Veloso, 2011) and Grammar use (Costa, Cabral, Santiago & Viegas, 2011).

Distance learning used an e-learning platform. It aimed at clarifying the training process; promote the analysis and discussion on the new syllabus' key concepts, principles and methodological options on theme forums; and encourage teachers from different educational cycles, schools and islands to share ideas, difficulties, teaching practices and projects.

Teachers' evaluation on phase one was based on: task accomplishment and interaction in classroom sessions; contributions to online forums; results on an online test on the new curricular framework (formonline); and an individual portfolio.

Phase two, which took place in school year 2010/2011, was affected by a set of constraints. The governmental decision to postpone the implementation of the new syllabus to the following school year, to make it simultaneous with the implementation of the Portuguese Language Spelling Agreement, invalidated the initial training plan, which included a clinical supervision process of the implementation of the new syllabus in schools.

The training program had to be redesigned and made fit to the new circumstances. Because of that the Regional Secretary of Education took too long to inform schools on how the training program would proceed; and schools did not organize teachers' schedules in order to facilitate their participation in the training process, which made it very difficult to create collaborative dynamics in schools in a systematic basis. It all depended on teachers' good will and time available. The process was than based mostly in distance learning (also for financial reasons given teachers' geographical dispersion).

This phase included teachers' participation in theme forums on the moodle platform and the construction and testing of teaching plans (didactic sequences) and materials, under the supervision and feedback of the Regional Commission for the Implementation of the Portuguese Language Syllabus. Teachers' evaluation in this phase was therefore based on the quality of their participation on the different online forums; their ability to plan, test and improve didactic sequences and materials according to the new syllabus; and their critical analysis on the training process (individual reports).

Phase three took place in 2011/2012 and 2012/2013. It was carried out in schools and was supervised locally by the teachers who had been involved in phase one and two, who worked with their peers on the implementation of the new syllabus, helping them plan their lessons and create didactic materials.

### *1.2. Research methodology*

The training process described above is now under analysis in a research project aiming to analyze teachers' representations on the training program's organization, its relevance for their updating and curriculum understanding, its impact on their planning and teaching practices as well as on collaborative work in schools, and the constraints they experienced along the road. It also aims to understand teachers' perception of the changes the new syllabus introduces, their evaluation on the syllabus' adequacy to their teaching contexts, as well as the demands and implications it has both on a professional and (inter)personal level.

The study uses both a quantitative and a qualitative methodology, combining document analysis (teachers' portfolios, critical reports, didactic sequences, and participation on forums) with a questionnaire, test results and a study case.

The study takes place in two steps. The first step addresses phases one and two, and it involves those teachers who participated in classroom training and distance learning from 2009 to 2011 under the supervision of the Regional Commission for the Implementation of the Portuguese Language Syllabus for Basic Education. The second step addresses phase three, and it involves the teachers from the archipelago who were already working with the new syllabus in schools under the supervision of those who participated in phases one and two.

The results we here present relate to the first step of the research process, and regard both qualitative and quantitative content analysis on the teachers' individual reports written by the end of phase two. Our sample includes 55 reports (18 from 1<sup>st</sup> cycle teachers, 16 from 2<sup>nd</sup> cycle teachers and 21 from 3<sup>rd</sup> cycle teachers) in a total of 1035 content units (CU) distributed per educational cycles according to Fig 1.

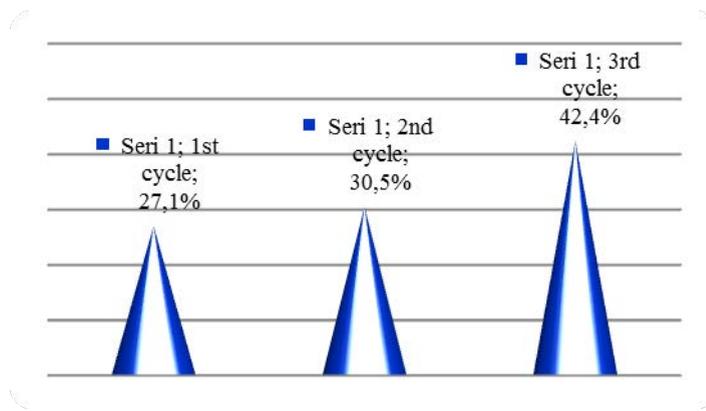


Fig. 1. Distribution of content units per educational cycle

Data refers to the dimension "Representations on the training process" and its analysis was based on the coding scheme presented in Table 1 (categories, subcategories and indicators were generated inductively from the data).

Table 1. Content analysis coding scheme

Categories	Subcategories	Indicators
Organization	Goals	Clarity Adequacy
	Duration	Adequacy
	Tasks	Adequacy
	Feedback	Clarity Efficacy
	Evaluation	Clarity Adequacy
Relevance	Knowledge update / application	Portuguese spelling agreement
		Linguistic terminology
		Teaching strategies
		Evaluation strategies
Impact	Curriculum appropriation	Understanding curriculum principles and concepts
		Understanding curriculum organization
		Getting ready to implement the new syllabus
Impact	Changes in practices	Getting enthusiastic on the implementation of the new syllabus
		Teaching strategies and materials
		Planning
Impact	Collaborative work	Evaluation strategies
		Sharing ideas/discussing/working together
		Sharing teaching strategies and materials
Constraints	Learning results	Transfers to other contexts of activity in schools
		Reading
		Listening and speaking
Constraints	Political / organizacional	Writing
		Others
Constraints	Political / organizacional	The postponement of the new syllabus's implementation

Professional	Distance learning
	No conditions for collaborative work in schools
	Teachers' replacement between phase one and two
	Lack of time or energy
	Difficulty in planning didactic sequences
	Difficulty in using different teaching strategies
	Difficulty in using different evaluation strategies

### 1.3. Results

An overall view of the results per category shows that when teachers address the training process they emphasize its impact (419 CU) over its relevance, its organization or the constraints they experimented (see Fig. 2). Although this highlight is common to teachers from all three cycles, 3<sup>rd</sup> cycle teachers are more critical on organizational issues and express more constraints.

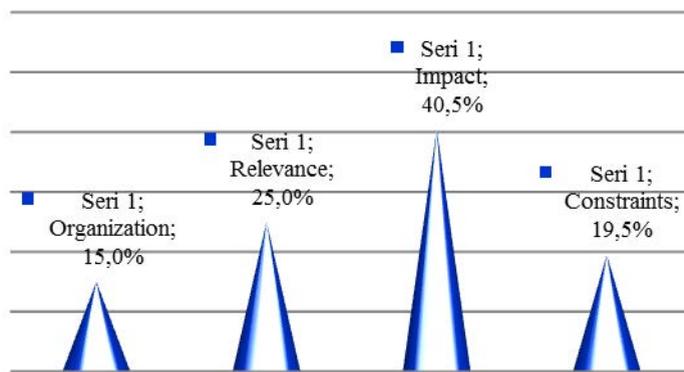


Fig. 2. Distribution of content units per categories

When teachers refer to the “Impact” of the training process, they mostly emphasise that it favoured collaborative work, mainly in what concerns *sharing ideas, discussing or working together* (124 CU). Teachers from all three cycles clearly point out this indicator over others, mostly due to the continuous interaction that theme forums allowed between teachers from different educational cycles, schools, and islands (see Fig. 3).

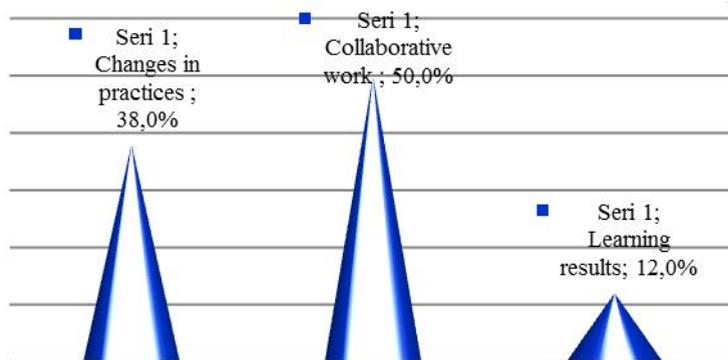


Fig. 3. Distribution of content units per subcategories in category "Impact"

*Sharing experiences and materials* is second in line (50 CU). It mostly happened during peer work in schools, which many teachers found difficult to promote (37CU) either because schools did not organize teachers' schedules in order to allow them to meet on a regular basis or because many of their peers did not show much interest or lacked time to do so.

Indicator *Transfers to other contexts of activity in schools*, though less referred to (34 CU), occurs in all cycles. For example, some teachers say they took a more active role in textbook selection, others say they suggested strategies to promote reading in school libraries, others even say they called the department coordinators' attention to certain pedagogical issues that should be discussed. This is in fact interesting information, for it shows that training on curricular issues may create opportunities for teachers to rethink their educational roles and activities beyond the classroom.

Subcategory *Changes in practices* (160 CU) follows collaborative work. In this case, teachers particularly say the training process helped them *change strategies and materials* they used in their classes (113 CU). We cannot prove so for there was no observation involved in this study. Besides, we must not forget these reports were meant to be evaluated by the commission that supervised the training process, and even though the evaluation criteria did not include reporting changes in teaching practices there may be a contamination effect.

Although we cannot say that these numbers correspond to effective change and we all know educational changes take long time are not without some discomfort and great effort, we must take this data into account as we analyse teachers' didactic sequences (a task that will take place later on according to the chronogram of the study). It is also important to relate this data to the fact that teachers sometimes give notice of the impact those changes had in their students' learning results in reading (18 CU), listening and/or speaking skills (10 CU) or writing (3CU). Some teachers are less specific or just say their students became more enthusiastic and interested in language learning (20 CU).

The "Relevance" of the training program is also quite highlighted in reports (164 CU). Teachers mostly refer that it allowed them to better *understand curriculum principles and concepts* (78CU), and helped them *get ready to implement the new syllabus* (52 CU) (see Fig. 4). Nevertheless, they don't seem to *feel very enthusiastic* to do so yet (15 CU), maybe because many still find it difficult to plan didactic sequences (22 CU), change teaching strategies (13 CU) or evaluating strategies (4 CU). It is mostly 3<sup>rd</sup> cycle teachers that say so (16 CU), which is

quite unexpected for they also teach in secondary education, so they must be working with a similar curricular framework for quite some time (remember Portuguese Language Syllabus for Secondary Education was approved in 2001). No doubt curricular changes walk faster than pedagogical ones.

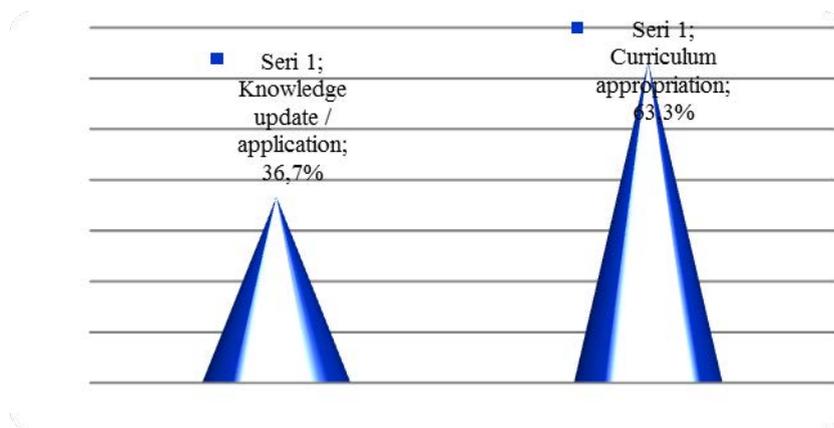


Fig. 4. Distribution of content units per subcategories in category “Relevance”

“Constraints” is the second last category teachers refer to. The constraints they point out are either related to political and organizational factors, or to professional issues (see Fig. 5). The constraint teachers refer the most is their *lack of time or energy* to further invest on their tasks (60 CU), namely interaction on online forums (21 CU) and sequence planning (12 CU). In this subject matter 1<sup>st</sup> cycle teachers are the ones who complain the most (24 CU), compared to 3<sup>rd</sup> cycle (19 CU) and 2<sup>nd</sup> cycle (17 CU) – remember 1<sup>st</sup> cycle reports are the ones with less CU in total.

They also find a great constraint in *distance learning* (45 CU). They don’t think it is as effective as classroom training, because it “makes the communication between participants more difficult and does not allow sharing ideas during tasks” (13)<sup>‡‡</sup>. Teachers blame this constraint on the political decision to *postpone the implementation of the new syllabus* (14 CU) as they find this decision made it more difficult to *promote collaborative work in schools* (37 CU), for, as we previously explained, schools did not organize teachers’ schedules in order to make that happen and teachers say their peers found that once the syllabus had been postponed there was no rush to get familiar with it.

<sup>‡‡</sup> Teachers’ reports were coded to preserve their identity. The letter refers to the author and the number to his/her cycle of education.

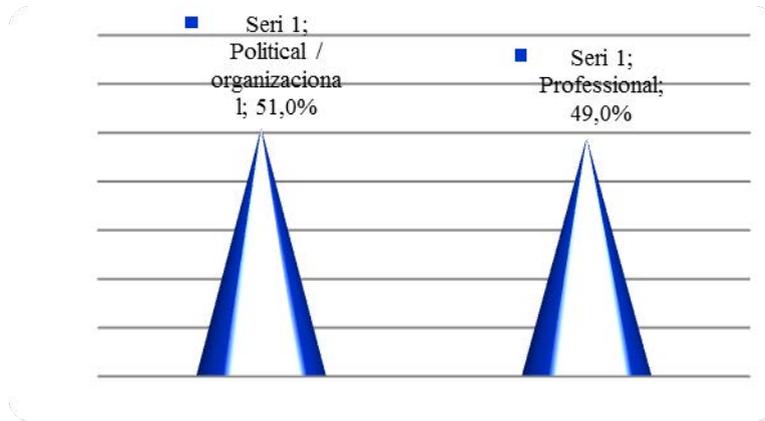
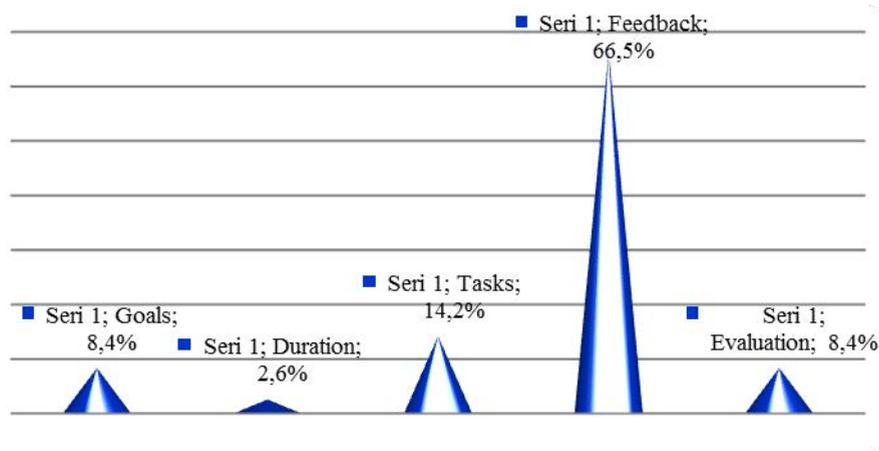


Fig. 5. Distribution of content units per subcategories in category "Constraints"

Other constraints they refer to are mostly professional and derive from the didactic changes the new syllabus demands: *planning* (22UR), *teaching methodologies* (13 CU), *evaluation strategies* (4 CU). It is curious that evaluation does not get much attention from these teachers. It appeared quite a problematic area in a study conducted on the implementation of the Portuguese Language syllabus for secondary education in Azores (Mira Leal, 2008), mainly because it valued oral skills and formative practices. Didactic sequences' analysis may prove relevant to better understand these results.

"Organization" is the category teachers refer to the least (155 CU) in a direct manner. In this category teachers focus mainly in feedback (see Fig. 6), maybe because it was the most important strategy included in phase two to help teachers put the syllabus' principles and methodological instructions in action.



Teachers who refer to feedback mostly say it was efficient (55 CU) and clear (13 CU), nevertheless some say that “the fact that it was only in writing, without dialogue between the formers and the teachers ma[de] it a unilateral process, more evaluative than formative” (13). That is also the argument used by those who find feedback not clear (6 CU) or effective (27 CU), mostly 3<sup>rd</sup> cycle teachers (24 CU).

This feedback referred to the tasks teachers had to perform – sequence planning and material construction, as well as participation in online forums. Even though not many teachers refer directly to the adequacy of such tasks (16 CU say they were adequate to the training goals, 6 CU say they were not adequate to the constraints they faced during the process), results make it clear that teachers found their training process in general, and those tasks in particular, relevant and with great impact in their professional lives in and beyond the classroom (671 CU).

Very few teachers refer to duration (4 CU) and evaluation (13 CU). In the first case they mostly find it adequate (3CU). That is not so in the second one (5 CU say it was clear and adequate, 8 CU say the opposite), mostly because they didn’t agree with criteria or final grade. Almost all teachers refer to the training goals but only a few discuss their clarity or adequacy (13 CU). Nevertheless, those who do so say the training goals were clear (6 CU) and adequate (6 CU).

## CONCLUSION

Curricular changes are usually demanding and challenging for teachers. Even more if those are various, recurring and constitute significant change to teachers knowledge or pedagogical action.

Educational authorities must take that into consideration and help teachers cope and adapt. Training is usually the best way to do so. But training can go many ways. The training program we here analyzed had different approaches to the training process, including classroom training, distance learning and training in context. We here focused mainly on the distance learning phase to which our data referred to specifically, even though it may somehow be impregnated with teachers’ ideas on phase one, that combined classroom training with distance learning.

Results indicate that teachers do not find distance learning as effective as classroom training, which many say “would have had a more positive and efficient impact on the adjustment that must take place” (E3). Nevertheless, they see significant impact and relevance in the training process mostly in promoting collaborative work in schools, understanding the new curricular framework for Portuguese language classes in basic education, and changing pedagogical practices, despite the various constraints they refer to.

Even though the professional constraints they signal are expected and quite natural in a process that aims to help teachers deal and adjust to change, the political and organizational ones should have been avoided or minimized, for they seem to have created some anxiety, confusion and disbelief among teachers, feelings that do not help educational change.

We expect this study to bring more interesting information on the training process it scrutinizes as we go along the various research tasks and stages.

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4<sup>th</sup> International Conference on New Horizons in Education

# How should be a good faculty of education and a good student in the faculty of education?

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## Abstract

In this study, it is aimed to find out the views of the students in the faculty of education on a good faculty of education and the profile of a good student in the faculty of education considering that it is required to get feedbacks from the students who are a good observer each to enhance the quality of the faculties of education. The research group of the research includes 34 third grade students studying at the department of primary school mathematics teaching of a state university during the academic year 2011-2012. As the research design, the case study which is one of the qualitative research methods has been used, and a test consisting of 2 open-end questions has been applied to the 34 participants as determined in the sampling, and the written opinions have been asked from the participants. The data collected has been assessed by dividing into codes and categories by means of content analysis method.

Keywords: faculty of education, teachers, teacher training

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## 1. INTRODUCTION

As it is known, the guarantee for our future is closely related to the education level of the individuals, and therefore, the society. It is no doubt that the development of the society would be increased to the extent that the education levels of the individuals of the society are increased (Aydın, 2003). Existing educational institutions has assumed to carry out the education of the societies. Qualitative education and raising qualified individuals are adopted as the main purpose at all stages from the primary education to the higher education. It is obviously seen that the universities plays an important role in raising the professional groups that enable the development of the societies. The universities are the higher educational institutions that operate as public entity with scientific autonomy, and provide education-teaching, scientific research, publishing and consulting at a high level, and include faculties, institutes, high schools, and similar bodies and units (Yüksek Öğretim Kanunu, R. G. 17506). It is no doubt that qualified individual profile can be raised as expected from the universities by effective application of the curriculums. Therefore, the academics and instructors as the practitioners of many curriculums are the focus of the education system as all agreed.

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Email address:

Considering that the students who are raised today with the thoughts and skills of the teachers will be the lawyers, doctors, teachers or scientists in the future, the importance of the teachers' profession can be more clearly understood. Therefore, it will be not wrong to tell that one of the essential members of our education system is teacher. The institutions that raise teachers, that are the faculties of education, are primarily responsible for raising the qualified teachers (Murat, Aslantaş & Özgen, 2006). In this sense, the importance of the faculties of education established to raise qualified teachers cannot be ignored. Because each of the teacher candidates studying at the faculties of education will deliver education to thousands of students in the future and share the information with them (Arslantaş, Özkan & Külekçi, 2012). Thus, all the countries in the developing and changing world to have well-raised teachers try to question their education systems and policies for raising teachers, and to continuously keep them up-to-date (Day, 2010). As raising teachers is perceived as raising individuals in general terms, it should be considered that socio-economic, socio-cultural and political developments have an important impact on developing teacher raising policies (Aslan, 2003; Darling Hammond, 2005). Therefore, it can be concluded that each society is to have a specific policy for raising teachers.

Our country has more than 150 years of experience in raising teachers (Öztürk, Doğan & Koç, 2005). According to Akyüz (2001), the institutions that has continued their activities under the Ministry of National Education with the beginning of Republican period have been transferred to universities as of 1982 (Aslan, 2003). According to Çakır (2005), the programs raising teachers are expected to equip the teacher candidates with certain professional qualifications. In this sense, considering that in primary education departments of all the faculties of education in our country, the package program as determined by the YOK (Council of Higher Education) is commonly applied, it can be said that all the competencies aimed to be gained by the teacher candidates through this program are the same for all the faculties of education (Terzi & Tezci, 2007). It has been specified in the Basic Law No. 1739 of National Education that the programs should include general cultural information, special field education and pedagogical formation courses, with respect to the programs for raising teachers (Yüksel, 2009).

Since the foundation of the faculties of education, at almost all scientific conference held, the properties required to be held by the faculties of education, educational process, physical conditions, social opportunities, and the qualifications that they aim at making the students gain have been discussed in detail. According to Çokluk Bükeoğlu and Yılmaz (2007), while it is applicable for all the levels of education, the faculties especially which delivers education at university education level should not only be the institutions where education is delivered, but also the places where the students come willingly, can participate in social, cultural and sportive activities, and develop their thought. As the reason for being of all the institutions from the primary schools to the universities are the students (Semerci, 2003), the views of the students as a good observer each have been required, when it comes to the a good faculty of education, considering that it can only be achieved by getting

feedbacks from the students to the questions how all these are assessed by the students, and whether these meet the expectations of the students. Therefore, this study has been carried out considering that the perspectives of the students who take place at the center of the education and teaching concepts of a faculty of education, and their views on the qualifications of a student in the faculty of education are important.

## **2. METHOD**

In this study, case study which is one of the qualitative researches has been used. The case study is an empirical study method which studies on a current case within the framework of the real-life of itself, and is used when the borders between the case itself and the content where it is involved is not obvious with sharp lines, and when there is more than one source of evidence or data (Yin, 1984).

The research group of the research includes 34 third grade students studying at the department of primary school mathematics teaching of a state university during the academic year 2011-2012.

As a data collection tool, a test consisting of two open-end questions have been used. While it was tried to determine a profile of a good faculty of education which is conceived of by the students with the first question, it was tried to reveal how a good student should be in a faculty of education through the students' perspectives in the second question. The expert views were taken about the questions involved in the data collection tool. The data from these questions was collected in writing at one week intervals.

The content analysis was used while analyzing the data from the research. The purpose of the content analysis is to reach the terms and relationships that can describe the collected data. Thanks to content analysis, the realities hidden in the data are tried to be uncovered (Yıldırım & Şimşek, 2011). The data was continuously compared with each other, and was analyzed considering their relationships between each other. In addition, the data was repetitively read for the accuracy of the analysis of data, and the parts which are not considered to be involved within the scope of the study were excluded. Following to the coding, the similar codes were integrated, and grouped under the appropriate categories, and their frequencies were calculated. In addition, the sample quotes were provided below related to the views of the participants which are coded as P1, P2, ... , P34 in respect of the created categories and codes.

## **3. FINDINGS**

The data collected were outlined and classified in accordance with the research questions, and the categories and codes were created. According to the questions from the question "How should be a good faculty of education?", three categories were determined as "academic", "physical conditions of the faculty of education," and "educational process". The data from the question "How should a good student be in a faculty of education?" were studied in two categories including "personal characteristics" and "proficiencies". These categories are

shown in the Figure 1. Each category is explained with codes, and the quotes from the views of the participants are directly given.

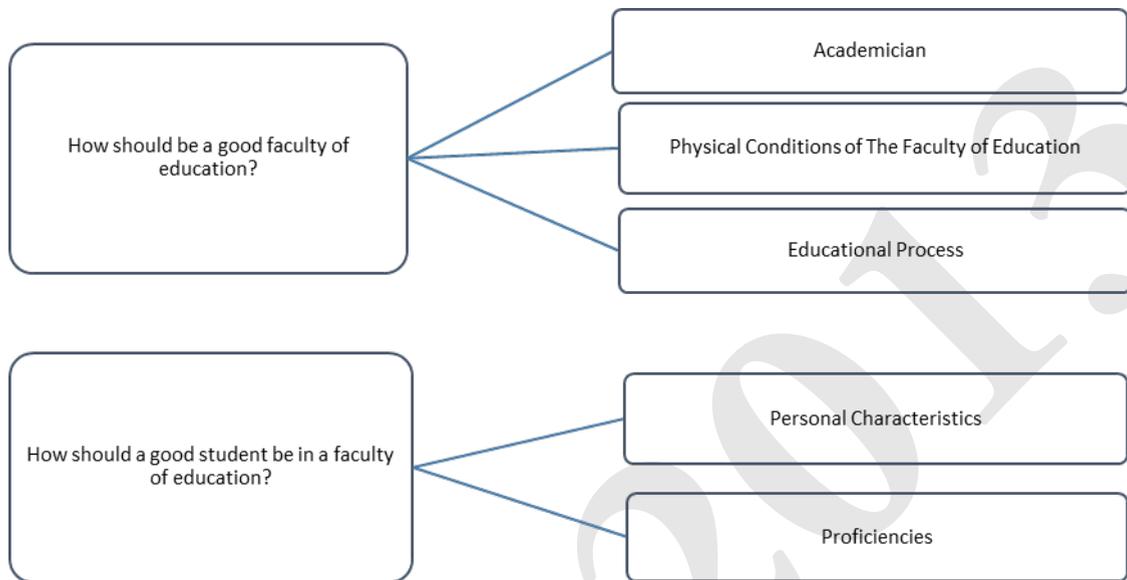


Figure 1: Research questions and created categories

### 3.1. Findings related to the question “How should be a good faculty of education?”

In the table below, the findings about the views of the participants about the question how a good faculty of education should be are mentioned. In this sense, the codes created under the category of “academic” in the Table 1, and the frequencies for these codes are given.

Table 1. The codes and frequencies involved in the “Academic” category

Category	Code	Frequencies
Academic	They should have field and professional proficiencies	16
	They should have good communication skills	14
	They should encourage the students to make research	6
	They should be a role model	4
	They should be coherent	3
	They should be mentors	2
	They should be democratic	2

When the Table 1 is examined, it is seen that the participants mostly emphasize upon that the academics should have field and professional proficiencies (16); should have good communication skills(14), and should encourage the students to make research(6) under the academics category. The quotes from the written views about these findings are directly given below.

While they state that P7 and P27 academic should have proficiencies in their fields and professions,

*P7: ...Our teachers should be equipped in field knowledge and profession...,*

*P27: ...The academics should be professional and equipped with respect to field and career...,*

P15 and P19 academics should have good communication skills,

*P15: ...They state that the communication between the student and the teacher within the framework of respect and tolerance for us to establish communication especially in future, in the faculties of education...*

*P19: ...The relationships between the teacher and the students should be good in a good faculty of education...*

P14 and P17 state that academic are required to encourage the students to make research as below.

*P14: ...The academic should encourage the students to make research...*

*P17: ...The academics should much encourage the students to make research...*

The codes and frequencies for the categories “Physical specifications of the faculty of education” as another category created in accordance with the answers to the question how a good faculty of education should be are given in the Table 2.

Table 2. The codes and frequencies related to the category of "Physical specifications of the faculty of education".

Category	Code	Frequencies
Physical specifications of the faculty of education	Should have a good physical equipment	13
	Should have a technological equipment	11
	Should not be crowded	5
	Should be safe	1

When Table 2 is examined, 13 students emphasize that the faculty of education should have physical equipment, 11 students emphasize that it should have technological equipment, 5 students emphasize that it should not be crowded, and 1 student emphasizes that it should be safe. The quotes from written views related to these findings are given below.

P1 and P25 state that the faculties of education have to have a good physical equipment, and P12 and P15 also state that the faculties of education have to have technological equipment with the following statements.

*P1: ...The buildings should be equipped with better physical structure for more applications...*

*P25: ...The teaching environments in a good faculty of education should be structured so that it will be best suitable for the students...*

*P12: ...The classrooms in the faculty building should not be lack of technological devices...*

*P15: ...The technological equipment should be supplied smoothly...*

The codes and frequencies related to the category of “educational process” created in accordance with the answers to the question how a good faculty of education should be are given in the Table 3.

Table 3. The codes and frequencies related to the “educational process”

Category	Code	Frequencies
<b>Educational Process</b>	It should be concentrated upon the teaching practice courses	10
	It should be concentrated upon the applications in courses related to education	10
	Much importance should be given to the courses related to education	9
	It should have different social activity clubs	6
	They should be aware of that they are raising teachers	3
	It should also include interview while selecting the students	3
	Care should be taken for the preparations of course and exam schedules	3
	Learning and the learner should be given priority	2

When the Table 3 is examined, it is seen that the students put emphasis on that it should be concentrated upon the teaching practice during the educational process, It should be concentrated upon the applications in courses related to education, much importance should be given to the courses related to education, and It should have different social activity clubs with respect to the category of educational process. P4 and P11 state that it should be concentrated upon the applications in courses related to education during the educational process,

*P4: ...It is not enough to raise qualified teachers that the teaching practice courses are just delivered in the final year. It is essential in terms of the ability to understand and apply their proficiencies for being a*

teacher, and to measure the tendency to being a teacher to receive the teaching practice courses as of the first grade...

*They stated with the following words:*

*P11: ...First, it would be better to have much more teaching practices. Although this is our third year, we are still not equipped so that we could know how to lower the level to the primary school level and to instruct to them...*

P6 and P17 stated that it should be concentrated upon the applications in courses related to education during the educational process,

*P6: ...Only information is provided during the courses related to education, and I think it should be almost 70% practical ...*

*P17: ...First of all, there are those courses related to education we are delivered every term. In these courses, the information and practices should be provided, which are mostly practical and will be useful for the students when they become a teacher, instead of delivering the courses according to this theory, or that theory, or like, the definition of the education is that...*

In addition, P11 and P26 put emphasis on that much importance should be given to the courses related to education during the educational process with the following words.

*P11: ...I think that the courses related to education should be given much more importance. We need to have powerful knowledge of education as much as we have powerful knowledge about our field of study...*

*P26: ...Much importance should be given to the courses related to our field of study; however, definitely, the courses related to education should be given priority and intense...*

### **3.2. Findings related to the question “How a good student in a faculty of education should be?”**

The views of the participants related to the question “How a good student in a faculty of education should be?” are studies under the categories of “personal characteristics” and “proficiencies”. The codes and the frequencies related to these codes, which are created under the category of “personal characteristics” are indicated in the Table 4.

Table 4. The codes and frequencies related to the category of “personal characteristics”

Category	Code	Frequencies
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<b>Personal Characteristics</b>	Should be social	9
	Should be willing and determined to learn	8
	Should be morally good	8
	Should be responsible	6
	Should be critical	4
	Should have self-confidence	2

When the Table 4 is examined, it is seen that the participants give priority to such personal characteristics of a good student in a faculty of education as to be social, to be willing and determined to learn, to be morally good and responsible. P8 and P13 stated that a good student in a faculty of education should be social with the following words.

*P8: ...We should not come to the faculty just to listen to the instructor and then, go away. We should be involved willingly in the social activities and social responsibility projects of the clubs...*

*P13: ...Of course, the student should not be only limited to the courses. At the same time, they should spare enough time for the social activities because when enough time is spared for he/she social activities, they could know the activities where they feel comfortable and should recommend the same to their students at school, and therefore, they would be a better role model teacher for their students with their sophistication...*

P2 and P24 state that a good student in a faculty of education should be willing and determined to learn with the following words.

*P2: ...A student who comes to the faculty of education should be an individual who knows what they want at first, and then, who is aware of why they are here, has good level research skills, if not high-level, and who is willing and determined to learn...*

*P24: ...They should be interested in, and concerned about, the courses, and willing to make research and to learn new things...*

P20 and P21 stated that the student should be morally good as below.

*P20: ...They should be morally good because the teacher means a role model individual...*

*P21: ...For the individuals who will become a teacher, the widely comprehensive adjective attributable is socially ethical on my mind. The student should be socially ethical. And if this student is studying at the faculty of education, then they should be more careful about those two times, or even,*

*ten times more...*

The codes and the frequencies related to these codes, which are created under the category of “proficiencies” in accordance with the findings about the participants’ views about the question “How a good student in a faculty of education should be?”, are given below in the Table 5.

Table 5. The codes and frequencies related to the category of “ Proficiencies”

Category	Code	Frequencies
Proficiencies	Should develop themselves	17
	Should be a role model	15
	Should be aware of that they will become teachers	11
	Should have adequate knowledge of their field and profession	10
	Should have good communication skills	10
	Should have general culture knowledge	6
	Should like their department	6
	Should have a library	4

When the Table 5 is examined, it is seen that the participants highlight that a good student should develop themselves (17), should be a role model(15), should be aware of that they will become teachers(11), should have adequate knowledge of their field(10) and profession, and should have good communication skills(10).

P9 and P12 stated that a good student in a faculty of education should develop themselves with the following words.

*P9: ...The student should learn only during the course but they should make research out of the courses, and they should develop themselves with respect to the assignments and projects...*

*P12: ...A good student in a faculty of education should develop themselves so as to be a teacher who will be beneficial to the society. The student should improve themselves in the course they run and should achieve a higher level knowledge than required level...*

While P12 and P17 stated that a good student in a faculty of education should be a role model with the following words:

*P12: ...A student of a faculty of education who improve themselves so as to be a role model in every respect will be a teacher who raises the students who will be role models in every respect...*

*P17: ...The teacher is the individual who is a role model for the society with all their acts and behaviors. Therefore, a student who study at the faculty of education should be aware of that they will be a teacher in the future, and they should serve as a model with all their acts....,*

P1 and P22 stated that a good student in a faculty of education should be aware of that they will become a teacher with the following words.

*P1: ...A student in the faculty of education give should be aware of that they will become a teacher, and do well by being a teacher candidate in all aspects such as their acts, behaviors, and appearance, etc...*

*P22: ...A good student should be an individual who does not regard the teaching profession as a comfortable and unengaged profession but who are prepared so that they can bear the sacredness and weight of this profession...*

#### **4. DISCUSSION AND RESULT**

According to the data from the test applied to the participants, the students have assessed the faculties of education in terms of academic, physical conditions of the faculty of education and educational process. Mostly emphasized characteristics in respect of the academics include that the academic should have field and professional proficiencies; they should have good communication skills, and they should encourage the students to make research. According to the physical conditions of the faculty of education, they stated that the faculties of education should have good physical and technological equipment. With respect to the educational process, it is seen that they have highlighted such properties as that there should be more concentrated upon the courses related to education in faculties of education, and the applications in the courses related to education, and also, that there should be social activity clubs.

According to the participants, when considering a good student profile in the faculty of education, it is seen that the data is divided into two categories including “personal characteristics” and “proficiencies”. While for the personal characteristics, such characteristics stand out as to be social, to be willing and determined to learn, and to be morally good, for the proficiencies, it is seen that such characteristics as that a good student in the faculty of education should develop themselves; should be a role model; should be aware of that they will be a teacher in the future; should have adequate field and professional knowledge, and should have powerful communication skills.

Although the views of the participants were received in writing without any limitation of subjects, it has been seen that the views are concentrated upon the academics, educational process and physical equipment. It is seen that the participants’ views on the academic and educational process are similar with the findings of the study carried out by Basturk (2011) titled “Assessments of the mathematical teacher candidates about the educational

process in the faculty of education” in terms of academic in that “the academic should develop themselves”; in terms of physical conditions, in that the technical facilities and physical equipment should be improved, and in terms of the educational process, in that the number of courses related to education should be increased. It is seen that participants have mostly pointed out with respect to the educational process that the practices for the courses related to education are low in number, and less importance is given to the courses related to education, and such result is coherent with the results of the study as carried out by Sahin and Balkar (2007).

The results achieved through the assessments made by the students on a good faculty of education and a good student profile in the faculty of education under this study provide clues about the education in the faculty of education, while showing what the students expect from a faculty of education.

Considering the findings of this study and similar studies, we think that the managers of the faculties of education as well as the heads of department should take into account the opinions and views of the students involved in this study to enhance the quality of education and to become competitors with the international faculties of education. Moreover, this type of studies can be supported with interviews for more detailed data, and become more common, and large-scale studies can be conducted in all other faculties of education in Turkey.

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4<sup>th</sup> International Conference on New Horizons in Education

# How Technology helps to create new learning environments by use digital museum resource

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## Abstract

Multimedia Technologies, communication and WEB allow the opportunity to develop tools to apply new teaching methodologies and learning way in the School. On the other side Museum resources are available online to support teaching activities. The research team (*Digilab of Sapienza University* and *"Via Val Maggia" School*) has launched a project to develop a new way to teaching based on objects specially museum digital resources, therefore new learning environments have been created. A particularly Information System and a tool to build e-book have been designed to teachers to improve student learning by use digital museum objects information. The *Polo Museale Sapienza* has given a important contribution with its digital cultural heritage. Linked and Open Data technologies have been applied to share cultural heritage with education materials. We will discuss the results of the project and we will show examples of the creative means that teachers have built to use museum objects in the classroom through tools developed by Project. The project results could be important to develop a distance learning system to help student at home or to long life learning

Keywords: learning environment, museum, distance learning

## 1. INTRODUCTION

In recent years in the schools, the availability of computer labs and tools adoption such as IWBs (interactive whiteboards), contribute to the possibility to rethink teaching methodologies and to use the materials available online to engage students and implement information contents and possible multidisciplinary links. Technologies allow:

- To establish new training for a more effective teaching
- To use online engaging content to students
- To work out multidisciplinary lessons

The museums are important teaching centres that will be able to engage students and improve learning, in addition to the school environment. These institutions are rethinking their visit paths by connecting to student knowledge and curiosity. Museums have adopted WEB technologies and communication to build a tool to enable special access to school for sharing cultural heritage online resources.

New teaching methodology includes making arrangements for museum visits according to the curriculum.

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Recent theories of education indicate museum objects as ideal tools for teaching: the museum object, in fact, can take on different meanings and stimulate the creation of associative content and of further information related to: the structure, function and disciplinary or spatial context in which it is inserted. We are going to propose new way to use cultural heritage that would make teachers protagonists of communication of their subject. Using technical tools teachers will be able to re-contextualize museum objects within a lesson. We present “School and Museum: the museum object as a tool for teaching“, a project funded by Italian Ministry of Education that has promote cultural heritage resources use by teachers to make lesson within class using IWBs or such as LO on the WEB.

## 2. MUSEUM AND EDUCATION

In recent years museum have developed a communication model to allow different relationship between cultural heritage and public (Falk, 2000) and they have taken more articulated roles and functions in relation to territory and visitors. These institutions are ongoing to develop new ways for disseminating scientific culture in order to meet a growing demand for interdisciplinary teaching, based on new learning and communication forms also according to available technologies.

Technologies have prompted museums to revisit the paths within their structures and produce personalized access to their content for meeting the diverse needs related to knowledge and interests of users. Many projects are underway to promote laboratories and personalized itineraries for various types of users (e.g. for young people, adults and general purpose tourists).

A special study field in this sector involves content personalization by user for applying human-centered approach to online access. A personalized access as a means of navigation or accessing the contents has therefore become a useful tool to valorise the digital heritage available. Studies on visitors seem to confirm that learning is stimulated when They can better understand and apply the concepts to their knowledge. Customization is therefore a new communication strategy based on a continuous process of collaboration, learning and adaptation between museum and visitor. A first important distinction concerns the control on a user in the customization process (Bowen, 2004), (Ardisonno & al. 2012)

A personalized access can be very important to connect museum and school.

The museum represents a privileged means of education, a real learning environment where to lead the children at the end of a training program initiated and developed in the classroom. Peoples, events of the past, tools, inventions become tangible through the collections, the objects, the evidence preserved in the museum. The student, through the thematic paths and the explanation of the guide, is involved in the discovery of ancient history, science, art and technology in a context certainly more appealing than the classroom in which he lives his everyday role of the learner. The teacher at the same time, during the educational visit, has a privileged point of view in the observation of their student and can check the development in cognitive, affective and identity areas. The child during the museum visit will have to comply with rules and relate to others in a proper way (area of identity); will have to arrange with the classmates the educational visit, think of the educational kit that will serve during the visit, support mates in distress (emotional area); must eventually gather information, prepare for possible questions to ask the expert, select museum objects they are interested and get further information about the object itself (cognitive area).

The use of technology and multimedia products, along with the ability to integrate with informative content different from the traditional ones, may be suitable means to facilitate the overcoming of a teaching based on the transmission / reception of content that are most often fragmentary and superficial, in some cases obsolete, to the advantage of creating a stimulating learning environment. Recent theories of education indicate museum objects as ideal tools for teaching the museum object, in fact, can take on different meanings and stimulate the creation of

associative content and of further information related to: the structure, function and disciplinary or spatial context in which it is inserted.. Indeed museum object can be used as image related to concept within a lesson. In this case museum visit, after lesson class, can be improve learning level of student through object experience (Paris, 2002).

There are many theories on learning that can be applied to build a system for the development of activities for students and, more in general, in the context of lifelong learning, such as the theory of Kolb [Kolb, 1984], the use of which can be applied to museum objects (Marie, 2010).

New paths and laboratories have been built by curators within museums and a teaching space has been devoted on museum WEB site. The virtual educational areas provide games, customization paths and LO. Different mode and contents have been provided:

- Lessons related to the course of study such as the museum of Anthropology of Wake Forest University \* with Programs for grades K through 12 focus on specific cultures and other anthropological topics e Kits contain hands-on objects, photographs, activities, labels, instructions, and historical materials.
- Interactive games such as Museum of Galileo† in Florence
- interesting image on their own PC such as Demonstrator‡ (CHIP project -Cultural Heritage Information Personalization) such as come nel caso del Rijksmuseum in Amsterdam§ (Aroyo & al, 2007).
- Tools to built personal virtual tour of museum through reserved area. The teachers can downloaded
- Opportunity to access to reserved area by teacher to make online lesson integrated by object museums and LO such as teaching center of Canada museum\*\*

### 3. THE PROJECT

The project aims to test a new teaching methodology which involves the production of e-books related to curriculum using non-traditional content, integrating digital cultural heritage resources. New museum role on education suggests opportunity to connect its cultural heritage to school through technology. The “*Polo Museale*” of Sapienza University of Rome††, with its 20 museums aims to promote activities in this field. Every year many primary school classes visit Sapienza museums in according to their courses. Different initiatives are ongoing such as education tours and experimental laboratories to cultural heritage dissemination. In this context *The Polo Museale* with Primary School “*ViaVal Maggia*” of Rome have launched a project to use object museums in teaching field.

The research team, consisting of museums and technological experts from university and primary school teachers, have analyzed the possibility to support teaching activities with multimedia technology and digital resources accessible through a

\* <http://moa.wfu.edu/>

† <http://www.museogalileo.it/en/explore/onlinedidactic/scienceplay.html>

‡ <http://www.chip-project.org/demo/index.jsp>

§ <http://rijksmuseum.nl/aria/>

\*\* <http://www.museevirtuel-virtualmuseum.ca/edu/Login.do?method=load&lang=en>

†† <http://www.musei.uniroma1.it/indexen.asp>

personalized path. The personalized catalog consist of content and images of museum objects chosen by the individual user. After an initial review of the tools available to the school, in this case the IWBs, the computers and the Internet connection, it was proceeded to design an application to allow teachers to build a personalized path through the web with the possibility to activate a download of such information, aggregated in a xml file, on each computer to be used in the production of multimedia lessons, according to a communication strategy based on a continuous process of collaboration between the museum and the teacher (Bowen, 2004), (Wang, 2007).

The “*Polo Museale*” aims to develop Repository for managing different and heterogeneous objects from digital catalogues of museums using Linked Data technology to promote cultural heritage dissemination, to encourage museum visits and to share digital content to make hypermedia lessons. It was then carried out mapping of data based on appropriate RDF to build metadata catalogue of museum objects.

Personalized access tool to Repository has been designed to allow teachers to build a preserved area to store the content and image related to museum objects chosen. This digital content may be used to describe teaching subject by class lessons.

The personalized catalogue has been stored on xml file based on RDF model. Teacher will be able download this file on its PC. The xml file includes in metadata based on Linked Open Data technology to allow access to object information, museum WEB Site, image by Hypermedia lesson.

```

<path>
- <name>erbario</name>
- <object>
- <id>RMSMUS12</id>
- <museum>Erbario - Museo di Botanica</museum>
- <linkmuseum>http://www.musei.uniroma1.it/erbario/index.html</linkmuseum>
- <inventory>1799</inventory>
- <linkform>
- <![CDATA[ http://www.musei.uniroma1.it/erbario/catalogo/gestionedb/scheda.asp?inventario=1799]]>
- </linkform>
- <name>Campanula persicifolia L.</name>
- <description />
- <image>1799.jpg</image>
- <linkimage>
- <![CDATA[ http://www.musei.uniroma1.it/dbinfo/RMSMUS12/JPEG/1799.jpg ]]>
- </linkimage>
- </object>
</path>

```

This tool has been integrated with another one developed by Sapienza University, ASDscuola (Accessible Site Developer), which allows to build automatically a hypertext from contents, accessible via web. To manage contents, ASD is based on a couple of technologies: Java and XML. Web pages are in XHTML language. ASD does not require any particular hardware and software, it's a portable system (Ferrara & Campanella, 2011). The

user can choose a customized itinerary downloaded previously in the editor of ASD tool and he can put the images and information related to the content of the lesson, so that the teachers will be able to explain the lesson with museum objects images and information. Following the teachers can take the students to the museum where they will find the objects previously observed in the context lesson. The students can build up reports by associating theoretical knowledge with museum objects, after visiting the museum. Results and hypertext made by teachers are available via website project.\*\* (Fig.1)

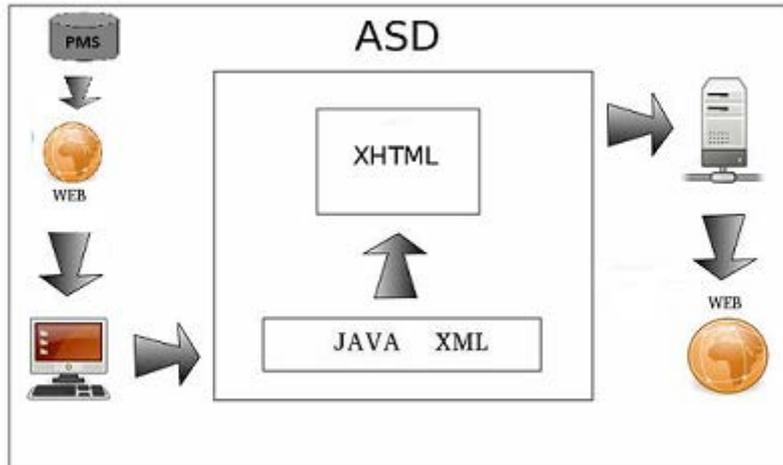


Fig. 1. Project scheme "Museum and School"

#### 4. RESULTS

The realization of multimedia products through collaboration between School and University, has shown a suitable tool for improving education. The project experimented at the "Via Val Maggia" school involved in the start-up phase, the science teachers who have been trained by experts from the University, on the use of educational software that gives access to information about objects in museums.

Teachers, who are often in trouble to acquire the means to facilitate and support the teaching of science subjects in class, joined with enthusiasm and participation in the training course, during which we proceeded to the construction of scientific hypertext. These are shown first in the classroom using new multimedia technologies (IWBs) and then made available on the WEB contributing to a platform for distance education.

Each teacher has first organized their own learning path on a topic already discussed in class, the subject was then segmented into paragraphs. Each paragraph has been listed as a node in the construction of hypertext. Each node provides historical, geographical and scientific information about topic that gives the title to hypertext and in each node were inserted images selected from the catalogs of the Museums of Sapienza in support of the

\*\* [www.musei.uniroma1.it/progettomiur/index.html](http://www.musei.uniroma1.it/progettomiur/index.html)

informative page. They were created hypertext on the Scales, on Temperature, on Light, on Works of Art. Thanks to the Project teachers have worked in the premises of the school by consulting the volumes in the library and using the multimedia computer stations. After searching for the information material has surfed online within the virtual paths offered by the Museums, to track down objects useful to implement the contents in order to create a custom e-book, a container of explanatory panels and virtual museum objects relating to the subject matter. Each teacher has created, thanks to supplied software, , the path of hypertext with the support of images of the museums of Sapienza, object of the experiment, submitted to the students during the frontal lessons. In the next visits to museums students will see objects that have already got to know, placed within the hypertext ., In this way the students can implement the associative and experiential activities for the improvement of their cognitive abilities.

The student, starting from the previous experiences, will consolidate the knowledge gained during the teacher frontal lessons, will verify the information, will formulate hypotheses and he reaches skills through interaction with the museum objects , building something new and exciting that he himself have helped to achieve. Students are not only active, but also actors (Dillembourg, 2002). Concluded the path / process of building the multimedia way, the student will be able to check the acceptability of their own thinking through the guided visit and direct experimentation in museum labs.

The project has therefore allowed the virtual learning environment creation, useful to development of distance education for further information or simply to assist the student in the 'integration of the lesson in the classroom.

## 5. Conclusion and New perspectives

New communication strategy, learning theory and technologies can be useful to develop relationship between museum and school. The project result have shown that digital resources and technology tool can be developed a way for teaching to build new learning environment. Often, however, the information of the cultural heritage are written in a language not easily accessible for the general public or to teachers and students. To solve this problem technologies can provide opportunities to rethink the implementation and presentation of contents. New project is going to launch to build a framework to allow, using Sematic Web, to develop annotation tool to increase digital object description by teachers. In this way the appropriate Web Site will be useful to promote a virtual learning environment based collaborative work to share content and LO for many school. The aims project will be to assess the impact of technology to verify the quality of engagement and learning by students

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# How the teacher e-evaluation system enhances the professional development of k-12 teachers: the case of Taiwan

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## Abstract

Compared with worldwide models for executing these types of evaluations, there are three notable features of the Taiwanese approach: (1) peer evaluation, (2) professional growth orientation, and (3) a school-based model. This study investigated 53 selected schools to examine how blogs/websites improved the knowledge and skills of school evaluators, established mutual trust and a culture of sharing, and promoted teacher professional development and school development. A questionnaire, field interviews, and observations were employed to analyse the effectiveness of e-evaluation.

This study had five notable results: (1) In more than 50% of the schools, the e-evaluation system included an announcement system, a digital portfolio, and a professional growth activity based on the evaluation report. Most of this information was available to the public. In 14.6% of the schools, the e-evaluation system contained information from teaching observations, portfolio assessments, and final reports, most of which was not available to the public. (2) The more comprehensive the e-evaluation system, the higher the passing rate for the evaluation personnel was during training and the more on-campus evaluators were involved, especially high-level evaluators. (3) The e-evaluation system included functions for model demonstration and the exchange of curricular materials, which helped to promote curricular reform and to earn the recognition of parents. (4) The schools quickly established cultures of sharing and discussion to form cooperative teams, enter various competitions and win awards, and raise school awareness. (5) The management of e-evaluation was a great help to the school administrators, reduced paper consumption, and improved progress control.

Keywords: teacher evaluation, e-evaluation, teacher professional development

## 1. Introduction

Some researchers (e.g., Calabrese, Sherwood, Fast, & Womack, 2004; Kersten & Israel, 2005; Marshall, 2005; Timperley, 1998) have indicated that the conventional supervision and evaluation process is not an effective strategy for improving teaching and learning, mainly because (1) teachers receive inaccurate ratings related to teaching performance, especially teachers of poor and marginalised students; (2) many evaluation processes appear to be mandatory rituals and waste valuable instructional time; (3) the evaluation process has almost no influence on personnel decisions, teacher development and the structure of teaching; and (4) teachers are dissatisfied with the evaluation process because they lack teacher input, they evaluate only a fraction of teaching, the lessons that principals evaluate are often atypical, the evaluators lack the necessary expertise for conducting

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evaluations, and there is lack of connection between evaluation results and professional development. In 2005, Taiwan began to promote K-12 teacher evaluation for developmental purposes.

More than half of Taiwanese schools are medium or large, having more than 1,000 students and 35 classes. And half of high schools have more than 3,000 students and 60 classes. As a result, the administrative staff is not able to conduct all of the evaluations in these schools. Part of the reason for negative perceptions of teacher evaluations and evaluation schemes is the well-documented tension between the accountability purposes and the developmental purposes of evaluation (Timperley, 1998). Developmentally oriented evaluations have found greater acceptance among educators than accountability-oriented evaluations (Danielson & McCrea, 2000; Mayo, 1997). Self-evaluations and peer evaluations are commonly accepted among teachers (ASCD, 1999; Marshall, 2005; Ministry of Education, 2006a).

One of the keys to delivering quality education is the promotion of teachers' professional competence. The Taiwanese government has emphasised using teacher evaluations for professional development within the K-12 system and has attempted to create administrative regulations and funding subsidies for teacher evaluations (Ministry of Education, 2006b). In Taiwan, 31.16% of schools and 18.32% of K-12 teachers have joined a teacher evaluation project (Ministry of Education, 2012a). In Taiwan, teachers can choose their peer evaluators, and because schools tend to be large, effective evaluation is a challenge (Ministry of Education, 2012b). Over the next three years, in addition to revising the regulations for teacher evaluation, the Ministry of Education will focus on finishing the evaluation website, establishing the database for evaluation personnel, strengthening the training procedures for evaluation personnel, and implementing the comprehensive evaluation process (Ministry of Education, 2013).

One of the objectives of this study was to find out how effectively an e-evaluation system can manage evaluation procedures and enhance the knowledge of evaluators. Self-evaluation tools and peer observations, including systematic classroom observations and professional meetings among teachers, allow teachers to share their experiences, reflect on teaching, and expand their professional knowledge and skills (Goldstein, 2007; Kersten & Israel, 2005). In short, we want to know what the requirements of an e-evaluation system for effective school-based teacher evaluation are.

The second objective of this study was to assess the abilities of the e-evaluation systems developed by the schools to meet accountability requirements in addition to developmental requirements, the latter of which are usually preferred by educators (Feng, Su & Yang, 2011; Kassabian, 2009). An evaluation system should reflect the performance of teachers. We will investigate how a system can be developed to enhance evaluator competence, build a culture of trust and sharing, and improve the school curriculum, teaching materials, student learning outcomes, school visibility, and student recruitment.

## **2. Literature review**

Relevant studies have found that teacher evaluation is a time-consuming task. Kersten and Israel (2005) found that evaluating a teacher took more than five hours on average for 65% of the administrative staff in the United States. The major issues for teacher evaluation in Taiwan are that the school administrators and the teachers both feel that it is hard to allocate time to evaluation, that the workload is heavy, and that evaluation affects teaching (Ministry of Education, 2008). Previous studies have found that teachers have to engage in a variety of non-teaching activities when being evaluated. Because teacher evaluation in Taiwan is peer-based, all evaluation activities create extra work for the teachers involved (e.g., conducting classroom observations, providing face-to-face feedback after each classroom observation, and writing a public appraisal of the teacher). Feng, Su, and

Yang (2009) found that, on average, every teacher in Taiwan spent 12 hours on self-evaluation and 8 hours on evaluating peer performance.

Teacher evaluation practices also emphasise a commitment to sharing and renewal (Claudet, 1999; Ovando, 2001). Mayo (1997) suggested that an evaluation system for professional development should give a teacher (1) useful feedback on student needs, (2) the opportunity to learn new teaching techniques, and (3) advice from the principal and other teachers about how to make changes in the classroom. Marshall (2005) also proposed 13 strategies for implementing a developmentally oriented evaluation system: (1) continuously analysing teacher learning; (2) energising the teaching team; (3) supervising the curriculum units; (4) frequently making unannounced visits; (5) quickly sampling multiple lessons; (6) conducting authentic conversations based on real data; (7) continuously making suggestions and redirecting teachers; (8) providing focused and face-to-face feedback; (9) fostering a candid give-and-take in conversations; (10) everyone asking, "Is it working?"; (11) continuously looking for new ideas and practices; (12) improving teaching in every classroom; and (13) orchestrating school-wide improvement. According to previous research, teachers need to engage in a variety of activities collaboratively, collectively making inquiries and sharing teaching resources.

Technology has brought a new dimension to teacher evaluation and is poised to offer a unique contribution, as technological innovations can offer opportunities to elicit teacher reflections on video data. The Taiwanese Ministry of Education provided technology funding to the schools that joined the teacher evaluation project. Pecheone, Pigg, Chung and Souviney (2005) found that electronic portfolios allow users to engage in online discussions, and Hartnell-Young and Moriss (2007) found that a digital portfolio is a powerful tool for improving professional development. However, there is no strong evidence for the effect of electronic portfolio evaluation on teacher learning. Some researchers have found that the concerns regarding validity, reliability, and cost have limited the implementation of technology-enhanced teacher evaluation (Melnick & Pullin, 2000; Youngs, Odden & Porter, 2003). Teacher evaluation in Taiwan is mainly peer-based, and technology-enhanced aspects include evaluator training, electronic portfolios, observation of teaching videos, and peer partnerships. Thus, it is important to examine the effects of electronic evaluation on evaluator training as well as on the monitoring and sharing of the evaluation process.

In recent years, a new focus in teacher evaluation has been on self-evaluation. For example, the Association for Supervision and Curriculum Development (1999) advocated that teacher evaluation should focus on self-evaluation and that evaluation items should primarily focus on improving teacher skills. Haung (2010) suggested that schools should plan to promote the professional growth through self-evaluation. Teachers participate in professional development activities to enhance their professional knowledge, skills, and attitudes (Zhao, 2010). According to the theory of teacher change (Ross & Bruce, 2007), self-evaluation is a powerful mechanism for improve the teacher achievement. Self-evaluation is closely related to professional growth. Ross and Bruce (2007) found that by providing teachers with clear teaching standards, self-evaluation could help teachers reach instructional goals and reduce the gap between educational expectations and results. There are many forms of teacher self-evaluation. Teachers can select an appropriate form according to their own teaching and developmental needs. Danielson and McGreal (2000) advocated that professional development is the most essential element of teacher evaluation. Teacher evaluation systems in many places have similar designs. For example, the supervision and evaluation system of Malden Public Schools in Massachusetts is based on the professional growth cycle, and a professional growth plan is one of the required evaluation items in yearly teacher evaluations in Singapore (Ministry of Education, 2009). However, schools must meet certain conditions to effectively encourage and support the growth and development of their teachers (Association for Supervision and Curriculum Development, 1999). As Ministry of Education (2013) stated, whether teacher evaluation promotes professional development is affected by several factors, including the teachers themselves, the

evaluator, the process of collecting the evaluation data, and the context in which the feedback and evaluation take place. These factors are relevant to the contents and methods of teacher evaluation.

There are three notable features of the Taiwanese approach: (1) the use of peer evaluation, (2) a professional growth orientation, and (3) the use of a school-based model. The teacher evaluation system in Taiwan uses self-evaluation and peer evaluation (observing teaching and reviewing a portfolio) and establishes professional development plans based on evaluation results. Teachers in Taiwan working in different contexts likely experience varying levels of support in presenting their teaching, developing their portfolios, and reflecting on their teaching for the purpose of instructional improvement. We need to know what types of core support are essential for an e-evaluation system that adds value rather than stress. It is also unclear whether teacher evaluation can elicit professional learning in other teachers who have not joined the teacher evaluation project.

### **3. Research methods**

#### *3.1. Participants*

The participants in this study were 159 teachers, 53 principals, and 53 directors of 53 schools (28 elementary schools, 11 middle schools, and 14 high schools) recommend by city or county governments. To be recommended, a school had to have promoted teacher evaluation for at least three years, have more than half of its teachers participating in evaluation, have more than half of the participating teachers be licensed evaluators, have an increasing number of people participating in evaluation every year, and be a core school for teacher evaluation in the county or city.

#### *3.2. Procedure*

In this study, a self-assessment questionnaire was first sent to the school and completed by the principal or director; interviews and field visits were conducted after this. A total of 20 staff members conducted the visits, and they established rating consistency through a six-hour discussion of the project. After collecting the data, data triangulation was performed by the investigator according to the contents of the interviews, the school self-assessment questionnaires, and school surveys. In addition, if there was any doubt about the information provided, the research team personally contacted the school by phone or through an on-site follow-up review.

#### *3.3. Instruments*

Based on the relevant requirements and the funding restrictions of the Ministry of Education as well as on the results of a literature review, three categories were used to classify the information gathered in the interviews: (1) The extent of the school's participation in the evaluation program—whether the number participants was stable or growing year by year, the training situation of the evaluation staff, and whether the evaluation plan encompassed data from multiple evaluations; (2) The content of the school's e-evaluation system—the management of the evaluation process, including the operation and effectiveness of various meetings about teacher evaluation, the management of the evaluation methods and the evaluation report, the mechanism for sharing information among teachers in the school, the school's incentives, the integration of the teachers' evaluation plans and the school's plan, and the publishing and sharing of the evaluation results of the school; and (3) The mechanism for professional development—the operation of the teachers' professional learning community, the school's support for professional development programs, and the school's mechanism for professional development evaluation.

The mixed method was used in this study, consisting of qualitative and quantitative approaches. This research use interviews with qualitative data to find common characteristics. The resulting tables of interview data were revised by six principals, directors, and teachers from elementary schools and middle schools as well as the 20 visiting staff members to ensure their validity based on expert opinion. Descriptive statistics was performed to analyze the collected quantitative data.

## 4. Findings and discussion

### 4.1. Usage of e-teacher evaluation systems

Table 1. The proportion of schools with an established e-evaluation system

Teacher evaluation system	School size	Number of schools	% of schools
Paper and pencil	Fewer than 35 classes	8	15.10
	More than 36 classes	4	7.55
	Total	12	22.65
E-evaluation	Fewer than 35 classes	5	9.43
	More than 36 classes	36	67.92
	Total	41	77.35

As shown in Table 1, among the 53 selected schools, 41 of them (77.36%) had established a teacher e-evaluation system, indicating that e-evaluation has played an important role in teacher evaluation for improving the performance of good schools. In addition to the cost of the e-evaluation equipment that was subsidised by the Ministry of Education, the use of e-evaluation was associated with school size: there was a higher proportion of e-evaluation usage in larger schools.

### 4.2. Main features of e-evaluation systems

Table 2. Subsystems of school-based e-evaluation systems (n=41)

E-evaluation subsystem	Number of schools	% of schools
Announcement system	28	69.96
Digital portfolio	21	51.22
Submission and storage of the evaluation report	6	14.63
Professional growth activities based on the evaluation report (e.g., PLC)	30	73.17

As shown in Table 2, the e-evaluation systems of the 41 schools can be divided into four subsystems: (1) an announcement system, which includes the evaluation criteria, the evaluation forms, the period of evaluation, the

minutes of meetings, and notifications about activities and important evaluation messages (for example, a notification for collecting the evaluation report and a list of the current evaluation personnel); (2) a digital portfolio, which is a personal portfolio set up for teachers and not only provided to the evaluators for evaluation but also available to campus peers or people outside of the school; (3) a system for the submission and storage of the evaluation report, including submission of a personal teaching video and a self-evaluation report completed by the teachers to be evaluated and submission of the teaching observation report, the portfolio assessment report, and the overall report form by the evaluator; (4) a professional growth activity based on the evaluation report, including the provision of information on learning activities, activities in progress, shared results about the activities, shared personal practices, and the materials and methods from research and development on teaching conducted by a group or an individual.

Based on the interviews and the documents, the schools' e-evaluation systems were most likely to include a school announcement system, followed by a digital portfolio, followed by professional growth activities based on evaluation reports, and finally a system for the submission and storage of evaluation reports. Although most schools used digital portfolios during the second year of the program, the portfolios were not as the professional growth activities based on the evaluation reports, the latter of which garnered the recognition and support of teachers. Making documents for the portfolios was time-consuming and there was a large range of variability in the teachers' information capabilities. Thus, improving teachers' capacities for digital portfolio production is still the goal of the schools in the next three years. The popularity of the system for submission and storage of the evaluation report was not high, mainly due to concerns about the confidentiality of the evaluation results and the time teachers thought they had to spend on word processing. Some of the teachers' comments are shown below:

*Since the first year, teachers have not been able remember so many details, and the administrative staff needed a control mechanism. So a website dedicated to teacher evaluation was constructed within the school's homepage to help the teachers understand the underlying processes and information. Because the website showed good results, its function has been expanded year after year. For example, teachers continued to be concerned about the database of the evaluators and the training materials. The digital portfolio was promoted in the second year. It was first demonstrated and its use was led by some teachers with strong information abilities. Most teachers have already set it up, but the updating process needs to be improved. Even so, the digitalisation of the documents has still shown its influence on communication. For example, the social studies teachers formed a group to maintain the media teaching materials for each unit, including the introduction of Power Points, videos, and books, which accidentally became digital learning resources for the students.*

*In addition to visiting other schools, the principal and the director also considered the students' learning performance, which is the key point of teacher evaluation. Annually, three demonstrations of digital portfolio making were conducted. Because the digital portfolio in our school focused on information about students' learning outcomes and remedial measures, a closed system was adopted. Outsiders were not allowed to enter and browse. Only evaluators could enter and provide feedback on the teaching observation. At the end of the school year, a presentation was held with a recommended teacher for each subject who shared his/her teaching files and published student feedback on their academic achievement, which was a big event at the end of the school year.*

*The teaching files in our school were combined with the professional growth activities. Most teachers put community learning accomplishments into their files. Parents and students were encouraged to read them so that they could*

*understand their teacher's teaching philosophy and the evaluation methods. This was an open file system so that teacher from other schools that had recently adopted this type of system could observe it online. Young teachers were more involved, while older teachers did not want to spend much time on it. Considering the insufficient capabilities of some teachers, the school agreed that teachers could use either paper portfolios or digital portfolios.*

Based on the interviews, it was found that schools that placed more emphasis on a professional growth plan had a stronger sharing culture. Not only were the processes and outcomes of executing the personal professional growth plans shared using the Internet, but the teaching files were also made available to external members, and the personal records of teaching observations were even posted on the Internet. Some comments follow:

*The teachers in our school participated in the teacher evaluation as a team, without any reservations. For example, if the school invited an outside guest to give a speech at the school and a member of the team was unable to attend due to a conflicting class schedule, other members of the same team would assist in recording or taping the content of the study to help him (her) understand the new information. The electronic equipment contributed to the peers-helping-peers process.*

*The evaluation system has been promoted for six years. The Ministry of Education has repeatedly emphasised that the professional growth activity should be not only based on the evaluation report but also results-oriented. The professional growth activity emphasises continuous improvement. Using the observation of teaching and the other files, we could retrieve student learning outcomes, which are also considered in the evaluation process. The detailed information from our personal evaluations of peers was uploaded to the webpage. We are not afraid that our peers can read our own evaluation records and learn from each other. The evaluators from other schools have often learned from us using the internet after being authorised to do so. We do not mind sharing with other schools. This year, 85% of the teachers volunteered to participate in the teacher evaluation project, which is a result of the sharing culture and mutual trust.*

To sustain these systems of school-based teacher evaluation and to support teacher learning and program improvement, technologies must be designed to make these complex systems more accessible. The labour and fiscal costs of these systems are great, and technology holds the promise of greatly reducing these burdens. What is needed, in part, is an electronic platform that seamlessly and efficiently enables users to upload their portfolios manually and to share their work with their peers (evaluators), students, and parents for formal and informal feedback. These efforts will allow teachers to focus on their work rather than the assembly of their portfolio and should significantly enhance the performance of teachers. In addition, electronic platforms that are transparent and supportive of system efficiency facilitate the training of evaluators and the teachers' responses. The establishment of a process to assess the reliability of the systems is necessary.

#### 4.2. Influences of e-evaluation systems on teacher professional development

Table 3. Influences of e-evaluation systems on teacher professional development

Professional growth activities based on the evaluation report	Number of schools	% of schools
Exchange of teaching materials, methods, and course designs (environmental education, reading education, informational education)	23	56.10
Observation of, demonstration of, and feedback on teaching	18	43.90
Sharing of learning experiences and learning content	9	21.95
Research and development of teaching media (E-materials are available in 15 schools, or 36.58%)	22	53.65
Assessment and review of student learning	10	24.39
Sharing activities with examples	25	60.98

We found that the professional development activities that teachers participated in after the e-evaluation were mainly based on education issues, including "curriculum materials design", the research and development of teaching media, the collection of and participation in shared activities with other teachers, and observations or demonstrations of teaching using electronic platforms (accounting for 56.10%, 53.65%, 60.98%, and 43.90% of the schools, respectively, that used an e-evaluation system); 36.58% of the schools developed teaching courses in e-learning. Table 3 indicates that the promotion of e-evaluation contributed to the professional growth of teachers who were concerned about the school curriculum and to the enhancement of student learning. However, a long-term effort on the part of the administrative staff is required by, for example, training the ranked teachers and organising the sharing activities. Some relevant comments follow:

*The promotion of the digital portfolio by the school required the placement of assisting staff and the allocation of study time, and the responses of the teachers are mixed. Considering the fear response of the teachers, the Department of Education's policies regarding information technology teaching, and the supporting grants, the principal decided to apply e-learning to the course design and the implementation of teaching, including the establishment and promotion of the e-classroom. Three teachers with excellent results in the performance evaluation were selected to form a teacher professional learning community for e-classrooms and to participate in learning and peer coaching. At the end of a school year, a meeting was held to share these teachers' accomplishments with other teachers, and the teaching materials that were researched and developed were posted online. Over the next two years, many similar teacher professional learning communities were founded. A lot more e-learning equipment has also been brought to the school.*

*After sharing my design of an interactive whiteboard lesson plan, because of the discussion with and feedback from my peers, I was more concerned about my personal teaching and the students' learning, with getting a more positive response from the parents and the students. Encouraged by the principal, I participated in a teaching competition of our city this year. Although I did not win, I did learn a lot. The teachers in our school have increasingly accepted the e-evaluation system.*

Technology can increase the viability of these complex teacher evaluation systems, elevate peer-to-peer and student-to-teacher interaction, and make systems of teacher evaluation more cost effective. The promise of technology to enhance the professional development of the teachers through the development of school-based

teacher evaluation systems is great, although a small number of teachers continue to resist the online portfolio. As has been found in related studies, if a school can embed the process of collecting evaluation data, feedback, and information about the evaluation context into an electronic platform based on a sharing culture with mutual trust, it can effectively encourage and support its teachers in their application, growth, and development of teaching skills (Association for Supervision and Curriculum Development, 1999; Chang, 2004; Hartnell-young & Moriss, 2007; Ovando, 2001).

#### 4.3. Effects of e-evaluation systems on school development

Table 4. Effects of e-evaluation systems on school development (N=41)

Effects	Number of schools	% of schools
Increase in the number of teachers participating in evaluations	28	68.29
Awards for teaching	17	41.46
Increase in the number of admissions	12	29.26
Correction of the school curriculum	6	14.63
Improvement in students learning (increase in test scores and competitive awards)	5	12.19

This study found that because a large number of evaluators were working in groups, the evaluation process was not easy to manage. The application of an e-evaluation system is expected to encourage teachers to achieve the ideal situation of conducting both self-evaluations and peer evaluations within a sharing culture and to update their growth goals. Most e-evaluation systems are open systems, which allows for browsing by off-campus viewers. Does an open system affect the visibility and development of the school? According to Table 4, due to the effect of promoting e-evaluation systems, 68.29% of schools showed an increasing trend in the number of teachers participating in the evaluation, and 41.46% of schools received awards for research and development resulting from the evaluation process, such as the Teaching Excellence Award, the Creative Teaching Award, and others. Even in the face of the low birth rate in Taiwan, the number of classes in 29.26% of the schools actually increased year by year because of the excellent performance of the teachers or the promotional messages about the teacher evaluation systems. Using information from the teaching observations and the teaching files as well as information about the learning achievements of the students from the e-evaluation system, 14.63% of the schools modified their school curriculum. Although the e-evaluation systems of some schools included subsystems for e-classrooms and e-assessments oriented to student learning and analysis, only 12.19% of the schools showed a significant change in student learning outcomes. Some comments follow:

*All assessment activities were posted on the webpage. Whether or not they participated in the teacher evaluation, all teachers could access the relevant information. Some teachers would ask the office of academic affairs to announce the personal teaching observation time so that their colleagues, in addition to the specified evaluators, could be invited to observe the lesson or to participate in the feedback meeting. Some teachers uploaded their personal teaching video into their teaching files in order to discuss operational processes with other teachers teaching the same subject, which could serve as a reference for course modification. With a safe atmosphere of mutual trust, new teachers participated in the*

*evaluation project every year, while very few people dropped out. Even those teachers about to retire soon volunteered to participate and insisted on doing so until their last moment of teaching.*

*With the integrated program advocated by the principal, the teachers from this school year all participated in the professional learning community about the teaching of reading and held discussions through the dedicated website for the professional learning community. Using the peer coaching mechanism (modifying the process of teaching based on the teaching observation data), with abundant data on implementation and modifications, we obtained the highest award from the Ministry of Education last year: the Gold Award for Excellence in Teaching.*

*Our school is a small school on the border of the city and county. Because of the promotion of the teacher evaluation system, the research and development potential of the teachers was stimulated. They participated in various teaching programs, increasing the visibility of the school. The evaluation network provided information about the current status and effectiveness of the management and counselling as well as the course implementation, providing information about every class to parents and teachers. In the past two years, we have even attracted students from other districts to our school, so the teachers do not have to worry about being laid off due to reductions in class size, which is the greatest benefit of the technology-based teacher evaluation system for development.*

We have some evidence showing that teachers improve their teaching practices as a consequence of participating in an e-evaluation system, and the corroborating data includes observations and information on student learning. However, the evidence for the effects of e-evaluation systems on schools is not sufficient.

## **5. Conclusion and suggestions**

For teacher evaluations in Taiwan, only the evaluation standards and the practice of self-evaluation are common to all schools, while the ratio of evaluators to people being evaluated, the evaluation period, and the evaluation methods (observation of teaching, teaching files) are not uniform. Teacher evaluation in Taiwan is peer- and school-based. To help the teachers grow professionally and effectively manage the evaluation process and its quality, e-evaluation systems are increasingly used in schools. Especially for schools having 35 or more classes (more than 1000 students), an electronic platform should be designed to meet the school's needs. Such platforms mainly include an announcement system, a digital portfolio, and a professional growth activity based on a teacher's evaluation report. Because philosophies vary between schools, the openness of the system also differs. For schools trying to promote a culture of sharing among teachers with a strong foundation of mutual trust, the systems are open to the public. Where confidentiality is concern, schools set the system to be only partially open to internal school peers. The teacher evaluation systems of most schools are only accessible to the evaluators and the teachers being evaluated. Most of the announcement systems and the systems for professional growth activities based on evaluation reports are open to the public because schools would like to use these electronic platforms or technologies to encourage teachers who have not participated in teacher evaluations to join the evaluation project or to reinforce the goal of teacher professional growth. However, the promotion of a digital portfolio does not have an immediate effect, and teachers need to be provided with enough education on using information technology; thus, the evaluation of digital teaching files is not mandatory in some schools.

The schools and the governments of the cities/counties studied require teachers to use digital instruction. Senior teachers may not be able to enact this type of teaching practice promoted by teacher e-evaluation.

Therefore, many schools have used e-evaluation in conjunction with supporting and induction programs, presuming that the administrative staff and peers can support the teachers as they complete the evaluation process. This study also found that the promotion of an e-evaluation system required sharing activities among teachers. The more frequently this occurred, the better the outcome.

Proactive schools usually combined e-evaluation and their educational policy to encourage teachers to review their performance on digital instruction, creative instruction, or reading instruction. Based on the evaluation results, a group was formed to discuss and study the instruction, and the research and development of curricular materials followed. The effectiveness of teaching was analysed through the observation of teaching and the teaching files to form a cycle of evaluation and growth. This model has various effects, including the improvement of the pedagogical knowledge of the teacher, the increase in school recognition, and the reduction of pressure from declining class sizes. However, in terms of enhancing student learning with an e-evaluation system, the evidence found in this study is not strong.

The 53 schools investigated in this study were recommended for participation by the governments of 20 cities or counties. Whether the effectiveness of teacher evaluations resulted from the use of technology and other evaluation-supporting measures or from the school culture and peer partnerships needs to be clarified.

Considering that there was no school that integrated the teacher evaluation, the professional development, and the student learning into an electronic platform, this study tried to use the successful elements of the e-evaluation systems used in 41 schools to propose a model for using electronic platforms to integrate teacher evaluation, professional development, and student learning into an evaluation system.

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4<sup>th</sup> International Conference on New Horizons in Education

# How to turn the epostl into an electronic setting: the e-epostl

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## Abstract

Current practices in the field of foreign language teacher education and specifically assessment of student teachers at foreign language teaching (FLT) departments have an inclination to make use of traditional means. Today assessment practices in FLT are more innovative and modern through alternative and authentic assessment tools. No matter how much more eligible for objective testing, time consumption and applicability rather than old fashioned assessment tools both the policy makers and the universities as practitioners should take a step to utilize and develop alternative assessment types in language teacher education to change the direction of this flow back and to meet the educational needs of prospective teachers who are digital natives and international criterion to be an autonomous and successful language teacher. Thus, the European Portfolio for Student Teachers of Languages (EPOSTL) as a standard self-assessment tool for students in foreign language teacher training departments across Europe was developed in the light of The Common European Framework of Reference for Languages (CEFR) and the European Language Portfolio (ELP) by the European Centre for Modern Languages of the Council of Europe (ECML). In this study it was aimed to transfer this material into an electronic setting so that this digital material will become an electronic portfolio "the E-EPOSTL" and those prospective teachers dealing with digital natives just like themselves can have the opportunity to evaluate themselves whenever and wherever they are online. In this study the procedure for the transfer of the EPOSTL into the E-EPOSTL will be discussed and defined via some visual e-materials.

Keywords: EPOSTL, CEFR, ELP, ICT, foreign language teaching, digital natives, reflection, autonomy, teacher education, prospective teachers

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## 1. Introduction

Although assessment should be a means to see the weaknesses and strengths of the learners, it has become the main goal of education. That is to indicate the necessity to change this attitude vice versa, No matter how much time consuming or difficult to try alternative assessment, not only the policy makers but also the universities as practitioners should take a step to utilize and develop alternative assessment types in language teacher education to change the direction of this flow back.

The Council of Europe Language Policy Division in Strasbourg, France (<http://www.coe.int/t/dg4/linguistic/>), and the Council of Europe Center for Modern Languages in Graz, Austria (<http://www.ecml.at/>) collaborate to direct and develop the practices in the field of foreign language learning and teaching across Europe. The Common European Framework of Reference for Languages (CEFR) developed by the Council of Europe is a standard

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reference framework for foreign language learning, teaching and assessment (CoE, 2001) ; the European Language Portfolio (ELP), which is also developed by the council is a standard self-assessment tool for language learners (Little 2005); and the European Portfolio for Student Teachers of Languages (EPOSTL) as a standard self-assessment tool for students in foreign language teacher training departments across Europe. It is available on <http://epostl2.ecml.at/> in different languages such as English, French, German, Polish, Romanian, Hungarian, Lithuanian, Greek, Italian, Russian and Spanish.

The EPOSTL was developed for the European Centre for Modern Languages of the Council of Europe (ECML) by a team of teacher educators from five different countries (Armenia, Austria, Norway, Poland, and U.K.). It is a by-product of a project 'A Framework for Teacher Education' carried out by the ECML between 2004 and 2006 (Krišjāne et al 2009, Newby 2012), the aim of which is to harmonize teacher education across Europe. The group members of the project decided to develop it on already existing documents developed by the Language Policy Division of the Council of Europe – the CEFR and the ELP as well as the European Commission-financed project European Profile for Language Teacher Education – A Frame of Reference (Profile).

Behind the EPOSTL, three main documents that helped to construct the EPOSTL are the CEFR, the ELP and Profile. First of all, 'can-do' formulations, and most of the terms in it and insights from the CEFR have been incorporated into the descriptors of the EPOSTL, the core of this document. Next, the common feature of the ELP and the EPOSTL is their having the three-part structure (personal statement – self-assessment – dossier). Also, they both have a focus on reflection. However, there is a significant difference between the two; while the ELP is concerned with language competences; the EPOSTL is concerned with didactic competences. Finally, the EPOSTL provides a frame of reference, the idea of which came from the Profile. However, while teacher educators and curriculum designers are at the target of the Profile, the EPOSTL aims mainly at the student teachers.

While preparing students for their future profession in various teaching contexts, the EPOSTL is an instrument to chart progress and it provides invaluable support during teaching practice and can be a useful source in negotiations with mentors, which will also enable mentors to provide systematic feedback.

The EPOSTL is the property of the student teacher enabling him/her to see his/her strengths and weaknesses. Thus, it is, in fact, a means of enhancing autonomous learning. Still, the teacher educator has an important role to provide guidance for the best use of the EPOSTL. The EPOSTL should have a close relation to the existing course structures. Using it over a period of time-if possible throughout the teacher education programme- is a must because of the fact that it is an instrument which evaluates the process. Then, it is possible to chart progress and growth.

Although it is a document for student teacher, the EPOSTL will do a lot for teacher educators involved in curriculum design by providing a tool in helping to clarify aims and determine content and see the strong and weak points in teacher education programmes. It can be seen as a helpful complementary to the European Profile for Language Teacher Education. It can also be used by teacher educators across countries to discuss anything in the field of training student teachers of English.

EPOSTL is originally a digital document; student teachers can download and print it, which would be time-consuming and demanding for most of them. Using the technological facilities, a website with the same content of the EPOSTL with its complementary files like glossary, index, a user's guide and a video, **www.myepostl.com** was developed. The aim of the research is to present the procedure for the transfer of the EPOSTL into the E-EPOSTL discussing and defining it via some visual e-materials.

## 2. The EPOSTL and The E-EPOSTL

The EPOSTL encourages the students undergoing their initial teacher education to reflect the didactic knowledge and the skills needed to teach languages, evaluate their own didactic competences and enables them to monitor their progress and to record their experiences of teaching during their teacher education at the faculties. The EPOSTL consists of three main sections (<http://www.ecml.at/epostl>):

- a personal statement section: providing some activities to reflect on aspects related to teaching in general and to think about questions that may be important at the beginning of their teacher education.
- a self-assessment section: which contains lists of 196 'can-do' descriptors relating to didactic competences related to language teaching constitute the self-assessment section. The descriptors target future school teachers in secondary education (ages 10 – 18), who teach general language. Different descriptors may be needed for other specific courses. The descriptors were formulated by the ECML project group members after consulting student teachers and teacher educators from 33 European countries. The EPOSTL does not have an aim to impose a rationale or methodology, though identifying core competences and making these competences transparent are hoped to make a small contribution to the student teachers who wants to cross not only institutional but also national borders and to look for common principles applicable across Europe. The descriptors are grouped into seven general categories which have the following headings: 1. Context, 2. Methodology, 3. Resources, 4. Lesson Planning, 5. Conducting a Lesson, 6. Independent Learning, 7. Assessment of Learning. Each general category has sub-categories. For example, 'Conducting a Lesson' includes the subheadings: 'Using Lesson Plans', 'Content', 'Interaction with Learners', 'Classroom Management', and 'Classroom Language'. Also, while several descriptors make references to principles of autonomous learning, these are spread through various sections. This reflects the fact that learner autonomy pervades many aspects of learning and teaching. Within each sub-heading each descriptor is numbered for ease of reference. Each descriptor is accompanied by a bar, a self-assessment scale, which helps students to evaluate themselves. Student teachers are encouraged, with or without the participation of their tutors and peers, to review these bars from time to time to reflect on whether and why improvement has been indicated. Whilst in the *Common European Framework of Reference* and in the *European Language Portfolio* self-assessment descriptors are scaled (A1, B2 etc.), the EPOSTL does not use any numerical scale since the authors believe that it is very difficult to quantify didactic competences. It should be noted that it is not expected that all bars should be filled in at the end of the teaching education programme. Learning to teach and becoming a good teacher is a continuous and life-long process.
- a dossier section: in which students can document progress and record examples of work relevant to their teacher education and their future profession. The documents in the dossier are proofs of what they indicated for self-assessment of 'can do' statements. Although the dossier is the property of the student

teacher, he or she can share items with tutors, mentors, peers etc. The followings could be included in the dossier.

- A. Evidence from lessons the student teacher has given
- B. Evidence in the form of lesson observations and evaluations
- C. Evidence such as detailed reports, comments, checklists etc. compiled by different people involved in the teacher education programme
- D. Evidence from an analysis of what students have done as a teacher
- E. Evidence in the form of case studies and action research
- F. Evidence from reflection

A 'list of documents' checklist can be found at the end of each category to help students collect evidence systematically.

Apart from its three main units, the EPOSTL has an introduction, which provides a brief overview of the EPOSTL, a glossary of the most important terms relating to language learning and teaching used in the EPOSTL, an index of terms used in the descriptors and a users' guide.

Mirici (2007) proposed that seminars, symposiums and conferences should be organized to share ideas and broaden the viewpoint concerning the ELP development, implementation and dissemination, which can be carried out through collaboration between the Ministry of Education, national contact persons, portfolio developers, academics and teachers. This is a must for the EPOSTL, as well.

With in-use traditional student teacher evaluation applications, it is not possible to evaluate the whole process a student teacher has experienced thoroughly. Hence, utilizing EPOSTL can be beneficial to provide reflection by the student teachers and makes it possible for them to participate in their own evaluation. EPOSTL is originally a digital document; student teachers can download and print it, which would be time-consuming and demanding for most of them. However, the developing technology and needs of new learners should be met. They already carry smart phones with internet connection. They may find it difficult to carry another thing to evaluate themselves. By using the technological facilities, the researchers designed a website with the same content of the EPOSTL with its complementary files like glossary, index, a user's guide and a video. By using this online-electronic version of the EPOSTL, learners can access their E-EPOSTL whenever and wherever they like since most students have the internet connection on their phones, or there are Wi-Fi connection nearly everywhere.

### **3. Digital natives and ICT**

Scientists say that there is a new generation entering into our educational institutions and this era is theirs. It is a time when children are born roughly between 1980 and 1994 (Prensky, 2001) as "digital natives", a term used for the new generation which is also called as "Net Generation". These young people are said to have grown up

with information and communication technology (ICT) as an integral part of their everyday lives imbuing them with sophisticated technical skills and learning preferences for which traditional education is unprepared (Bennet et. al, 2008). There is a need for an educational reform to accompany the technological developments the new generation follows very closely because as Prensky (2001) indicated that our students have changed radically and today's students are no longer the people our educational system was designed to teach. One of the biggest problems facing education today is that our Digital Immigrant instructors, who weren't born into the digital world but even later in their lives adopt most aspects of the new technology and who speak an outdated language (that of the pre-digital age), are struggling to teach a population that speaks an entirely new language (Prensky, 2001). Being a digital material, EPOSTL is a practical document for the digital natives. On the other hand, what can make the EPOSTL more accessible and practical are probably the internet and the recent technology. In this study, thanks to the rapidly developing technology and its facilities, the EPOSTL was transferred into an electronic and online environment and it became E-EPOSTL, so that the teacher candidates can reach it without any time or place constraints.

Nowadays both international and intercultural communication mainly takes place in the virtual reality, via the Internet. That's why we offer to use this assessment tool through the internet for the digital natives, who are volunteer and good at using the technological products and like to multi-task.

#### **4. Reflection, Autonomy and Professional Development**

Research on effective teaching over the past two decades has shown that effective practice is linked to inquiry, reflection, and continuous professional growth (Harris, 1998). At the very heart of the EPOSTL, there is an aim to grow up reflective and autonomous language teachers. According to Little (1990), learners become responsible when they are ready to take their own decisions, take part of their own learning process by being critical. Sinclair (2001) also stated that autonomy takes place when learners establish their own objectives, select methods and techniques that work; regulate and monitor their own process and is able to evaluate what they have acquired. Likewise, Benson (1996) indicated that autonomy is a multidimensional capacity that will take different forms for different individuals. She (2001) defined autonomy as the resulting challenge is to "take greater account of learners' ability to set learning goals and to organize their own activity" Though it may imply a degree of independence in the learner, it does not imply isolation. Autonomy and reflection are also in the center of teacher development, which is preferable to teacher training in that it allows the teachers to see their own weaknesses and strengths and try to find out solutions to them in various ways, like action researches, seminars, conferences and so on. Moving from these definitions and explanations of autonomy, it can be said that, in a nutshell, EPOSTL is the right instrument to enhance autonomy in student teachers by helping them to reflect on their strengths and weaknesses. As they take the control to evaluate themselves, they can organize their own learning process as student teachers by putting new goals necessary to develop teacher competencies that they need to see better. As being online and more accessible, the E-EPOSTL looks as a multifunctional tool to develop candidate EFL teachers in Turkey.

#### **5. Developing the E-EPOSTL**

Firstly, a domain name was adopted. Then, a hosting, which has a Php, mysql support, was rented. Next, the importation of the content of the EPOSTL into [www.limesurvey.org](http://www.limesurvey.org) came. It is an open source survey application system which is written in PHP language. It works on the Linux, an operating system. LimeSurvey allows users to quickly create intuitive, powerful, online question-and-answer surveys that can work for tens to thousands of participants without much effort. The survey software itself is self-guiding for the respondents who are participating. Its manual is thus focused at how to install the application, administer the

installation, and support survey creators, administrators and report generation users alike. The followings are significant features of [www.limesurvey.org](http://www.limesurvey.org):

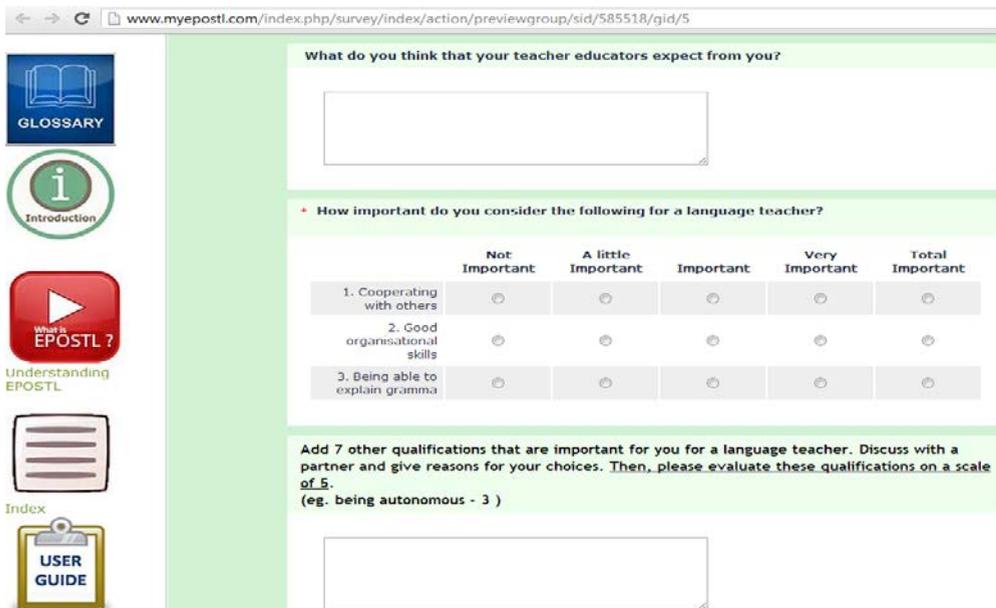
- Unlimited number of surveys at the same time
- Unlimited number of questions in a survey (only limited by your database)
  - Unlimited number of participants to a survey
  - Multi-lingual surveys
  - User-management
  - 28 different question types with more to come
  - Quotas management
  - Integration of pictures and movies into a survey
  - Creation of a printable survey version

**The followings are the possible areas of application of [www.limesurvey.org](http://www.limesurvey.org)**

- Ordinary marketing surveys
- Psychological tests
- Customer satisfaction surveys after buying from an online shop
- General data collection for example by phone at call centers
- Quality management (inter alia in the field)
- Query of candidate qualifications
- Order Form for Product Samples
- Invitation management for events ("I come with X people, we would like to eat Y and Z need overnight accommodations)
- Theory test for Driving School
- Review of lectures at universities
- Event tool like for college fests

These are the question types that limesurvey provides its users: Arrays(5 point choice/(10 point choice/ Yes-No/ Uncertain/ Increase/ Same/ Decrease/ by column/ dual scale/ Numbers/ Text); Mask questions (Date/ File upload/ Gender/ Language switch/ Numerical input/ Multiple numerical input/ Ranking/ Text display/ Yes-No/ Equation); Multiple choice questions (Multiple choice/ Multiple choice with comments); Single choice questions (5 point choice/ List Dropdown/ List (Radio)/ List with comment); Text questions (Short free text/ Long free text/ Huge free text/ Multiple short text).

Creating the sub categories (personal statement- self assessment- dossier) and the items (different sorts of questions-Short free text/Long free text/File upload/Numerical input/array (5 point choice) was the next step.



Also a glossary, which isn't available on the limesurvey.org was separately created by the developer. The following snapshots are from the website [www.myepostl.com](http://www.myepostl.com)

Fig. 1. The screenshot of the personal statement part of the E-POSTL: Text Type Questions

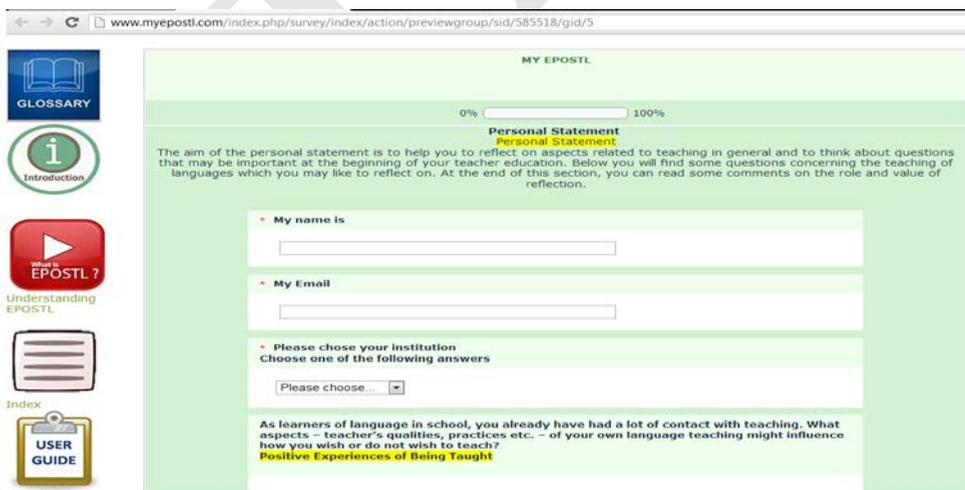


Fig. 1. The screenshot of the personal statement part of the E-EPOSTL: Likert Type Questions

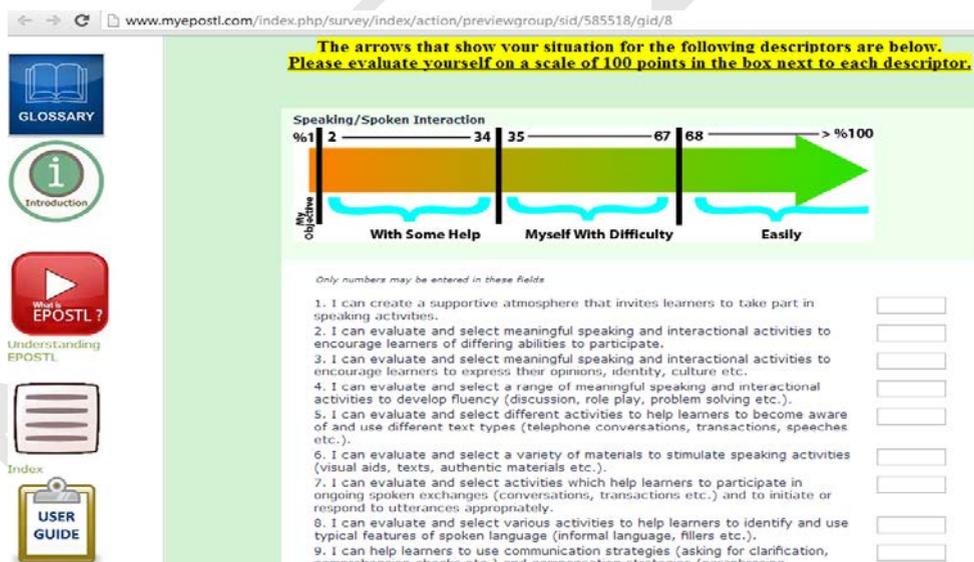
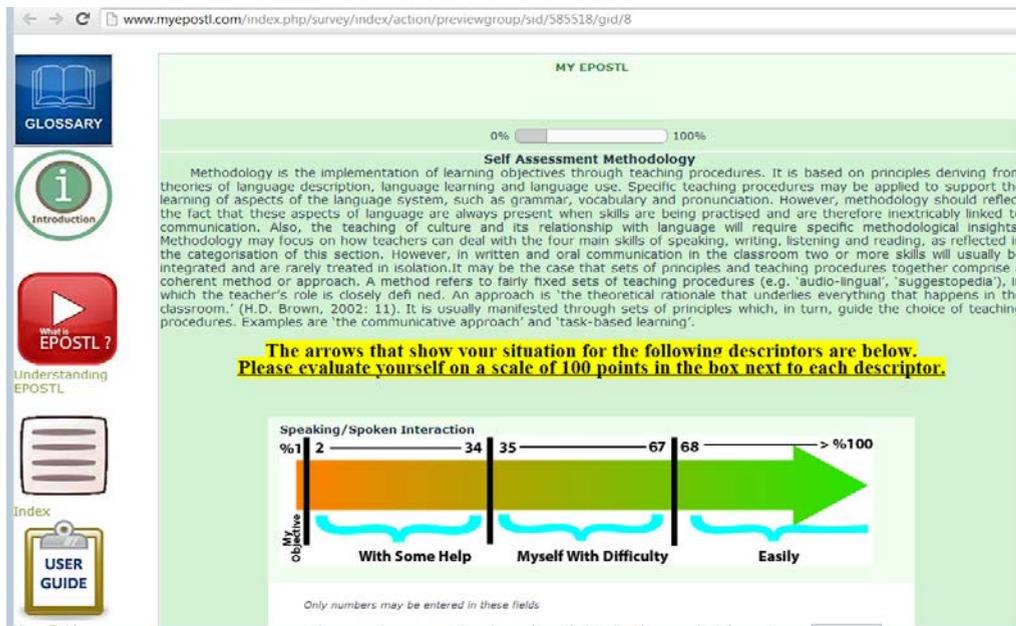


Fig. 1. The screenshot of the self-assessment part of the E-EPOSTL: Explanation before every part

Fig. 1. The screenshot of self-assessment part of the E-EPOSTL: The descriptors/can-do statements

www.myeostl.com/index.php/survey/index/action/previewgroup/sid/585518/gid/14

**MY EPOSTL**

0%  100%

**Self Assessment Reflection Grid**  
The grid will help you to record your reflections on the descriptors.

**Reflection Grid**  
The grid will help you to record your reflections on the descriptors.  
Please type your comments for any descriptor you like in the self- assessment section by indicating the **descriptor number and the date of reflection.**  
Here is an example for you.  
**METHODOLOGY G2 / 25.03.2013: I find some virtual communities on the internet for my students and help them to interact with these communities.**

**What do I put in the dossier?**  
It will be clear from the list which follows that not all of its suggested evidence can be gathered during your particular training period; some may only be possible when you are a practising teacher. Indeed there is no expectation that everything listed below should be produced during your initial teacher education.  
In order to draw up and update the document, you are encouraged to include:  
A. Evidence from lessons you have given  
B. Evidence in the form of lesson observations and evaluations  
C. Evidence such as detailed reports, comments, checklists etc. compiled by different people involved in your teacher education  
D. Evidence from your analysis of what you have done as a teacher – your 'teacher actions' - and from learners' tasks and related performance  
E. Evidence in the form of case studies and action research  
F. Evidence from reflection

**Understanding EPOSTL**  
Introduction

**What is EPOSTL ?**

**Understanding EPOSTL**

**Index**

**USER GUIDE**

Fig. 1. The screenshot of the self-assessment part of the E-EPOSTL: Reflection Grid

Fig. 1. The screenshot of the Dossier part of the E-EPOSTL: Explanation for the Dossier

www.myeostl.com/index.php/survey/index/action/previewgroup/sid/585518/gid/6

**GLOSSARY**

**i**  
Introduction

**What is EPOSTL ?**  
Understanding EPOSTL

**Index**

**A. Evidence from lessons you have given**

- lesson plans, completed by yourself and/ or with others, for a single or a series of lessons
- lesson 'scripts' (for example the exact words in the target language which you propose to use) and/or transcripts of part of whole lessons
- videos of lessons/ part lessons/ significant moments in a lesson (e.g. starters, plenaries, your or the learners' use of the target language, in-class assessment, pair work, individual learner performances etc)
- examples of learner tasks, classroom aids, teaching and learning materials, web sites etc. you have designed and/or used in and out of class, with a rationale for your choice
- other

Please type your comments for each of your files in the **COMMENT** box you will see after you upload the files by indicating the date of reflection. Here is an example for you.

**25.03.2013:** This is a lesson plan I prepared for a reading class for young learners. I think it is Ok but I could have add a writing task at the end of the lesson. it is useful that I planned to use some icebreakers at the beginning of the lesson for a nice atmosphere.

Please upload at most 100 files

Upload files

**B. Evidence in the form of lesson observations and evaluations**

- lesson observation notes written by teachers/ mentors/ tutors
- post-lesson evaluations written by you and/ or others
- other

Please type your comments for each of your files in the **COMMENT** box you will see after you upload the files by indicating the date of reflection. Here is

Fig. 1. The screenshot of the Dossier part of the E-EPOSTL: Upload screen/ Different parts

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4<sup>th</sup> International Conference on New Horizons in Education

# Hpcs: a web based homework & project control system

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**Abstract**

For a university, the way of giving lectures practice oriented makes a lecture less boring and more comprehensive. However, the increase in the number of students and the restricted number of academic staff makes it particularly difficult for practice homework to be given or to be followed, if any. The common homework submission method of e-mailing is not a practical method since the email may not be delivered, may be recognized as spam or the large number of homework emails may cause a clutter in the email inbox. In this study, a web based homework control system is developed where students send their homework and instructor access to homework, list them and evaluate them. The system is successfully tested in the lectures given in the Computer Engineering Department. The use of the system over the entire university will facilitate submission and evaluation processes of the homework and will enable the success analysis of the past.

Keywords: homework submission, homework rating, group homework, HPCS, online education

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**1. INTRODUCTION**

The effect of homework and projects given in a lecture on the understanding of the subject is a long-standing debate. Eren and Henderson carried out a study examining whether large number of homework is actually a waste of time for the students. They have analyzed the positive effect of homework on exams and found that while homework has a marked effect in life sciences, they have almost no effect in social sciences [1]. Ronning, on the other hand, questioned how the differences in the socio-economic status of the family affect the impact of the homework on the success. Results show that for the students with high socio-economic status homework has a strong impact on success while it has no impact for the ones with low socio-economic status [2].

These and the other similar analysis [3,4] show that homework has an important effect on the success in life sciences, which is the field with the intended student population of this study, so it is inevitable to give homework for departments with advanced Math studies. Therefore, it is a necessity to have a system to be able to assign homework to student, to have the homework submitted, and to evaluate and announce the results.

It is important to speed up these homework-related processes to prevent time losses. Therefore, a system is needed where the homework is sent online and is evaluated and graded by the instructor and where the results are announced. Some web-based systems with similar capabilities have been developed. For example, Moodle is an open-source code system and is developed to serve as a course management system. It is not restricted to

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homework and projects, it also includes course contents, announcements and activities [5]. Several studies concerning Moodle carried out; it is compared with other systems and beneficial results of Moodle are proven [6,7,8,9]. However, in Turkey since for most of the universities the course contents and announcements are shared via a different system, in some cases a system is needed where only the homework and the projects are assigned, received and graded. Currently, this need is met using emailing in most of the universities. However, emailed homework may sometimes not be delivered because of the file type it includes or may be received as a spam mail.

In addition, mailing method for the homework submission causes clutter in the email inbox and makes it difficult for the instructor to control and evaluate the homework. A system enabling a web-based homework submission and grading will be able to avoid these significant problems.

Some web-based systems have been also developed who serve only for homework submission and grading. For instance, Webwork is an open-source web-based system which provides online homework submission and grading services. It is developed much rather for mathematical homework that the student provide the solution online [10]. Thereby, Webwork is not suitable for all types of homework submission. On the other side, in the web-based homework submission system developed by Hsu (HWSAM) the homework sent by the student is submitted to the instructor as a file and document hierarchy. Each homework document is gathered in the file of the related course. Group submission feature has also been considered but the simple and inefficient interface of the system makes it fairly difficult to interact with different systems [11]. The detailed system developed by Banker, CHARLIE (A Computer Management Homework, Assignment and Response, Learning and Instruction Environment), not only serves for the submission and grading of the homework but also serves as a system that enables course content input, activity publishing, file sharing and other many similar features [12].

As it can be seen from the studies detailed above, there are systems which allows web-based homework submission and grading. However, they are not able to fully satisfy the needs of a certain university in Turkey nor they are able to be integrated with an existing system. Hence, in this study, a web-based system providing homework submission and grading in Sakarya University particularly Computer Engineering Department is developed. The details of the system are given in section 2 and the assessment of the system is given in section 3.

## **2. HPCS SOFTWARE**

The system is developed as a web-based application and is coded in .Net platform using C# programming language. MsSQL is used as database and Linq library is used to link tables. There are 3 types of user in the system developed. These users and the operations they can perform are shown in Table 1.

Table 1. The operations of user types

User Type	Operations
Admin	Add user, edit user, add and edit course, add and edit activity, view and delete sent homework, add and edit announcement
Instructor	add and edit activity, edit course lists, view delete and grade homework, add and edit announcement
Student	View and update sent homework, upload files to activities, view grade and class average

Users cannot login unless they are registered to database of the university. In this manner, it will not be necessary to give extra user name and passwords to students and they will use the system easily. As a first step to run the system properly, the instructors and courses should be added by the admin. And when instructors log in to the system they can add the students and the activities of their courses to the system. A detailed flow chart of the system is shown in Fig 1.

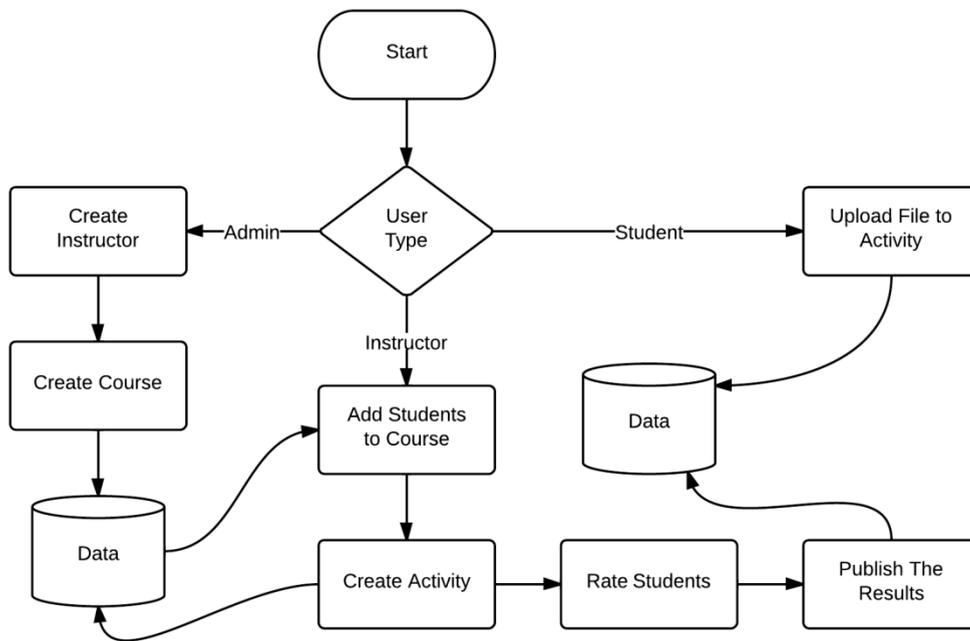


Fig. 1. System flow chart

An instructor may restrict the submission day of the activity by assigning a due date and a late due date. The instructor may also view the students' documents over the system, grade the documents and publish the grades

again using the system. An unregistered student cannot login to the system. When a student login he/she can view his/her registered courses on homepage. The student can send his/her document for the existing activities and update the document before the due date set by the instructor. The interface from which the instructor can add an activity is shown in Fig 2.

The screenshot displays the 'Activity Control Page' for the 'Data Structures' course. The page header includes the department name and the system title. A navigation bar shows 'COURSES' and a 'Logout' link. The main content area is divided into two sections: 'Data Structures' on the left and 'Activity Control Page' on the right. The 'Activity Control Page' contains the following form fields:

- Course: Data Structures (dropdown menu)
- Activity Name: Assignment 2 (text input)
- Group Size (0:No Group): 4 (text input)
- Activity File: C:\Users\MFA\Docu (text input) with a 'Browse...' button
- Due Date: 3/6/2013 11:59 PM (calendar and clock icons)
- Late Due Date: 3/9/2013 11:59 PM (calendar and clock icons)
- A watermark 'H1G7' is visible over the form.
- A 'Save' button is located at the bottom right of the form.

Fig. 2. Activity control page

Some of the activities (homework or projects) may be allowed or required, by the instructor, to be done in groups. In this case, instructor should state the size of the group when he/she adds the activity. The size shows the maximum number of students that a group can have. When a student login and wants to submit the homework as group homework, he/she adds the group members as shown in Fig 3.

Each of the added group members can view the homework from his own page once the activity is submitted. If the instructor views and grades any homework from the group then all the group members will be graded automatically. In this manner, a time loss due to dealing with the same homework of the group members is eliminated.

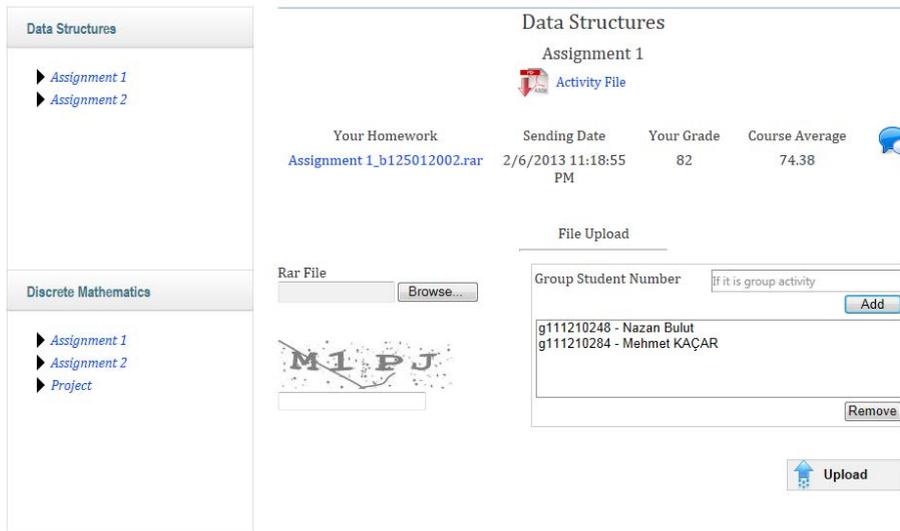


Fig. 3. Student activity sending and controlling page

MsSQL is used as a database and tables are connected to each other with relations. The activity files sent by instructors and homework files sent by students are stored in the database. By this way, the security of the files is provided and the files are prevented from irrelevant people. The database has been constructed as 7 different tables and these tables link to each other with relations. The class diagram of these tables is given in Fig 4. As it can be seen from the figure there may be one or more courses linked to each instructor and each course may have one or more activities. In addition, all the data flow in the system is stored in log table.

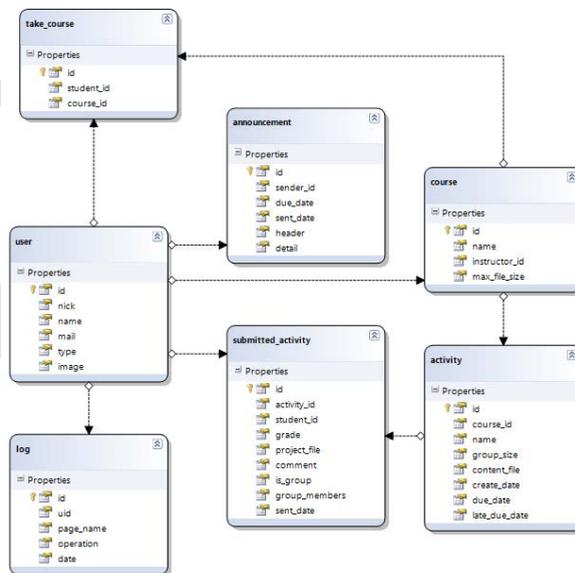


Fig. 4. Data class diagram

### 3. CONCLUSION

The Homework and Project Control System developed here provides an environment where students submit their homework easily. The grades as well as the comments of the instructor become visible once the instructor announces the results of the homework. By this system, problems due to the submission of the homework via email or in a CD are prevented. Group homework is graded easily by the instructor, grading only one of the group members is sufficient, all the group members are graded by the system accordingly. The security of the files is ensured by keeping the homework and projects in the database. HPCS is being tested in Computer Engineering Department and successful results are obtained. In future, the system can be used throughout the entire university.

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4<sup>th</sup> International Conference on New Horizons in Education

# Human Capital, Education and the Labor Market: Evaluation of Interaction in Latvia

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## Abstract

Smart, sustainable and inclusive economic growth with high employment level (the strategy „Europe 2020”) is the goal to which Latvia aspire. Achievement of this goal is largely dependent on human capital and its quality. In this context, it is necessary to develop such skilled workforce, which would be able rationally respond to labor market needs and its changes, otherwise the sustainability of economic growth and prosperity will met more difficulties. In this paper the interaction between human capital, education and the labor market is evaluated. As an indicator for evaluation higher education and vocational training are used, which are quite important parameters affecting the quality of human capital, while the interaction and the results are evaluated using the Latvian experience.

Keywords: human capital, high education, vocational training, labor market, Latvia

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## 1. Introduction

The objectives of the society in conditions of limited resources are ensuring of existence and improvement of well-being. The process of raising welfare is complex and can occur at two levels:

- at national level, when a country through its economic activities provide increases in GDP and thus in GDP per capita;
- at individual level, where the paid employment is one of the most important in processes of provision, sustenance and improvement of welfare.

European labor market is characterized by rising unemployment, as well as untapped potential in certain sectors that particularly is relevant for countries with strong fiscal consolidation, decreased average household income in many European Union member countries, as well as high and ever-increasing labor taxes, which are impede job creation (European Commission, 2012). Consequently, competition not only among job seekers, but also among employees increases. As one of the main factors, which could influence the opportunities of job seekers and employees to realize their potential in the labor market and through this improve their well-being, the human capital is, the quality of which is directly dependent on education.

Human capital is recognized as a key resource in Latvia. However, development of human capital facing the challenges of aging and depopulation, an as a result loses of productivity and changes in labor structure. Latvia ranks fifth place among Central and Eastern European countries in terms of usage of human capital (Saeima of the Republic of Latvia, 2010).

As is indicated in the strategy „Latvia 2030” - continued investment in basic values of human capital and the use of it would be useless spending, if human productivity during next few years will not be significantly improved (Saeima of the Republic of Latvia, 2010). Productivity growth contributes to increasing of social welfare, therefore it is necessary motivate individuals to develop their human capital, but in this aspect the making of right choice is important.

An individual's choice in favor to vocational or higher education and specific programs is an important issue in Latvia, because:

- mismatch of labor skills and competences with labor market requirements in Latvia is observed (Ministry of Economics of Republic of Latvia, 2011);
- investments in human capital at the workplace are relatively small (Latvijas Republikas Saeima, 2010);
- most of the Latvian workers are not employed on professions according to their acquired education (LR LM, 2007);
- a large number of workers occupies several jobs (LR LM 2007) what points to the lack of specialists.

At the same time the Latvian education system stands in the face of changes and one of the main arguments in favor of this changes the fact that the existing offer of vocational and higher education do not meet needs of economy could be mentioned (Ministry of Economics of Republic of Latvia, 2011). Forecasts indicate that imbalance in offer and demand of labor force in Latvia in period from 2014 till 2020 is possible. The biggest shortage of labor force since 2014 till 2020, by forecasts in following professions and occupational groups is expected:

- professions - tourism professionals, professionals in quality management systems;
- occupational groups - paramedical staff, nurses, other social science professionals, low-skilled workers (LR LM, 2007).

Given the above trends, the aim of the article is to assess the interaction between human capital, education and labor market in Latvia.

The article is organized as follows: the second section presents the theoretical basis of role of human capital and education in economic growth, economic development and welfare improvement, as well as in the labor market, in the third chapter the author explains the methodology used for the study, in the fourth chapter the research results are discussed, followed by conclusions.

## 2. Literature Background: Short Overview

At the global space creative and qualitative human resources are becoming a major factor determining differentiation between countries and are important elements of competition both in global and regional level. Statistical data show that European countries pay special attention to lifelong learning programs (continuous training) to improve the quality of human resources, especially because the European countries are characterized by high differentiation in the human resources. In the recent projects, which are focused on the development and crisis management, human capital is recognized as an important tool (Iatagan, Dinu & Stoica, 2010). Concerning this, European Union member countries use vocational education and various types of training (through expanding existing programs and the introducing of new) for mitigating impact of the global economic downturn (Heyes, 2013).

Similar findings have been received in the U.S. Research results indicate that in order to reduce the impact of globalization, the development of skills and competencies should be encouraged, what mean investments in human capital (Hickman & Olney, 2011).

Importance of human capital in economic development increased with the emergence of endogenous growth theory (Lanzi, 2007), in which technology, knowledge, intellectual capital and productivity are indicated like basis for economic development (Chen & Dahlman, 2005). According to the strategy „Europe 2020” and its initiative „Innovation Union” economy should be based on science-intensive and high-technology sectors that contribute to the formation of an innovative economy.

It should be noted that the European Union member countries have different levels of economic development, experience, available resources, consequences of the global economic downturn, but a common goal, set by the strategy „Europe 2020”, as a result they also have a different starting position to achieve this goal.

Widely recognized fact is that achieving sustainable economic development without investments in human capital is not possible, because it is one of the most important factors of development. The link between economic growth and human capital has long been recognized. Many studies, particularly in Western Europe showed a positive impact of human capital on economic growth (Jajri & Ismail, 2012).

Human capital and education are positioned as significant factors in the economic growth process (Romer, 1986; Lanzi, 2007) however, it should be noted that economic growth is not always conducive to employment, because high productivity level can ensure prosperity in conditions of unchanged number of employees (Krasnopjorovs, 2010). In this regard, once again the high level of competition in the labor market should be highlighted, what makes it necessary to raise the level of human capital development.

Importance of education in employment is actively emphasized in studies, because, depending on the level of education level of productivity varies, as a result wage level also varies (Furia, Castagna, Mattoscio & Scamuffa, 2010). As pointed out by Becker (1964), individuals choose the most appropriate level of education in order to balance the marginal costs and marginal returns, while McKenna (1996) points out that education expands employment opportunities, because educated workers are productive in all jobs, while uneducated workers are productive only in some works.

## 3. The Data and Methodology of Research

Purpose of this article is to assess interaction between human capital, education and the labor market in Latvia. Author defines the human capital in present research like prospective employees in Latvia, who through the choice of higher or professional education and certain programmes increases quality of their human capital, as well as tries to realize their potential in the labor market.

Identification and evaluation of interaction are carried out using data on:

- new enrollees in higher and vocational education – assessment of changes in share of new enrollees by thematic groups can help us identify whether prospective employees properly assess changes in the structure of economy and thus in future will be in demand in labor market;
- employment and gross value added by sectors of economy – usage of these data make possible to evaluate the changes in the structure of economic sectors, which leads to changes in the labor market also; this information as well as information on regional specialization prospective employees should take into account;
- occupied posts and vacancies by economic activity – usage of these data make possible to evaluate the information on labor market dynamics.

The data of Central Statistical Bureau of Latvia are used for the period since 2005 till 2012.

Data analysis is based on calculations of Structural Change Index (SCI) to assess changes of relative importance of the studied issues (Productivity Commission, 1998). During the study regional specialization were identified in Latvia. In the author's opinion this is important information which should be taken into account by prospective employees, when they choose direction in education. Identification of regional specialization is based on Location Quotient (LQ) calculations (Florida State University. Department of Urban and Regional Planning. Planning Methods III: Forecasting, 2013). Interaction between education and labor market is assessed using correlation analysis.

#### 4. Research Results

The global economic downturn severely affected the Latvian economy. As a result, GDP fell by 25%, while the unemployment rate increased by about 20% (Ekonomikas Ministrija, 2012).

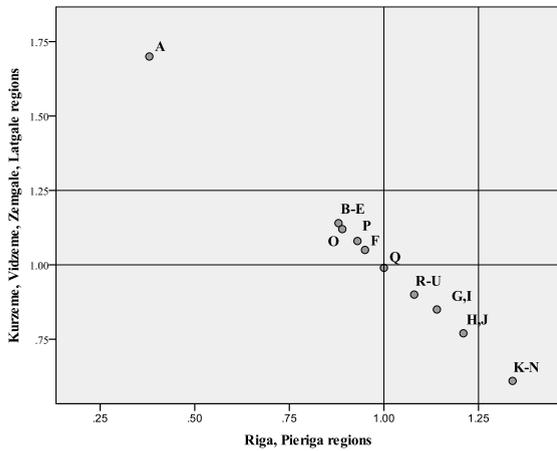
Given that the service industries with low productivity level and strong focus on domestic market predominated in Latvia during the pre-crisis period, in turn, currently the country's economic recovery is based on export-oriented manufacturing sectors, mismatches between skills of job seekers and labor market demand could be formed. In addition, the growth mainly will be driven by an increase in productivity rather than an increase in number of employees. Almost  $\frac{2}{3}$  increase in demand of the labor force by 2020 will be provided through three sectors - manufacturing, trade and business services (Ekonomikas Ministrija, 2012).

Latvia is characterized by high regional differentiation and Riga region produces more than half of the country's GDP, thus greater job opportunities in Riga region could be observed. Regional specialization which may constitute a larger share of the labor market demand within the region is an important factor to be taken into account by future employees.

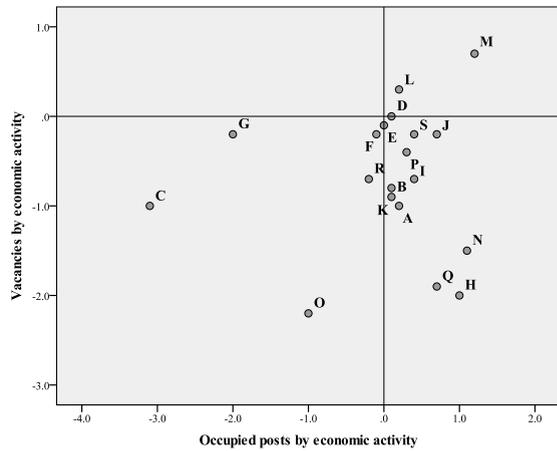
For example, the LQ calculations indicate that regional specialization in Riga and Pieriga is based on „Financial, insurance, scientific and administrative activities” (K-N) sector, in turn, other regions of the country are specializing on „Agriculture, forestry and fishing” (A). In conformity with LQ calculations „Industry and energetic” (B-E) sector is positioned as sector of local interest in Latgale, Videzeme, Zemgale and Kurzeme regions, in turn, in Riga and Pieriga regions „Trade, accommodation and food service activities” (G,I) sector and „Transportation, storage, information and communication” (H,J) sector are sectors of local interest (see Fig.1.).

Calculated LQ values indicate that in Riga and Pieriga regions, where more than half of the country's GDP is produced, and thus higher number of employees is employed, service sector is dominated. The fact that among the region's specialization also an export-oriented service sectors are observed as positive aspect could be noted. In other regions much more emphasis on sectors, which produce material goods, is done, particularly, on agriculture sector.

Dynamic of occupied posts and vacancies between the 2005 and 2012 indicates that the major role in the country's employment such service industries as „Real estate activities” (L) and „Professional, scientific and technical activities” (M) play. But the biggest amount of persons, who lost their job, in industries such as Manufacturing (C), Wholesale and retail trade; repair of motor vehicles and motorcycles (G), Public administration and defense; compulsory social security (O) was observed.

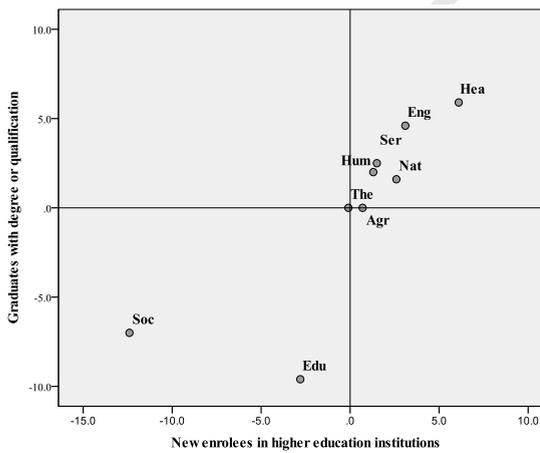


(a)

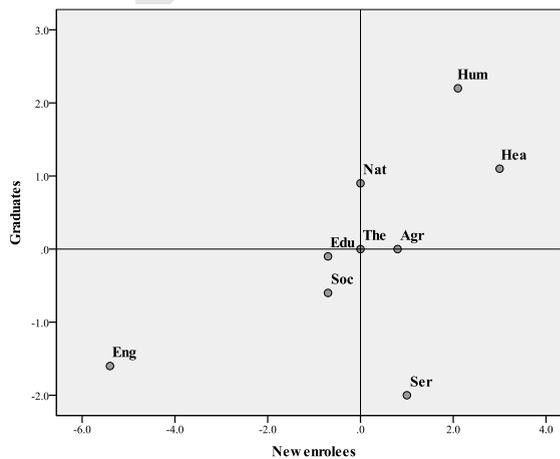


(b)

Fig. 1. Characteristics of labor market in Latvia: (a) Regional specialization in Latvia, LQ values in 2012, (b) Occupied posts and vacancies by economic activity in Latvia in 2005 and 2012, changes in %



(a)



(b)

Fig. 2. New enrollees and graduates in higher and vocational education in Latvia in 2005 and 2012, changes in %: (a) New enrollees and graduates in higher education, (b) New enrollees and graduates in vocational education

Future employees in choosing scope and direction of education should take into account not only the global labor market trends, but also regional specialization and dynamic of occupied posts and vacancies. Analysis of

this indicators show that important role in the country's economy „Financial, insurance, scientific and administrative activities; real estate activities” (K-N) sector has, as well as „Agriculture, forestry and fishing” (A) depending on region.

Calculated LQ values that represent the regional specialization indicate a relatively weak interest of prospective employees in education in relevant areas. For example, the number of new enrollees and number of graduates in programme „Agriculture” practically unchanged, despite the fact that the agriculture in accordance with the LQ calculations can be regarded as sector of regional specialization in four regions in Latvia, and over the period analyzed, despite the reduction in vacancies, changes in number of occupied posts almost did not happen (see. Fig. 1.).

One more example indicates that both in higher, as well as in professional education a marked decrease in the programme „Social sciences, business and law” was observed, but specialization of Riga and Pieriga regions is „Financial, insurance, scientific and administrative activities” (K-N) sector, and during period analyzed a slight increase in vacancies in this sector was observed (for example, industries „Real estate activities” (L) and „Professional, scientific and technical activities” (M)) (see Fig. 2.).

It is also important to consider the fact that a large proportion of workers are employed in positions for which they have no adequate level of education, and statistically this phenomenon is difficult to determine, therefore the analysis is based on the assumption that all students plan to work in accordance with their education.

A gradual increase in popularity in such areas of education as „Engineering, manufacturing and construction”, „Natural sciences, mathematics, and information Technologies”, „Health and welfare” was observed, what is in accordance with aim of country to base economic growth on high-technology and science-intensive industries.

An important factor in the choice of a particular educational program is the existence of state financed budget places. In conformity with data the biggest amount of new enrollees in 2010 and 2011 was observed in such programmes as „Engineering, manufacturing and construction” (26.1 and 26.6% of all budget places) and „Health and welfare” (16.8 and 16.3% of all budget places) (Ekonomikas Ministrija, 2012).

Changes in the structure of economy in Latvia reflect global economic trends and strive to an economy based on industries with high value added. Gradually, this trend is also reflected in the students' choice. This is partly a result of the state's activities - allocation of budget places and scholarships, thus affecting students' choice.

The question is whether these processes reflect tendencies in the Latvian labor market and are linked to them?

In order to determine the interaction between the labor market and education (education essentially impacts quality of human capital and its necessity in labor market), as well as to evaluate this interaction, correlation analysis for structural changes in the economy (employment and value added), education (higher and vocational education) and labor market (vacancies and occupied posts) was used.

The data of correlation matrix (see Table 1) indicate that the choice of future employees in favor to a particular educational direction is not related to changes in the structure of economic sectors (assessing these changes by number of employees and value added).

The calculations suggest that between SCI values of higher education and employment structure a weak positive statistically insignificant correlation is observed (value of correlation coefficient is 0.147) (see Table 1). Similar characteristics of relationship between SCI values of higher education and value added are detected. Despite the slightly higher value of correlation coefficient (value of correlation coefficient is 0.403), relationship between SCI values of higher education and value-added also indicates on weak positive statistically insignificant correlation (see Table 1).

The choice of new enrollees in favor to vocational education also is not influenced from structural changes in the economy. The correlation coefficients between the SCI values of vocational training, employment structure and the structure of value added point to a weak negative correlation (values of correlation coefficients, respectively -0.457 and -0.243) (see Table 1). Taking into account results of correlation analysis author concludes that the interaction between education and the labor market in Latvia, assessing this interaction in terms of

changes in structure of economy, is weak. So, the tendencies in country's economy do not affect the choice of new enrollees and brighter this process is reflected in vocational education.

Interaction between education and labor market is evaluated by using changes in structure of vacancies and occupied posts also.

The data of Table 2 also indicate the weak interaction between education and the labor market. In accordance with calculations weak positive statistically insignificant correlation (value of correlation coefficient is 0.462) between SCI values of higher education and vacancies was detected. A similar relation between the SCI values of vocational education and vacancies was found. Despite the fact that the correlation coefficient is slightly higher, the relationship remains weak, positive and statistically insignificant (see Table 2).

The correlation coefficient between the SCI values of education and occupied posts also points out on a weak and statistically insignificant linkage and its value is even negative in the case of vocational education (value of correlation coefficient is -0,216) (see Table 2).

Table 1. Correlation matrix for SCI values of Latvian economy, higher and vocational education

	Employment	Gross value added	Higher education	Vocational education
Employment	1	.327	.147	-.457
Gross value added	.327	1	.403	-.243
Higher education	.147	.403	1	-.027
Vocational education	-.457	-.243	-.027	1

Table 2. Correlation matrix for SCI values of Latvian labor market, higher and vocational education

	Vacancies	Occupied posts	Higher education	Vocational education
Vacancies	1	.585	.462	.371
Occupied posts	.585	1	.215	-.216
Higher education	.462	.215	1	-.027
Vocational education	.371	-.216	-.027	1

Assessing the interaction between education and the labor market on the basis of structural changes in the vacancies and occupied posts, the weak interaction also was detected.

The calculations indicate that changes in structure of economy do not determines the choice of future employees in favor to specific education (which would be desirable), as well as vacancies' dynamics do not influence this kind of choice (which would be relatively logical).

## 5. Conclusion

A rational reaction of workforce on the needs and changes in labor market is important factor, which affects sustainability of economic growth welfare. Human capital in Latvia is recognized as one of the most important resources, but at the same time in the country's labor market a number of problems are identified, hindering the realization of human capital's potential. Most of them were associated with relatively low and relatively inadequate investments in human capital. Emergence of the problem of discrepancies between changes in labor market and workers' skills and education in Latvia creates a need to assess interaction between education and the labor market. Author's evaluation was based on two aspects: changes in the structure of the economy and

changes in the labor market structure. The research results indicate that changes in the branch structure of economy practically do not affect the choice of prospective employees. A relatively weak interest of prospective employees in field of education, which would allow them to work in regional specialization areas, should be noted. Analysis indicates that changes in the structure of labor market relatively little affect the choice of prospective employees in favor to certain educational direction. During the research, the author concludes that the interaction between education and the labor market in Latvia is weakly expressed.

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## Appendix G. Abbreviations used in the Figure 1 and Figure 2

Fig. 1. Characteristics of labor market in Latvia: (a) Regional specialization in Latvia, LQ values in 2012, (b) Occupied posts and vacancies by economic activity in Latvia in 2005 and 2012, changes in %

(a) A - Agriculture, forestry and fishing; B-E - Industry and energetic; F - Construction; G,I - Trade, accommodation and food service activities; H,J - Transportation, storage, information and communication; K-N – Financial, insurance, scientific and administrative activities; real estate activities; O - Public administration and defense; compulsory social security; P - Education; Q - Human health and social work activities; R-U – Other activities

(b) A - Agriculture, Forestry and Fishing; B - Mining and quarrying; C – Manufacturing, D - Electricity, gas, steam and air conditioning supply; E - Water supply, sewerage, waste management and remediation activities; F – Construction; G - Wholesale and retail trade; repair of motor vehicles and motorcycles; H - Transportation and storage; I - Accommodation and food service activities; J - Information and communication; K - Financial and insurance activities; L - Real estate activities; M - Professional, scientific and technical activities; N - Administrative and support service activities; O - Public administration and defence; compulsory social security; P – Education; Q - Human health and social work activities; R - Arts, entertainment and recreation; S - Other service activities

Fig. 2. New enrollees and graduates in higher and vocational education in Latvia in 2005 and 2012, changes in %: (a) New enrollees and graduates in higher education, (b) New enrollees and graduates in vocational education

(a), (b) „Edu” – education (general education in vocational training); „Hum” – Humanities and art; „Soc” – Social sciences, business and law; „Nat” – Natural sciences, mathematics, and information technologies; „Eng” – Engineering, manufacturing and construction; „Agr” – Agriculture; „Hea” – Health and welfare; „Ser” – Services; „The” – Thematic groups n.e.c.

4<sup>th</sup> International Conference on New Horizons in Education

# Human Rights As A Dimension Of Social Work Education

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## Abstract

Within the framework of equality and social justice, social work is an applied science and profession which aims to solving the problems of individuals, families, groups and communities and to strengthening their problem – solving capacities via the perspective of “person in environment”. The human rights education is one of the fundamental values of this applied field. Knowing and using their rights provide them to ensure their psychosocial well-being and life in human dignity. Social workers have helped their clients by using professional roles. In this study, it will be examined the curriculum of Hacettepe University The Department of Social Work which is the pioneer in Turkey and will be discussed the place of human right education in social work.

Keywords: Social work, human rights education, Hacettepe University the department of social work undergraduate curriculum.

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## 1.Introduction

The notion of human rights which has been used widely in our age has appeared after the destructions of the Second World War and has been secured at the international level by UN-Declaration of Human Rights which was accepted in December 10, 1948. Human rights, as the starting point, which has been featured the understanding of reserving and securing the human rights against the state which is accepted as the most violating the human rights and freedoms, are innate and inalienable rights (Karataş, 2002). These rights occupy an important place as a discipline and profession in the social work.

The principle of social work which aims at developing the social functionality of the clients by dealing with the problems of individual, family and groups with the help of the approach of the person in environment can be defined as a profession serving the human rights within the frame of basic tenets of it. Social work deals with fundamentally the problems and needs of human beings. When these problems are not solved and the needs are not required, this means an abuse of a human right. Social work is responsible for removing the obstacles to use rights (Karataş,2002). The fact that the profession of social work depends on the human rights and the

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principles of social justice is simply stated in the definition of social work, accepted by IFSW in 2000. According to this definition, social work profession facilitates social change and development, social cohesion, and the empowerment and liberation of people. Principles of social justice, human rights, collective responsibility and respect for diversities are central to social work. Underpinned by theories of social work, social sciences, humanities and indigenous knowledges, social work engages people and structures to address life challenges and enhance wellbeing (<http://ifsw.org/get-involved/global-definition-of-social-work/>).

In our country, the settlement of social work discipline which adopts so distinguished purposes has importance in respect of the development of human rights. Hacettepe University Department of Social Work, which had the first social work school and had the feature as the first until 2002 has raised social workers with the master and PhD programs in addition to undergraduate education. This department in question serves as a model in behalf of some departments of social works which have been tried to be founded with the help of scientists who are from different disciplines such as sociology, psychology and medicine because of the decrease of the qualified academicians who develop themselves in terms of social work and whose numbers gradually increase. In this work, the importance of human rights for social work will be argued through the examination of undergraduate program. In addition this, there will be an endeavor to show how should be the education of human rights for the departments of social work which will be founded or have been founded.

## **2.The General Information About Social Work Education**

Towards the end of the 19<sup>th</sup> century, the solutions seeking for the problems especially poverty, which were appeared in United States and Europa after the Industrial Revolution caused the first education activity to begin in behalf of social work. The courses which was opened in German and England in 1890s and the summer school in New York in 1898 are accepted among the first practices of education (Karataş ve Erkan, 2005). In Amsterdam, the first school of social work was opened in 1899.

The social work education makes a great progress in the World since the first times when it began whereas in Turkey, coming into question of the social work arrives considerably late. In 1959, the Institute of Social Works was founded and in 1961, Academy of Social Work went into action depended upon Ministry of Public Health and Welfare. In 1967, The Graduate School of Social Work was founded in Hacettepe University and these two schools were syndicated as one school in 1983 as a result of the conditions of social, politics and economics in that age. Until 2002, Department of Social Work in Hacettepe University had the property of first school in the field of social work. In 2006, it was joined with Faculty of Economics and Administrative Sciences.

In the department of social work, in addition to the fundamental sciences with the help of generalist social work approach, there are also lectures dealing with the theory, practice and method of the social work (Kut, 2005). At the same time, the issues such as the social conditions and social problems have an important place in

the curriculum. The students of this department are encouraged to search the solutions for the social problems with the help of the research methods which are thought as both theoretical and practical. By providing for the students to intern in company with at least one supervisor in the institutions of social work, it is intended to gain knowledge about their professional role and functions such as administration and planning and use their knowledge by practicing. With the courses of practice which constitute a great part of eight-section curriculum, it is tried to increase the awareness, skill and knowledge about which roles the students will take over after the graduation, which field of problems they will face with and how they solve these problems according to social work ethic principle and values. In education, one of the main values which are tried to be gained by the students is the respect of honor.

### **3.Human Rights and Social Work**

The expression that the human rights which people have them only because they are human (Tufan and et al. 2009) is one of the most important expressions in our age. In Universal Declaration of Human Rights, there is a stress on the division of human rights as three zones. According to this information, first zone rights are civil rights and political rights. Beside these, there are some rights which are defined as first zone rights such as the right to due process, right to talk and religious freedom and freedom of movement. These rights also are defined as rights of status negativus. The state cannot interfere in these rights (Reichert, 2011). Second zone rights are defined as the rights of status positivus. Second zone rights include the ones which emphasize the preservation of the rights such as nutrition, housing and health by the state through necessary precautions and the providing of making individuals have adequate standards in respect of these rights again by the state. Third zone rights are interested with the issues which require all people in the world to collaborate. These include rights dealing with environment such as living in the peaceful, balanced and harmonious world, utilization of the trade of world and economic developments and use of clean air and water (Ife,2008).

None of these rights are more important than another. The protecting and securing of all these rights are the fundamental responsibility of the states and these rights are assured at international and national levels. However, even today, people continue to face with the violation of their rights in different places of the world. For example, in the six-page section of Turkey in the 2013 Report of the World, which was published by Human Rights Watch and included the violations of human rights around the world, it is stated that there is a continuation of the violation of the human rights such as the freedom of expression, assembly and organization, violence against women, violence against the security forces, ill-treatment and use of excessive force. ([http://www.hrw.org/sites/default/files/related\\_material/turkey\\_tr.pdf](http://www.hrw.org/sites/default/files/related_material/turkey_tr.pdf)).

The department of social work encouraged its students for necessary steps to provide required conditions for people to live healthy in order which has this three zone rights. The social workers are change agents. If there are obstacles to the way in which providing and securing of the human rights, the social workers fulfill the duty and the professional role such as advocacy, empowerment, and facilitator, bridging the gap, activist and lobbying in order to remove these obstacles and provide the social justice. Human rights provide for the social workers an

approach while they are working with the individual, group and society. There is a need to integrate human rights with the policies and practice of social work. According to IFE (2008), there is a symbiotic relationship between the community development and the human rights and both of them use each other as base in order to reach their goal.

The human rights are accepted as one of the principles of organization for social work practicing. However, the needs, which are required to be needed, oblige a transition from the endeavoring for needs to confirmation of rights. In other words, a fundamental need can be a positive right and there can be a demand from the state to be provided these rights (Tuncay ve Akbaş, 2008).

Social workers make an evaluation of needs while they remove the social problems. This can be an evaluation of individual, family, society and agency and institute. It is important for the students to understand the situation is a need or a right. The notion of need which is used in the glossary of the social work is rather complicated. The need is a requirement whereas right is an obligation. One person can demands financial aid due to her/his poor situation. The meeting of this demand should be made not as an aid but as a right of that person. For the fundamental right like living, this financial aid is a necessary. The right is not given, but taken. While the social work deals with the meeting of the fundamental rights and solving the problems, it acts from the fact that all of these are a right. If the fact that the need of the social work is appeared as result of injustices which are faced by people is taken into account, the importance of right based practicing of social work will be understood better. The starting point and reflection of right based practicing will be given just with the education ( Şahin, 2002).

When the problems faced by individuals are solved and while working with the individuals, there is a need to realize what are the social, economic, cultural and political obstacles. People cannot use of their rights or know what are these rights because of these obstacles. One of the requirements of teaching the human rights in the education of social work is to provide for student to realize their professional identity while they serve the people who are marginalized in respect of social and economic (Deweese ve Roche, 2001).

For example, while working with the groups such as the women under the pressure, refugees and homosexuals, knowing about the borders which make these groups be disadvantage can be helpful for the professional staff in order to solve the problems of these groups. It is emphasized that the impact of human rights on practicing, policy and research. The discipline of social work respects the differences with ethic principle and values and has the role of advocacy and empowerment in order to be provided the social justice. For this reason, human rights and the discipline of social work have a common ground. In the consideration of all this information, in the education of social work, the existence of human rights is absolutely a need. From this view, Hacettepe University the Department of Social Work's eight-section curriculum is examined in respect of human beings, social justice and equality and there happens these results:

With the course of the Introduction to Social Work, which is given in first year of the school, the fundamental philosophy of social work is taught and the emphasize on how to provide the justice on behalf of the individuals is made. At the same year, with the course of Introduction to Law, it is aimed students to have main law information. Since the second year, in the course of Social Work Theory 1-2-3, the fundamental approaches in the social work are told for the students who are taught the fundamental philosophy of social work. In these courses, the issues such as respect to individual, honor of individual and providing of social justice have a wide place. At the same year, with the course of Social Work Legislation, the fundamental legal regulations which are used by the students in the institution of social work and are for individuals and groups dealing with this profession, are taught. At the third year, with the course of Human Rights and Social Work, all social work legislation and philosophy are integrated and the students are made to realize the violation of human right which they are faced with. In the same year, with the course of Social Work Ethic Principle Value and Responsibilities, while the needs of human beings are met, how to solve the ethical dilemma about using the values of social work.

Even if human rights are mentioned as a word in the names of the courses in respect of quality, in fact, in the courses, there is always an emphasis on the human rights for women, children, disabled, old, young, refugee and homosexual people who are faced with various problems. In order to overcome the problems of these people with disadvantaged situation, the students are made to increase the level of knowledge and skill about the required legal regulations, the sources in the society and how they reach these sources. When these courses are taught, various methods are used such as reading, writing report, making presentation and case study. In these courses, there should not remain limited with the knowledge about the human right. Also, there should be more concentrated on the practicing in order to make students teach the human rights and social justice and interiorize this knowledge by adapting this knowledge on both their professional and special life. Beside these, film screenings, group workshops, drama and theater activities should be included into the curriculum.

#### **4.The Conclusion and The Recommendation**

Hacettepe University which has been the first school in the field of social work for long years, has an important place when it is compared with other social work departments which has been just opened in respect of the curriculum. In education, in addition to the fact that the emphasize on the human right is widen and the readings in education activity, in order to prevent to violation of human rights to clients with the situation of disadvantaged, it is important that the fundamental skills are gained such as case study, film screenings, drama activities and workshop works in the focus on human rights on behalf of these groups. At the same time, the students should be made to realize by opening master and PhD programs dealing with the human rights. There should be paved the way for being specialist activist of human rights. The departments of social work which have been just opened or will be opened, should shape the emphasis and the practicing on the human rights in the curriculum in cooperate with the Hacettepe University the Department of Social Work. In the intern period of the students, there should be an occasion for the students to practice in the organizations of human rights.

Undoubtedly, the human rights are not only important for the social work profession and discipline. The fact that the violation of human rights is increased is a truth. To prevent these violations is possible with the social policies of the countries. The human rights should be appeared in the policies in the direction human differences and needs. Also, in order to increase the awareness, knowledge and skill of people, there should be an endeavor about awareness raising of all individuals through meetings, drama activities and symposiums since the elementary school. Thus, the interiorizing of the human rights will be provided both for the society and for the people with the help of education.

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4<sup>th</sup> International Conference on New Horizons in Education

# Identity status, coping strategy and decision making process among Italian university students

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## Abstract

The research has investigated: the identity development, the decision making process, the coping strategy, predictive variables on the academic performance and the decision making style. The research involved 82 Italian university students divided into: a group of 50 subjects of mean age 21.86 (S.D = 2.35); a second group of 32 students, mean age 24.50 (S.D = 1.30).

The sample completed: Ego Identity Process Questionnaire, General Decision Making Style and

Coping Orientation to Problems Experienced. Results showed that: low-profile identity foretells the avoiding decisional style; high self-exploration is predictive of the academic success and the coping style.

Keywords: Identity Status; Coping Strategy; Decision Making .

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## 1. INTRODUCTION

Adolescence is a crucial stage where new and risky contexts require the individual to decide about his or her own future and to face the consequences of his or her choices (D'Alessio, Baiocco, & Laghi, 2006).

The adolescent, having to make choices for his or her future, has not only to consider his or her own aspirations and interests but also to possess a capacity for exploration and identity commitment and cognitive schema (Eccles, & Wigfield, 2000; Wigfield, & Eccles, 2002).

Reflection on identity appears to be an essential passage for defining projects for life; choice is a complex cognitive task, which also has to take into account all possible options, including future ones, ones that are not predictable, of the development of complex competences, as well as the ability to face changes (Eccles, & Wigfield, 2000; Wigfield, & Eccles, 2002; Pellerone, 2011).

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In the light of these premises, the objective of the present contribution is to investigate the following: a) identity development; b) the influence that it has on the process of decision making and the coping strategy; c) predictive variables on the academic performance.

### *1.1 IDENTITY DEVELOPMENT AND DECISION MAKING PROCESS*

In the last few decades various theories have emerged that deal with adolescent development in the processes of change in self-imaging; in particular, the theme was investigated beginning from the seventies using psychoanalytic and psychosocial models (Lucky, Goossens, & Soenens, 2006; Schwartz, Zamboanga, & Wang, 2009): the former model focuses attention on the relationships between infantile and adolescent growth, on the modalities through which the individual feels and works out the changes in himself or herself, and on the maturation of the Self, that constitutes the basic structure of the relationship with reality (Hartmann, 1964). The psychosocial approach, and in particular Erikson's theory, affirms that the individual develops from "psychosocial stages", and stresses that the experience that is produced by such settings influences the phases of development (Erikson, 1968; 1982).

Guichard and Huteau (2007), starting from the psychosocial model, represent adolescence as a phase of suspension, in which identity strategies are challenged and infantile identifications become identity; the adolescent constructs imaginary representations of himself or herself, which are not directly accessible to the conscience (Guichard, & Huteau, 2007; Wigfield, & Wagner, 2005).

Marcia's model (1989), instead, proposes to operationalize the psychosocial identity construct, defining it a dynamic structure and not a static one, whose formation depends on different factors like the "decisions" taken during life. The author works out the conception of identity statuses, which represent the styles through which to face identity problems, delineating two of their key components: the commitment with which adolescents make choices on material issues, and exploration of alternatives in relation to objectives, beliefs and convictions (Wigfield, & Wagner, 2005; Laghi, 2008; Pellerone, 2011, 2012; Pojaghi, 2008).

The author, jointly analyzing the two dimensions, identifies four identity statuses that correspond to as many modalities for facing events: to) Achievement, b) Moratorium, c) Foreclosure, d) Diffusion. In the achievement status the adolescent makes an identity choice after investigating the possible alternatives through experimentation; the moratorium status is characterized by tension and reflection on the different solutions, although a choice has not yet been made; that of foreclosure is typical of those adolescents that cling uncritically to the first identificatory models without experimenting with alternative ones; the diffusion status is typical of those who effect superficial experimentations, without reflections and therefore not aiming at a future commitment (Crocetti, Rubini, & Meeus, 2008; Pojaghi, 2008).

According to Marcia' model, Wigfield and Wagner (2005) organized the four identity statuses along a healthy (acquisition of identity and moratorium) vs. unhealthy continuum (foreclosure and diffusion of identity) showing that: students with a positive identity status differ from those with negative status due to the capacity to have good relationships with classmates, positive emotions connected with academic goals, a good level of self-effectiveness, self-esteem, high learning motivation and an effective process of decision making.

Likewise Kathleen and collaborators (2006), on a sample of 133 subjects, investigated how these people choose their future profession, hypothesizing a correlation between decisional modality and aptitude for planning in relation to cognitive structures. From the study it emerges that the modality with which adolescents choose

their professional future is linked to ethical principles and moral values, showing that indecision is correlated with lack of capacity for exploration both of the environment and of the self. This places young people in a risk condition, since undecided students seem to show poor perception of themselves and the social context they belong to and therefore to be more inclined to make not very effective choices.

Hence in adolescence the lack of decisional competences is correlated with a lack of that knowledge of one's own abilities and present and future preferences that is necessary to work out a self-image mirroring one's own identity (Petter, 2002).

Thus the decisional process is a complex and dynamic one and constitutes a competence that is concretized in a personal style of choice, characterized by two general decisional modalities, one typical of those people that have the tendency to seek the best possible result, defined Maximizers, and one characterized by the tendency to be sufficiently satisfied with a good alternative, the Satisficers (Nenkov, Morrin, Waerd, Schwartz, & Hulland, 2008; Schwartz, Ward, & Monterosso, 2002).

Mann (1989) proposes five decisional styles, grouped in two macro-categories: adaptive, which includes the self-confident and vigilant style (which attentively considers all the choices before facing decisions); and disadaptive or anxiety-provoking categories (during the creation of the decisional process), evasive (with a tendency to procrastinate) and complacent (following others' advice).

Likewise, the model of Scott and Bruce (1995) distinguishes five decisional styles: Rational (characterized by a complete and exhaustive search for information and consequences); Intuitive (attentive to global aspects, reducing the systematic search for information); Dependent (linked to others' advice and suggestions); Avoiding (represented by the tendency to avoid or procrastinate); and Spontaneous (the choice is dictated by immediate feelings).

The literature shows that styles in decision making are predictors of the modalities and outcome of the execution of complex tasks, like problem-solving, coping style, learning and the process of vocational decision-making. In this connection, adolescents with a sure decisional process have the ability to plan their careers and a highly developed vocational identity, which is enacted through greater exploration of the self and the environment, with initial awareness of the decisional process, followed by a capacity for evaluation of the possible career alternatives on the basis of interests, skills and values (Hirshi, & Lage, 2007).

## *1.2 DECISION MAKING AND COPING STYLE*

The literature details the role of individual differences, skills, and resources during the use of coping strategies, and the importance of understanding how people avoid and offset potential stressors.

For example, Aspinwaal and Taylor (1997) analyze the processes through which people anticipate or detect potential stressors and act in advance to prevent them from happening or to mute their impact (proactive coping). The authors describe five stages in proactive coping: 1) resource accumulation, 2) recognition of potential stressors, 3) initial appraisal, 4) preliminary coping efforts, 5) elicitation and use of feedback concerning initial efforts.

Most of studies indicate that strategies coping serve two main purposes: to reduce the risk of harmful consequences of stressful event (problem-focused coping) and to contain negative emotional reactions (coping

focused on emotions). The first type of coping is divided in two factors, active coping and planning over; the second type is expressed in four factors (Lyne and Roger, 2000):

- a) spacing (to deny the existence of the problem);
- b) self-control (not to be carried away by their emotions);
- c) accountability (considered more or less responsible for the situation);
- d) positive reappraisal (recognizing the changes that come from the modified situation, to see reality from a positive point of view).

A second group of research has distinct strategies to approach compared to avoidance strategies (for example, the dimensions of "monitoring" and "blunting" studied by Miller, 1987); in according to this theory, the greater is the sense of control experienced by the individual and the greater the use of strategies to approach.

Finally, a third perspective has especially emphasized the role of social support, which Lazar represents as a dimension common to many coping strategies. Literature shows that life satisfaction is positively correlated to coping strategy and social support seeking in fact; in detail life satisfaction is significantly correlated to decision self-esteem and to all decision-making styles (vigilance, buckpassing, procrastination, and hypervigilance). In addition, significant relationships were found among coping with stress, decision self-esteem and decision-making styles (Deniz, 2006).

Robitschek and Cook (2002) show the relationship between personal characteristics and vocational identity to investigate both career exploration processes and outcomes. The authors study a group of college students, 107 women and 98 men, according to Harren's model of personal characteristics. Results show that personal initiative predicts environmental exploration and vocational identity. Coping style predicts self-exploration. Social support is claimed to be the predictor of vocational identity by environmental exploration.

Recently, Radford et colleagues (Radfor, Mann, Ohta and Nakane, 2010) study decisional self-esteem, decisional stress, and they examine decision coping styles in a group of 743 Japanese and 309 Australian university students. Results of this study show that for both cultural groups the decisional self-esteem is positively correlated with decision making style, but is negatively correlated with decisional stress and the "complacency," "avoidance," and "hypervigilance" coping styles in personal decision making. There are some cultural differences, in particular Japanese students show lower decisional self-esteem than Australian students, but higher decisional stress, complacency, avoidance, and hypervigilance coping styles than Australian students. These findings are related to cross-cultural differences between Australian individualistic culture and Japanese collectivistic culture.

### 1.3 METHOD

#### 1.3.1 Objectives and research hypothesis

The aim of the present research is to explore whether there is a relationship between identity statuses, operationalized in high profile (acquisition and moratorium) and low profile (blockage and diffusion) and the level of the academic success measured in the students participating in the research. In agreement with the literature (Meeus *et al.*, 2010, 1993; Wagner, & Wigfield, 2005; Wigfield, 2005) it is hypothesized that

adolescents with an adaptation status obtain higher average scores in academic performance level in comparison to students with a diffusion status.

A further objective is to investigate whether there is a relationship between Identity Status and decisional styles (classified according to the Model of Scott and Bruce). In agreement with the literature (Luyckx *et al.*, 2009; Wigfield, & Wagner, 2005), it is hypothesized that adolescents with a low-profile status sometimes tend to use a dependent decisional style (that is to say one characterized by the continual search for others' advice and opinions before facing a choice), and sometimes an avoiding style (typical of those people who make continual attempts serving, as much as possible, to avoid taking decisions).

The aim is also to investigate predictive variables of academic success, hypothesizing, as confirmation of the literature, that among the predictors we find the following: I) level of identity (Renninger, 2002); II) use of a rational decisional modality (Baiocco, D'Alessio, & Laghi, 2008); III) internally locus of controll.

### *1.3.2 Participants*

The research involved 82 students (10 males and 72 females) who attended the faculty of Human and Social Sciences of "Kore" University; with reference to the varying age, the participants were subsequently divided into:

a) a group constituted by 50 subjects, i.e. 7 males (14%) and 43 females (86%) aged between 18 and 21 ( $M = 19.86$ ,  $S.D = 2.35$ );

b) a second group constituted by 32 students, i.e. 3 males (9%) and 29 females (91%) aged between 22 and 25 ( $M = 23.50$ ;  $S.D = 1.30$ ).

### *1.3.3 Measures*

#### *Questionnaire for collecting anamnestic data*

Anamnestic data were collected through the administration of a questionnaire constructed ad hoc for the goals of the research, to acquire: basic information, age, gender, school, year attended, academic qualifications and profession of parents, university performances level,

#### *Ego Identity Process Questionnaire (EIPQ)*

This is a tool by Balistreri, Busch-Rossnagel and Geisinger (1995) serving to investigate identity status development according to Marcia's Model. It is a scale constituted by 32 items that investigate the dimensions of exploration and commitment as distinctive elements. The Exploration level is measured through the analysis of four ideological domains: occupation, religion, politics and values. The Commitment level is investigated through four interpersonal domains: family, friendships, gender roles and capacity to enter into sentimental relationships.

Balistreri and collaborators (1995) report the estimates of internal validity of the tool: .80 for the results that indicate commitment, and .86 for the scores that indicate exploration; the scores that indicate reliability are .90 for commitment and .76 for exploration; the internal consistency is .72 and .71 respectively for commitment and exploration.

### *General Decision Making Style (GDMS)*

The General Decision Making Style (Scott & Bruce; 1995), constructed for detecting individual decisional style, is a questionnaire consisting of 25 items grouped in five subscales corresponding to five decisional styles: Rational (deep search for information and systematic evaluation of alternatives), Intuitive (confidence in one's own intuitions and feelings), Dependent (search for advice and opinions from people that are considered competent), Avoiding (attempt to avoid decision making), and Spontaneous (making the choice in the shortest possible time).

The Italian version of the tool of Couyoumdjian, Baiocco and Del Miglio (2005) presents good reliability (average Cronbach alpha values above .75). A subsequent Italian version by Baiocco, Lagli, D'Alessio, Guerrieri and Di Chiacchio (2007) shows that the Cronbach alpha reliability coefficients with reference to the different styles examined vary from a minimum of alpha .68 for the Rational scale to a maximum of .83 for the Avoiding and Spontaneous scales (average alpha .75)

### *Coping Orientation to Problems Experienced (COPE-NVI):*

The Coping Orientation to Problems Experienced - New Italian Version (Sica, Magni, Ghisi, Altoè, Sighinolfi, Rocco, & Franceschini) represents an improvement of the previous Italian version of the COPE, a measure originally developed in the United States.

The COPE-NIV was administered to 458 individuals (50% females) belonging to the general community, together with various measures of psychopathology and a measure of psychological well-being.

The questionnaire is formed by 60 item, grouped into 15 coping mechanisms: a) Activities: take some kind of action to eliminate stress or dampen the effects; b) Planning to overcome the problem; c) Deletion of competitive activities; d) Containment of stress; e) Finding information; f) Researching moral support; g) Expressing emotions; h) Reinterpretation positive and growth, developing the critical experience in positive terms; i) Acceptance of the situation; l) Devoting himself to religion; m) Humor taking; n) Negation; o) Behavioral detachment; P) Mind detachment; q) Use of drugs or alcohol. These coping mechanisms are being grouped into five large essentially independent dimensions: a) Social support, b) Avoidance strategies, c) Positive attitude, d) Problem solving and e) Turning to religion.

The COPE-NIV can be considered a useful and psychometrically valid tool for measuring coping styles in the Italian context.

## *1.4 DATA ANALYSIS*

The Univariate Analysis of Variance one way (ANOVA) is used to verify the hypothesis that students with a low-profile status tend to use a dependent and avoiding style; The Pearson's correlation is used to investigate the relation between decision making style, locus of control and identity status.

To verify Predictors of success at school we are used the analysis of Hierarchical Regression.

### 1.5 RESULTS: PRELIMINARY ANALYSIS

The objective of the research was to investigate the relationship between development of the identity status, decisional styles and level of locus of control in a group of university students.

From the analysis of the frequency distribution on the basis of identity development, the following emerges: 34.1% of the students are going through the Achievement identity status, followed by 23.2% with a Diffusion status; 22% with a Moratorium status; and 20.7% with a Foreclosure status. There are significant differences due either to the age variable with  $X^2 (15N= 82)= 25.60, p = .04$ ; but there aren't differences due either to the gender variable with  $X^2 (3 N= 82)= 2.43$ .

A design was done of type 2 factorial multivariate variance (Gender) X 2 (Age; 19-22 vs. 23-27 years), to verify the influence of the independent variables on exploration and commitment, but MANOVA emphasises no effect of gender x age interaction (Wilks's Lambda = .96; F = .52;  $p = NS$ ).

The type 2 factorial MANOVA (Gender) X 2 to verify the influence of gender and age on the ideological and interpersonal domains emphasises the following the main effect of age and gender; the breakdown of the univariate effects shows differences compared to the gender variable in the dimension of value ( $F(1,81) = 5.54$ ;  $p < .05$ ), and differences compared to the age variable in the dimension of politic ( $F(1,81) = 2.87$ ;  $p < .01$ ): in detail girls present higher average scores in the domains of value, and older students show higher average scores in the domain of politic than younger students.

The Univariate Variance analysis stresses the influence of age on the use of rational decision making style ( $F(8,81) = 4.23$ ;  $p < .001$ ) and spontaneous style ( $F(8,81) = 3.71$ ;  $p < .001$ ); the post hoc analysis (Tukey's method) shows the following: older individuals (23-27 years old) used more the rational style than younger students (19-22 years old), who had higher mean scores on the spontaneous style.

The type 2 factorial MANOVA (Gender) X 2 to verify the influence of gender and age on coping strategies emphasises the following the main effect of gender; the breakdown of the univariate effects shows differences in the dimension of social support ( $F(1,81) = 11.98$ ;  $p < .01$ ), and in the dimension of problem solving ( $F(1,81) = 4.51$ ;  $p < .05$ ): in detail girls present higher average scores than man.

#### 1.5.1 Influence of Identity Status

The objective was to investigate whether there is a relationship between Identity Status and Decisional Styles, in the hypothesis that students with a low-profile status tend to use a dependent and avoiding style. The Anova one way shows the significant linear effect on the avoiding styles due to identity development ( $F(3,81) = 5.23$ ;  $p < .01$ ): the breakdown of the univariate effects shows that subjects with a Diffusion status obtain the highest scores in the avoiding choice modalities ( $M = 14.73$ ;  $S.D = 5.61$ ), in comparison to individuals in Achievement status ( $M = 9.32$ ;  $S.D = 4.94$ ). Thus the initial hypothesis appears to be confirmed, according to which students with a low-profile status manifest a tendency to assume avoiding or procrastinating behaviours when faced with a choice; however, the hypothesis that students with a low identity profile also have a preference for a dependent decisional style is disconfirmed.

#### 1.5.2 Correlation between decision making style, locus of control and identity status

Pearson's correlation show that: a) spontaneous style is positively correlated with relationship dimension ( $r = .31$ ;  $p < .01$ ) and negatively with the gender role variable ( $r = -.22$ ;  $p < .05$ ); b) avoidant style is positively correlated with the importance of gender role ( $r = .23$ ;  $p < .05$ ) and relationship ( $r = .35$ ;  $p < .01$ ); c) rational style is negatively correlated with the relationship dimensions ( $r = -.26$ ;  $p < .05$ ) and positively with the work ( $r = .22$ ;  $p < .05$ ).

The decision making avoidant style is positively correlated with the use of avoidance coping strategies ( $r = .54$ ;  $p < .01$ ) and negatively correlated with the problem solving coping strategies ( $r = -.25$ ;  $p < .05$ ).

### *1.5.2 Predictors of success at school and decision making style*

In reference to school performance, the analysis of Hierarchical Regression with separate blocks shows that bringing the decision making style into model has no significant effect, although 20% of the variance is accounted for by the remaining variables, which in order of importance are exploration ( $\beta = .30$ ), and commitment ( $\beta = .36$ ).

In reference to decision making process, the analysis of Hierarchical Regression show that the age ( $\beta = .46$ ) and level of exploration ( $\beta = .21$ ) can be considered predictive variables to the use of rational decision style.

The avoidant ( $\beta = .63$ ) and dependent ( $\beta = -.21$ ) styles are predictive variables to the avoidance coping strategies; the level of self exploration can be considered a predictive dimension to the problem solving coping strategies ( $\beta = .42$ ).

## *1.6 DISCUSSION*

The present work, starting from the limits and the external validity of Marcia's model, has explored the relationship between the development of identity statuses and the modalities used to face the process of vocational choice, through the use of a particular decisional style (Model of Scott & Bruce, 1995). The results of the research show that, for classification of identity statuses, a higher percentage of adolescents goes through the status of Foreclosure, followed by those in Diffusion and Moratorium; these data confirm that, consistently with the average age of the group, most adolescents still cling uncritically to the first identificatory models without experimenting with possible alternatives; others make superficial explorations not oriented towards a choice and a future commitment.

The results obtained also point out the main effect of the gender variable on some domains: boys express greater predilection for the area of politics, compared to girls, who attribute greater importance to the dimension of value. These results are in line with the literature, which stresses the presence of gender differences in friendly relations: while relations between girls are based on the sharing of interests and values, those between boys are based on personal experience and feelings (Garelli, Polmonari, & Sciolla, 2006; Tani, Rossi, & Smorti, 2005).

The analysis of decisional styles shows that girls have a greater propensity to make choices linked to other people's advice and suggestions, a datum in agreement with the literature (Gati, et al. 2010); younger people use a spontaneous decisional style significantly more than older ones. The latter datum confirms the traditional theories on development, which maintain that there is progressive evolution of the modalities of choice, from a

more instinctive style or one linked to the desire for immediateness to more logical and rational decisional modalities.

The correlations between GDMS and EIPQ confirm the initial hypothesis, according to which adolescents with a low identity profile (Diffusion Status) tend to procrastinate the most important choices for their life, as confirmed by the literature (Luyckx *et al.*, 2009; Wigfield, & Wagner, 2005); although the assumption appears to be disconfirmed that a low-profile identity status is also associated with use of a dependent decisional style.

The subjects with the propensity to use avoidant style, during decision making process, have recourse to avoidance coping strategies, but they haven't the tendency to use problem solving strategies to resolve their problems. The avoidant and dependent decision making styles are predictive variables to the avoidance coping strategies; the level of self exploration can be considered a predictive dimension to the problem solving coping strategies.

### 1.7 CONCLUSION

The research investigated the relationship among development of identity, coping strategies and decisional style in university students during the process of vocational decision making, in an endeavour to confirm some fundamental theoretical assumptions, to offer interesting suggestions and useful implications for the application of vocational planning actions.

The initial assumption was that today's assessment procedures should not be used for the purpose of classifying the personality, but to furnish the adolescent with useful information to stimulate in him or her self-discovery and the capacity to ask himself or herself some questions. In this connection, the method of quantitative investigation was backed up by an idiographic procedure helping to favour an analysis of the roles taken on by adolescents faced with the decisional process and of the modalities with which it is possible to express self-concepts and identity development in the transition towards integration in the labour market.

In this connection, economic changes and changes in the labour force of today's society, which often limit the vocational decisional process, stress the fact that not everyone can always make training or professional choices on the basis of their interests; in this case Holland's theory and the application of the model can only help students to explore career choices within those professional alternatives that are feasible and available.

Hence intervening in the development of the adolescent identity process proves to be fundamental for the purpose of improving the level of school performance, but above all the decisional process, since adolescents with a more evolved identity use a multiplicity of decisional styles that are well suited to contextual situations.

In conclusion, considering the importance of the decision-making for the present and future life of every individual, it is a topic which remains to be studied in depth.

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4<sup>th</sup> International Conference on New Horizons in Education

# Impact (s) of doctoral degrees held by faculty members in Portuguese higher education

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## Abstract

In order to verify the impact(s) of doctoral programs processes of faculty members in higher education in Portugal, we applied a questionnaire survey to the completed PhD of teachers. This study is based on a questionnaire survey to the doctoral degrees of faculty members in Portuguese higher education, completed between 2007 and 2012, the survey was held between April 16 and May 6, 2012, to all teachers in Portuguese higher education having quickly reached 1001 answers that we briefly analyze here. It appears that in this period of analysis, there were many faculty members who have successfully completed their doctoral process, meeting the quality standards that enable the integration of higher education in the Portuguese panorama of internationalization, especially in view of the requirements of the Bologna process.

Keywords: Education, Qualification, Higher Education

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## INTRODUCTION

The conducted questionnaire survey was sent electronically to all teachers in Portuguese higher education, which corresponds to a universe of 25849 faculty members, distributed by public University and Polytechnic higher education and private University and Polytechnic higher education. As already mentioned, 1001 valid responses to the survey questionnaire were obtained.

In the sampling calculation, it was decided to use the method of "simple random sampling is a method characterized by giving the same probability of selection to all" (Vicente, 2012) the elements that make up the sample, considering a universe of 25849 (Ciência, 2012) faculty members that integrate the Portuguese higher education system, it would be necessary to receive 647 valid questionnaire surveys for a 99% confidence interval with a maximum error of 4.93%. Since the number of teachers who completed the doctorate between 2007 and 2012 is certainly less than the number of teachers that are a part of the system (25849) and with the number of valid questionnaires reaching 1001 questionnaire surveys, it was thus possible to be considered that the results are

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very reliable, since it is a randomly selected representative sample that meets the characteristics necessary to meet the objectives set for the study – to have held a doctorate between 2007 and 2012 - and the sample (647) far exceeded its size (1001 valid questionnaires), allowing to obtain estimates with the imposed level of accuracy and reliability.

## 1. Results Analysis

University faculty members represented 553 (55.2%) of the respondents and the polytechnic faculty members 448 (44.8%) of which 126 of these are linked to the universities' polytechnic subsystem. The effort of holding a doctoral degree by the polytechnic faculty members had already intensified, as it is now clear, even before the revision of the proper Career Statute. Demonstrating that the teaching staff of our higher education institutions always regarded their qualification, as its fundamental concern, as a way to ensure that the education given to students is, for their part, as best and most appropriate as possible.

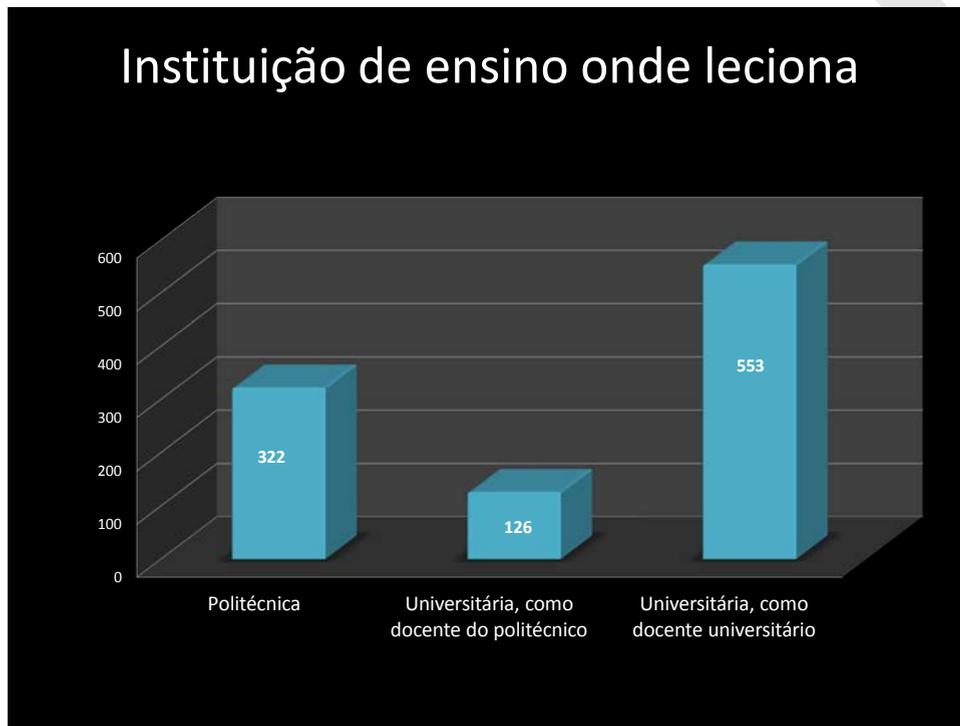


Figure 1 Institution where one teaches

Respondents report a mean of 13.6 years at the institution where they teach that is, they already held a significant teaching experience before moving towards a doctorate degree. In general the teachers who do the PhD do not have had experience at another institution, since the average length of teaching in higher education is 15.6 years, in other words, only slightly higher, corresponding to only two extra years. Demonstrating that these faculty members are far from meeting transient needs of the higher education system, although many of them have had and still have precarious contracts for many years with little or no guarantees, despite their effort and

commitment in both seeking permanent qualification and cyclically spreading an understanding of excellence with a strong impact on the economy and society among their students. It is not determined the effect that the unceasing pursuit of knowledge by teachers in higher education, has in the transfer of knowledge that is done by teachers at various levels within and outside higher education institutions, on a daily basis, whose preferred recipients are their students.

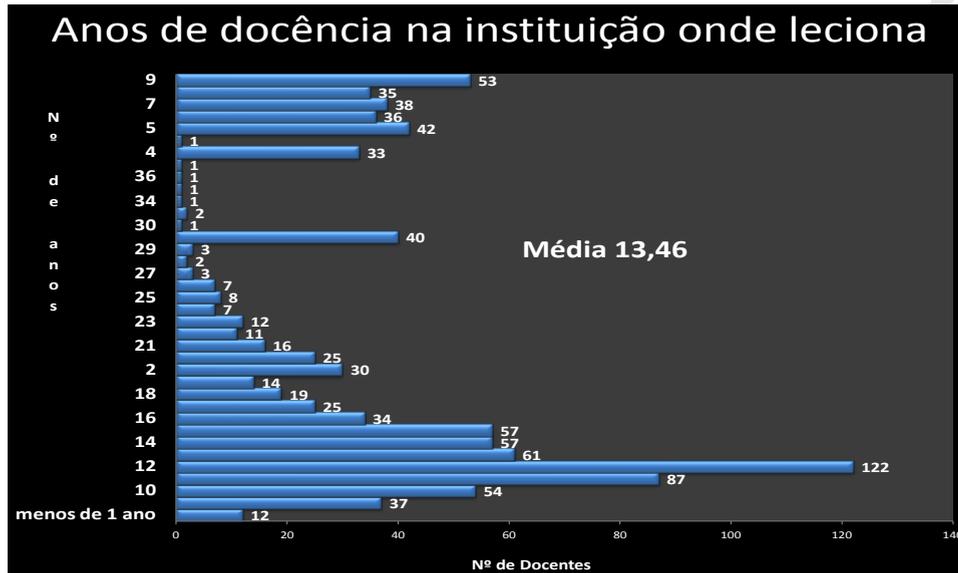


Figure 2 Years of teaching at their institution

The vast majority of teachers, that is, 712 (71.2%) when joining their present institution only had a graduate degree and 218 (21.8%) already held a master's degree. Only 51 have joined the institution with a doctorate degree. Since then the pursuit of higher qualifications, has been a constant goal by the faculty members of our higher education institutions, whose importance of skills and the impact it would have and has in the Portuguese social and economic fabric, deficient in higher qualifications, has always been understood by them.



Figure 3 Degree with which one has integrated the institution

The start of the PhD is dated before 2007, in most cases, which is before the adoption of a legal statute by institutions, and 2006 is the year with the highest number of early doctoral degrees.



Figure 4 - Start of doctoral degree (year)

Of the respondents, 461 (46.1%) did not receive any leaves to undertake a PhD, a number that clearly shows the lack of conditions that many faced. Although there weren't encouraging conditions to a good performance in

the doctoral process, considering all the psychosocial involvement that this type of stages in the lives of faculty members requires, the same motivation in actively contributing to the development of their country and its institutions, demonstrates a remarkable sense of responsibility and citizenship, still ensuring a competitive higher education at European and global level, in a very global market.

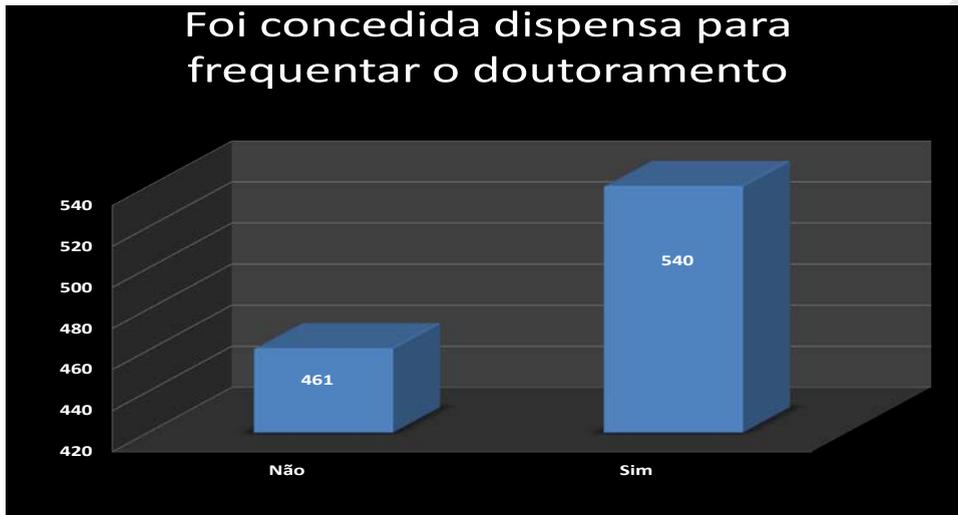


Figure 5- a leave was granted to undertake the doctoral degree

389 (38.9%) of respondents did not apply to any system of financing for their research project. Bearing all inherent costs in the process of doctoral programs, that are not depleted in fees, since they imply the constant need for updating literature, traveling to conferences, among others. Still they have taken up these costs, no doubt explaining their motivations and success in their doctoral project. However the impact of this education par excellence is directly and cyclically reflected in their students having a strong weight in the economy and society but also in the institutions where they work as faculty members, becoming more competitive and credible in attracting a greater number of students given the qualification of its faculty staff.

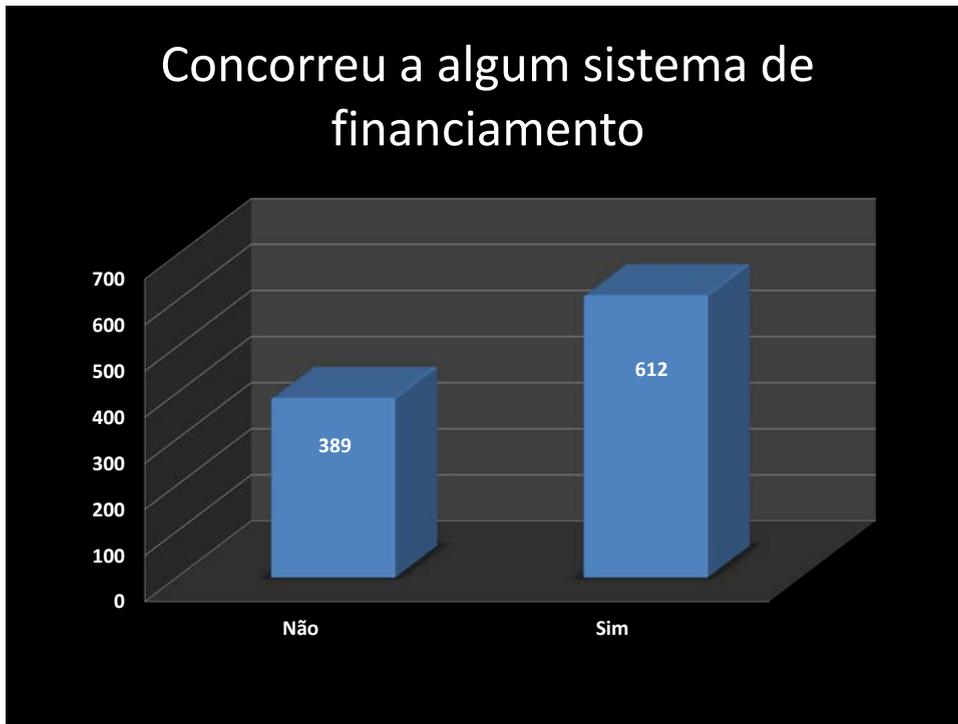


Figure 6 - Applied to any system of financing

Not only providing support falls far short of what is expected, as we have seen, but inbreeding is much more limited than what is suspected. 653 (65.2%) of respondents did not attend the Masters at the institution where they work and 544 (54.3%) did not undergo a doctorate program in their institution.

It is noted that in most cases teachers seek other higher education institutions, than their own, to make their doctoral programs, an issue that can relate to the educational offer by the institution where they teach (do not forget that only recently polytechnics have master programs to offer), freedom of decision, complement to the future educational offer of the institution where they teach, providing the institution with other future educational opportunities.

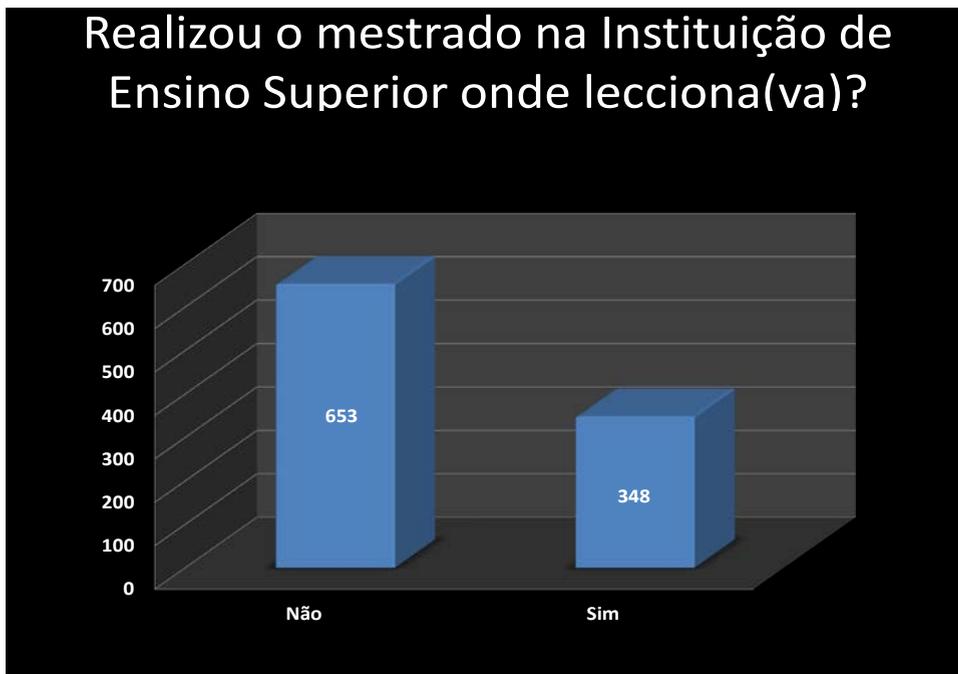


Figure 7 Carried out a master's degree in the Higher Education institution where they teach (taught)

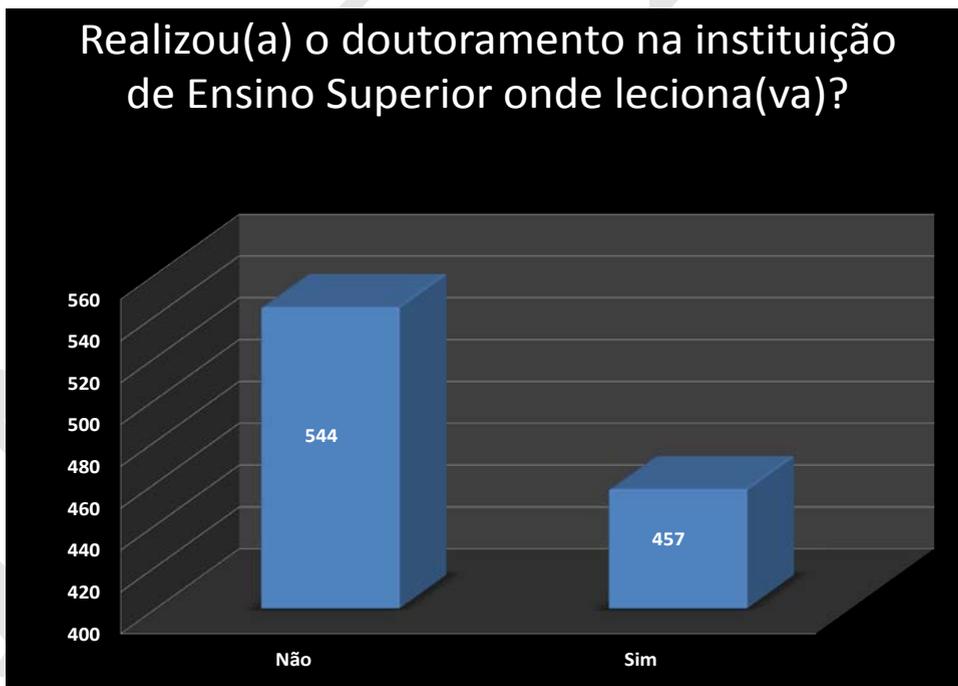


Figure 8 Carried out a Ph.D. in the Higher Education institution where they teach (taught)

However it is also worthy understanding that achieving a PhD by lecturers that is still the case of 473 (47.3%) of respondents, even it is still important; it is not yet a majority.

In the polytechnic, 123 of doctorates already belonged to "the permanent staff" on the date on which they got their doctorate, without it bringing them security or additional revenues. That immediately deflates the idea that the direct passage to associate professors or assistant professors that would heavily penalize the financial stability of the institutions, on the contrary he teachers are the first to understand that a quality higher education goes unequivocally through their qualification and nothing more because only then are they able to meet the international standards that govern these institutions. It is awkward if institutions whose core is based on skills and knowledge transfer, keeps the costs of human resources invariably low, it could mean two things: either they had not allowed intensive qualification the of their faculty members, or they didn't have the ability to maintain the most qualified resources, in both situations there would be a loss, since the differentiating character in these institutions is precisely the strong investment in knowledge capital.

And in the remaining cases of teachers of polytechnic Institutions and university lecturers, when respondents began their doctoral program, they lacked any guarantees in terms of career integration. Lecturers even today do not have that, that is, despite the precarious career of teachers in higher education, They will do whatever they can in favor of the institution where they work, enhancing it with their academic performances and the whole setting that results in the transfer of knowledge for their students.



Figure 9 Professional category at the date of completion of the Ph.D.

## 2. Conclusão

Most teachers in Portuguese higher education responded affirmatively to the challenge of the Bologna process and to internationalization of our higher education institutions, having initiated and completed their doctoral projects before the approval of the institutions' legal statutes, which allows the transition of teachers with a PhD to a less precarious contractual relationship.

On average teachers integrate their higher education institution for thirteen years, which is a considerable time, taking into account the inertia of the system to generate conditions for carrying out the processes of doctoral programs by faculty members, aimed at attaining the standards required to our higher education system.

The overwhelming majority of teachers, who are part of the Portuguese higher education system, integrated the system with a graduate degree regardless the education subsystem where they provide service.

A significant number of teachers did not receive any type of leave of absence, to perform the demanding qualification process of a PhD, with which one aims to respond to the clear need for quality and internationalization of Portuguese higher education in accordance with the best international standards.

More than half of the faculty members did not apply for any source of funding to carry out their research project, which makes us question the expectation of teachers in relation to financial support systems for existing qualifications.

The vast majority of teachers choose other higher education units to carry out their doctoral program, than that where they teach, registering the same trend as it was verified when obtaining a master's degree.

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## Impact of EU education programmes on challenging “otherness”: Turkish case

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### Abstract

“Otherness” is one of the main challenges for European Union project that aims to bring different cultures together in a war thorn continent. To achieve these goals, the Union had developed and implemented various programmes, like the Lifelong Learning and Youth in Action. These programmes bring the pupils, students, teachers and trainers within a multinational context. In the case of Turkish - European relations, each side had always been at the edge of the spectrum of otherness. In that case as a full member to the EU education and youth programmes, Turkey has become a prominent example of how well defined educational and social activities can help to close the gap of the spectrum.

Keywords: EU, education, otherness, Turkey, European Integration

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## INTRODUCTION

In these days we are uncovering the inner workings of societies and especially understanding the mechanisms of interaction between individuals and groups. Still we are far away from understanding the larger picture, especially solving the mysteries on how the societies themselves as bigger entities interact with each other. Do societies act on some kind of reason, or do they act on some kind of social instinct? How do societies interact with their surroundings? “Otherness” as a term reminds us, the people who are different from what we are today. It includes a state of distance, generally based on lack of the first hand information. As individuals we define the outer world according to the magnitude of distances to our own entity. We classify them trying to understand if they pose a threat to us, or would they be good allies.

This continuous effort in our lives that is shaping our relations with others, might have a correspondence at the larger level. When it comes to otherness, it is generally not the individual experiences that create the distances, but rather the recollection of memories buried deep inside the culture and history, which they are generally relates to the society. There must be a broader picture, awaiting us to resolve.

Carl Sagan (1997) said after seeing the famous picture of the earth from 6 billion kilometers away taken by the Voyager spacecraft that:

“From this distant vantage point, the Earth might not seem of any particular interest. But for us, it's different”.

When we have the possibility to look from a further distance, the picture changes and the possibility to understand the broader picture rises. As observing galaxies from a distance allows understanding how they interact, it is also possible to have a broader look on to societies. The rules of interaction should be different from the individual where short term becomes a few dozen years and long term becomes centuries. It becomes harder to explore and comprehend to the full extent. In that regard it is not a surprise that famous social scientists have a bigger tendency to understand the macro-scale.

Otherness is defined by difference, typically difference marked by outward signs like race and gender. As such, otherness has also been associated predominantly with marginalized people, those who by virtue of their difference from the dominant group, have been disempowered, robbed of a voice in the social, religious, and political world (Onbelet, 2013). A cultural difference also contributes to otherness.

This article doesn't aim to discuss the identity and otherness at the sociological level, but trying to understand how intercultural education programs like the ones within the European Union impacts the collective identities. European identity is also one of those collective identities with an reflective appraisal of the “other”, as well as its internal dynamics.

### Identity

Persons have an identity by positioning themselves relative to other persons and by giving to these relations a meaning that is fixed in time. An identity guarantees the being a person in the flux of time. The same holds for groups: a group has an identity if it succeeds to define itself vis-à-vis to other groups by attributing meaning to itself that is stable over time. (Eder, 2009)

Personal identity helps individuals to define their daily relationship with their outer world. They acquire their identity while they grow up in a community. In short it is the society that creates and defines individual identity. The information to create a self-identity comes from the data produced from the relations with a persons close community. Thus personal identity is in the form of reflected appraisals. We are not born with an identity—others give it to us. Our parents, our friends, and our teachers all tell us who we are through reflected appraisals—messages we get about ourselves from others (Hybels and Weaver II, 2004).

Since it is the social setting where identities are forged, lack of social interaction during the infancy and early childhood may cause some critical loss in the process of creating a self-identity. For example feral children, who

were somehow separated from a human community during their infancy, are observed to neither being able to establish the social connections nor being able to learn any human language.

Feral children lack the basic social skills that are normally learned in the process of enculturation. For example, they may be unable to learn to use a toilet, have trouble learning to walk upright and display a complete lack of interest in the human activity around them. They often seem mentally impaired and have almost insurmountable trouble learning a human language ([http://en.wikipedia.org/wiki/Feral\\_child](http://en.wikipedia.org/wiki/Feral_child)). Thus, being a part of the community has a major role in creating individual identity.

Besides the individuals, social groups and communities also have their own collective identities. To understand the behaviors of social entities, like nations, belief groups, races etc. collective identities should be put into focus.

Collective identity can equally refer to cities, to regions, or to groups such as political parties or even social movements. Since some years collective identity has also become an issue with regard to Europe where public debate is increasingly concerned with the problem of a European identity that is seen as lacking or as needed. But why do societies, groups and even a union of nation-states such as the EU need an identity? For a person an identity allows being recognized as something particular vis-à-vis the others. But why do groups up to nation and even transnational phenomena such as the EU need an identity? (Eder, 2009)

It is almost obligatory for any intelligent being or organization to have an established identity. Just like the individual identity, “others” are pretty important in the establishment of collective identities. It is not a coincidence that a community of the European Union having a hard talk on what defines the European identity.

Collective identities reflect the way individuals and groups internalize established social categories within their societies, such as their cultural (or ethnic) identities, gender identities, class identities, and so on. These social categories shape our ideas about who we think we are, how we want to be seen by others, and the groups to which we belong.

Ideas of similarity and difference are central to the way in which we achieve a sense of identity and social belonging. Identities have some element of exclusivity. Just as when we formally join a club or an organization, social membership depends upon fulfilling a set of criteria. It just so happens that such criteria are socially constructed (that is, created by societies and social groups). As such ‘we’ cannot belong to any group unless ‘they’ (other people) do not belong to ‘our’ group. Sociologists set out to study how societies manage collective ideas about who gets to belong to ‘our group’ and which types of people are seen as different – the outsiders of society (<http://othersociologist.com/otherness-resources>). “Otherness” is the key to understand the interaction between collective identities.

## **Otherness**

### *Natural and Constructed Identities of Europeanness*

East and West are not only the names of directions, but also the names of a cultural spectrum. A spectrum of distance defines that the level of “otherness”. This distinction has a historical background. Although Europe and Asia are geographically one single continent, the real distinction comes from cultural background rather than a geographical one (<http://en.wikipedia.org/wiki/Eurasia>). Defining the European peninsula, not bigger than another one India, as a separate continent should be regarded as an effort of the establishment of the “European” identity. First written usage of the names as Europe, Asia with Libya (Africa) dates back to Herodotus (5th century B.C.).

European Union should be considered as a continental peace project with global effects. Uniting Europe under one umbrella is not a new idea. Interestingly, it was the Turks, who emerged as a non-Christian social entity caused the first discussions of uniting the continent against the common enemy “the others”. The effort of defining the European Union project, according to a 15th century enemy is ironic in itself. Still identities and

concepts like “otherness” are written deeply in the public consciousness and culture of the respected societies. This is why the concept of “otherness” should be considered as an important factor in the European integration processes.

European Union web site defines the entity as a unique economic and political partnership between twenty seven European countries that together cover much of the continent. It is defined as a political and economical union. Defining the union depending on “otherness” is carefully avoided, as it would be politically not correct. Although it is a structure of the union of states and their political and bureaucratic integration EU has a social level. For the ordinary citizen EU has cultural and social meanings. Being a “European” can be considered as a cultural identity, a definition to separate the individual from others. EU citizens rarely define their identity separately from their national identity.

In a world where social communities are governed, there will always be identity constructionism. In this regard the programmes and activities introduced by Brussels, could also be understood as an effort to construct a new identity. Smith (1997) defines national identity as a product of both “natural” continuity and conscious manipulation. Cerulo (1997) defines Smiths approach to national identity as a middle-ground solution, linking social constructionism to more essentialist views. According to Smith (1997) natural continuity emerges from pre-existing ethnic identity and community; conscious manipulation is achieved via commemoration, ideology, and symbolism. In that regard there should be distinction between the constructed European identity and the newly constructed and constructed European identity.

According to Euro barometer 77 (Spring, 2012), 54 % of the citizens of the EU mainly define themselves with both their own nationality and being a European. 3 % of the population defines themselves as Europeans without mentioning their nationalities. Still 38 % of the Europeans tend to define themselves as only with their national identity not mentioning being a European. UK citizens holding the upper hand with 60 % as defining themselves as only with their nationality (Eurobarometer, 77). On the other side of the story and according to another survey made in 2009, only 30 % of the Turks think they are Europeans (Eurobarometer, 71).

### *Interaction between identities*

Europe is a large continent with a population exceeding half a billion people. There are dozens of nations, races, beliefs, sub-cultures and other kind of social groups consisting the European community. Putting this social complexity besides its rich and deep history, it is not easy to understand the interactions of those social groups. Historically, Europe has been the stage of continuous turbulence, barbarian invasions, religious struggles, two major world wars etc. The idea of uniting Europe had never been easy. Since its first introduction in the 15th century as a solution against the Turks, dozens of millions of lives were lost. It should be said that Second World War became the eye opener for the most. For the last 60 years, the union emerged as a common market first, later turning into a political union. Still the competing national identities are still a concern for the Union, with its advantages on creating a dynamic and diverse society.

European identity is still competing with the national identities. Still EU is aware of the hardships of establishing a multinational entity and making half a billion people to believe its values and to accept its identity. Therefore EU has been working on fostering intercultural dialogue and European integration with various programmes for the last 30 years to help the construction of a new collective identity.

“Otherness” is like a measurement tool, defining the distance to different people or social groups. Some might be close and some might be at the far end of the spectrum. So we can observe different levels of “otherness” within the EU itself. It has not been long when some of the older member communities to the EU, reacted to the accession of the Eastern states, like Poland. That reaction was characterized with the famous “Polish Plumber” case.

After the rejection of European constitution in 2005 former Polish dissident Adam Michnik bitterly remarked during an interview with L'Express: "In your eyes, we don't belong to the family of Western states: we are

barbarians. Paradoxically, the Poles were more accepted in France before enlargement." Even though he was referring to the Franco-Polish relationship, which had been damaged in particular by the referendum, the Polish intellectual was at the same time expressing the more broadly shared frustration of former Eastern states with what was seen as the unenthusiastic welcome that had been extended to incoming EU members by France and many other member states (Capelle-Pogacean, 2011).

On the spectrum of "otherness" where Christian European communities stand at one end, Muslim communities sit clearly on the opposite. Although European Union is a modern political initiative, the European communities are mainly happy with the contrast between them and the Muslim world.

As Stråth mentions the meanings of Europe are a discourse of power on how to define and classify Europe, on the frontiers of Europe, and on similarities and differences. In many versions the emphasis is on Europe as a distinctive cultural entity united by shared values, culture and identity. References are made to Europe's heritage of classical Greco-Roman civilization, Christianity, and the ideas of the Enlightenment, Science, Reason, Progress and Democracy as the core elements of this claimed European legacy. There are subtexts of racial and cultural chauvinism, particularly when confronted with Islam. Europe acquires distinction and salience when pitted against the other. When the differences within Europe are emphasized, it is often in the form of unity in diversity (Stråth, 2002).

Interestingly with a continuous and uninterrupted existence of Muslim communities on the European continent since the beginning of the 8th century A.D and their contribution to the birth of modern Europe, Islam had always been the "Other". It was the reflected appraisal of European collective identity. Muslim population in continental Europe exceeds 38 million of which 16 million as actual EU citizens (more than 7 %) ([http://en.wikipedia.org/wiki/Islam\\_in\\_Europe](http://en.wikipedia.org/wiki/Islam_in_Europe)). Still Islam is not accepted as a part of the contemporary European culture. In Europe as general more than 140 million people within a population of 800 million, define themselves as Muslims. That equals to almost 18 % of the total population of the continent.

Turkey is the biggest of all of the Muslim communities in Europe, not only by its population of 74 million but also with almost 9 million immigrant Turks living in various EU countries. Perceived, as the biggest archenemy of Europe in history, Turkey and its interaction with European communities deserves a better look. Being across the farthest side of the spectrum Turkish case is also like a litmus paper on the possibility of challenging otherness for a peaceful and united Europe.

During the identity creation process of the new united Europe, a modern approach was chosen to define the genetic codes of being a European. Therefore the new European identity relies on the universal values such as human dignity, freedom, democracy, equality, the rule of law and the respect for human rights. These were the core values of the EU, which are set out at the beginning of the Treaty of Lisbon. They are common to all Member States, and any European country wishing to become a member of the Union must respect them ([http://europa.eu/lisbon\\_treaty/glance/rights\\_values/index\\_en.htm](http://europa.eu/lisbon_treaty/glance/rights_values/index_en.htm)). Still European communities have an unwritten identity code, which also includes the other as its reflected appraisal.

There has to be a clear distinction between the natural identity of Europe perceived by the society, and somewhat ideal and constructed identity that the EU tries to create. The latest economic crisis created a lot of tension on the societies and put the European project into a test. There have always been EU skeptics. There are people like Francis Fukuyama who define the current crisis as not only being a financial one, but a glimpse of a deeper identity crisis. In his talk given at Geneva University in November 2011 he depicts the problem of failing to create a European identity. In his words:

There is a deeper failure at the European level, a failure in European identity. That is to say, there was never a successful attempt to create a European sense of identity and a European sense of citizenship that would define the obligations, responsibilities, duties and rights that Europeans have to one another beyond simply the wording of the different treaties that were signed. The EU in many respects was created as a technocratic exercise done for purposes of economic efficiency.... Wealthy Germans feel a sense of noblesse oblige towards poorer Germans; this social solidarity is the basis of the German welfare state. But they do not feel similar obligations towards the

Greeks, whom they regard as being poor disciplined (<http://blogs.the-american-interest.com/fukuyama/2012/01/12/european-identities-part-ii/>).

So, is it possible to overcome those “otherness” issues when it comes to accepting Turkey and its people as a partner or colleague? Is it possible to help challenging that otherness with the help of educational support programmes like Comenius, Leonardo da Vinci and Erasmus?

### Perceived Image of an “Other”

Creating a union, in a war thorn continent was never an easy task. There will always be challenges a head. As Fukuyama underlines the technocratic and political grounds of the union, will only be sustainable if a common European identity would have been created. Hardships impose a level of threat to the creation of a modern European identity, but they also create a chance for the societies to blend in as they have to display solidarity.

Turkey, is an important figure on the identification and clarification of identity problems in Europe. Although it has almost been 2 hundred years, that Turkey choose to become a part of the European system, things are different on the “other” side. In political terms Turkey was a part of Europe since mid 14th century. The feeling of “otherness” for both sides is the main reason that divides both sides of the spectrum. After becoming a official candidate country to the EU, the discussion within the other European societies increased. Turkey has adapted the Copenhagen and Maastricht criteria long ago, which theoretically let her become a part of the EU. Still the real European identity which depicts the Turk as the other keeps on discussing.

The quoted text below is from the web site of the British National Party and reflects one of the most extreme and negative perceptions of the “Other”, it can be valuable for reflecting the driving forces of the interaction between the EU and Turkey.

EU membership will grant all 71 million Muslims in Turkey the right to settle anywhere in Europe. This can only speed up the mass Third World invasion of Europe, which is already underway. In addition, the Muslim population has a birth rate three times higher than native Europeans, tripling in the last 30 years and accounting for 85 percent of Europe’s total population growth in 2005 (<http://bnp.org.uk/2009/04/barack-hussein-obama-demands-eu-welcome-71-million-muslim-turks/>).

These are the views of a Nationalist party, which might be accepted as an extreme example. But even at the most liberal view against the accession of Turkey into the EU, one might easily observe the pattern of “us” and “them”.

The idea of Islamic or Turkish threat has historical roots. European fears, and stereotypes of Islam as “violent, fanatical, expansionist and anti-progressive” (Hafez, 2000), have been reinforced following the 9/11 incident. It seems like that there is a common public opinion in Western societies that Islamic values are “incompatible with ‘modern’ values. In effect, Islam and the Islamic Other are socially constructed as being in opposition to liberal values central to European identity (Flood et al, 2007).

Flood, Hutchings, Nickels and Miazhevich also reaches to a conclusion that Western media (French and British in that regard) plays a major role in defining Islam as the ultimate “other” of Europe. The language used by the media carries four important dimensions:

- Their violent, anti-liberal Islamism vs. our peace-building, liberal values.
- Their intolerance of free speech vs. our respect for free speech.
- Their racial hatred vs. our respect of diversity.
- Their sectarianism and mutual loathing vs. our secularism and respect for one another (Flood et al, 2007).

Ruiz-Jimenez and Torreblanca argues that Turkey’s accession to the European Union is one of the most controversial and divisive topics the EU faces. Underlining the deeply divided environment within European governments and societies on whether Turkey should become a member or not they divide the problem of objecting its accession in three different approaches as utilitarian, identitarian and post-national hypotheses

(Ruiz-Jiménez and Torreblanca, 2007). They reach a conclusion that supporters for Turkish accession are mostly counted among the ranks of those having a post-national vision of the EU, which relates Turkish accession to EU's values rather than their national stand point. Conversely, those against Turkish accession are more likely to be so departing from identity-related arguments. We also find that the utilitarian dimension is the least important of the three which means the benefits of Turkish accession is the least of the public concern (Ruiz-Jiménez and Torreblanca, 2007).

Cultural entities whether a nation or a multinational union, moves and interacts slowly but with a huge power. This huge power produced by the interaction of the societies or cultures lead to further merges or splits to form new cultural entities in the course of history. The power of interaction becomes at full height when it is about the separate end of the spectrum.

### **Effect of EU Programmes on “Otherness”**

#### *EU Programmes and Turkey*

European Union community programmes are between some of the tools to speed up the integration process within the member states and tools for the introduction of new member societies to the community. Lifelong Learning Programmes, one of the largest in the EU, has a specific objective of reinforcing the role of lifelong learning in creating a sense of European citizenship based understanding and respect for human rights and democracy, and encouraging tolerance and respect for other peoples and cultures (Strategic Priorities, 2012). With uncountable human cost of previous struggles, fighting against discrimination, racism and xenophobia is a priority for a more coherent European unity in the future.

Considering the deep and continuous historical and social relations between these two entities -where both define itself mostly by defining who the other is- we are now capable of measuring the possibilities for further interaction and cooperation. Although Turkey is not a member of the Union, it is a member of some of the EU Programmes like Lifelong Learning (LLP) and Youth in Action (YiA) Programmes since 2004. Turkey became a leading country after becoming the 3rd biggest programme country as of 2012 in terms of budget and number of beneficiaries. This success is remarkable as a candidate country, since there are 31 member countries to the community programmes in which 27 of them are EU member states. As of 2010 there were already 175.000 Turkish students, teachers and professionals benefited from the programmes and had cultural contact with their European counterparts and more than 100.000 Europeans visiting Turkey to share a similar cultural interaction with their Turkish counterparts (Çalikoğlu, 2011).

With priorities like fighting with discrimination, helping the establishment of a European identity and fostering EU citizenship and more, lifelong learning and youth in action programmes became an important tool for challenging the “otherness” in and around of the EU. What makes the Community Programmes a unique facilitator for developing the relations between two cultural entities is that for the first time, people from the different sides of the “otherness”, came together? Teachers, pupils, students and other professional found the chance to work together on social and cultural issues at local, regional, national and European level. They created a great synergy between identities and raised a new understanding of the “other”. Prior to the EU programmes, the contact between Turkish and other European societies were mostly based limited mediums of interaction, like tourism activities. Most of the European participants had only connected with immigrant populations in their country, where “otherness” was felt at its height.

Between 2004 and 2010 Turkish beneficiaries managed to complete 8.540 projects under both the LLP and YiA programmes. In just 2010, they managed to create around 13.000 partnerships from all over Europe. Of the 175.000 Turkish beneficiaries 42 % of the beneficiaries are students (mainly beneficiaries of the Erasmus programme), 30 % of them are young people (mainly beneficiaries of the YiA programme), 19 % are teachers and trainers, 5 % are academic staff and 4 % are from other professions. (Çalikoğlu, 2011).

*Cases on Positive Impact on "Otherness"*

Turkey, being on the other side, EU programmes gives a rare opportunity to observe how different identities interact and how the distance of "otherness" is effected. The following examples are derived from different interviews with the participants of LLP and YiA activities. They resemble how the perceived distances can easily be shortened during short activities and how prejudices break down.

"It must be the immigration and the Euro..." said Clara a young girl from Catalonia, Spain during the summary presentation of their Comenius project. They were talking about the growing poverty across Europe. The crowded group of teachers and students were gathered from 5 different European countries Germany, Hungary, Spain, France and Italy were discussing the European identity. The title of the project was "Eutopia: The identity of Europe". It has been a very common exercise to have teachers and students as visitors from all across the EU under the umbrella of the Community programmes. The host school named after the famous Turkish sociologist Prof. Dr. Erol Güngör Social Sciences High School in Konya as the sixth partner of that project. The participation teachers were admitting that Turkey and a social sciences high school was the right place to discuss the identity of Europe. Also for the first time in their life times they were facing the real "other" Europe from such a close distance. They all underlined the differences and the value of these differences that should be added to the bigger European picture.

Most of the visitors, especially the students were hosted by Turkish families where they were expected to have a full intercultural week, at home and at the school. During our visits to the classes we listened to the personal experiences of the Turkish teenagers during the project activities. There were cultural shocks for sure, but overall opinion was in favor of such intercultural activities.

Although a few hundreds of thousand participants might seem to little within a population of 600 million, each personal experience creates a social impact, preached by each participant in their own social setting. It is obvious that if a multinational entity as EU, aims to improve social cohesion, it should give reasons to people to gather. This kind of activities strengthens the ties at the street level, between different communities, that in turn help the political unity to flourish.

LLP and YiA activities are great places to talk with people on culture, identity and others. A young Italian girl, who became a volunteer in Turkey under the European Voluntary Service (EVS) shared her thoughts about her recent contact with the Turkish society in a meeting in 2009. She clearly defines the size of the division between communities and depicts the perceived other before she came to Turkey.

"Unfortunately the Italians know very few about Turkey and they consider it as an Arabic country which means they think that the all the women are all in veil and the men with long beards in the ordinary thinking. Actually they also know very few about the Arabic culture too."

Since in this article main issue was the perception of "other" in the EU communities. Still "otherness" has two sides and just like the Europeans feel themselves distant to the Turkish, Turks also feel the same way. Leyla -an art student from Istanbul- who accomplished her dreams by visiting Florence as an artist by taking part in a Leonardo da Vinci Project.

"The vision of "That arrogant smile" -which kept coming in front of my eyes since my childhood, while I used to think that the Europeans always had the best school, best roads, best houses and etc. - faded away in a short time and replaced by a more real smile of the people who actually have similar hopes and troubles in their lives. It was like a feeling of becoming equal, making me think that I am neither below, nor superior to anybody on this blue planet (From Anatolia to Europe, 2007).

The image of the “other” rarely depends actual facts, but mostly on unconfirmed perceptions. The imaginative depiction of the “other” generally disappears with interaction. In that regard Stintan, a Swedish teacher, writes back to her new Turkish friend after a Comenius in-service training activity in Bartın, Turkey.

I am telling my family, my friends, my colleagues and almost anybody I meet about you. I put up the posters about Bartın, which you gave to me, in my class and at my school. They will think that I have spent 3 or 4 months in there. I still cannot believe the things I have experienced in just 4 days. They were like a dream (From Anatolia to Europe, 2007)..

Kazım, a Turkish teacher, who attended an in-service training course in France with other teachers coming from all around Europe:

At the last day of the seminar, which took only 7 days, everybody was trying to do his/her best to be polite to each other. The goodbyes started as our certificates were being distributed. Our eyes were glistening with the tears that we were trying to hold. But our female friends were unable to stand and let themselves crying in tears. We were all in a great surprise and unbelieving. How was it possible to build such big friendships in just 8 days? In just one week ... (From Anatolia to Europe, 2007). This positive pattern repeats itself with every individual on both side of the “Otherness”.

### **Conclusion and Suggestions**

The real challenge during the establishment for a multicultural Union with multi identities is still fighting discrimination, xenophobia which has its historical roots. The subject is a serious issue to be concerned with. Creating a multicultural, multi-linguistic society is a much harder task, which needs more to be done. EU Community programmes seems to be the real tool that really makes a difference, which have some real impact on the ground.

As we have claimed in the beginning, cultural entities are like huge entities that constantly interact with each other. The idea of creating a European Union which will bring together some separate chunks is one of the biggest projects of the human kind. It is a completely new paradigm, trying to utilize the human knowledge to structure massive social entities within a new modern European identity based on universal values like democracy, dignity, freedom etc. rather than religious or racial ones.

“Otherness” will continue to be a major issue for the EU in the future. European Union has put various actions and programmes to foster the new European identity. The solutions to fund and help intercultural activities under programmes like LLP and YiA are going to be playing an important role in the struggle with xenophobia, racism, exclusion or in short “otherness”. Our field experiences and the data that have been collected clearly shows that international and intercultural programmes have a sound effect and social impact on the people in terms of tolerance and intercultural dialogue. In a study carried out by RAY (A network established by YiA National Agencies), 66.4 % of young participants told that they felt more European after participating to the projects (Youth in Action makes a difference, 2012).

As stated above the natural and constructed identities of Europeanness are in a continuous competition. There is a similarity between the construction of a European identity and nation building efforts of the 19th and 20th centuries. Despite the sophistication of the complex relations between dozens of identities, the interaction between natural European identity, constructed European identity, national identities of Europe and the “other” identities should be studied.

There must be further studies to understand if the positive impact on the participants are permanent. Does the old and ever existing identities will really turn into a new and modern collective “identity”. And does too much intercultural activity creates exhaustion in time? At what scale does this kind of programmes should be supported to create a critical mass to further improve the new European identity?

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4<sup>th</sup> International Conference on New Horizons in Education

# Impact of external examinations on high school curricula: document analysis

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## Abstract

Sitting for the Examination for Admission to Higher Education (YGS) is the first phase of the university entrance examination process in Turkey. High school teachers have raised concerns regarding the inconsistency between the content of the YGS mathematics tests and the content of the 11<sup>th</sup>- and 12<sup>th</sup>-grade mathematics curricula. Document analysis of the content of the 2010–2012 YGS mathematics tests and the content of 11<sup>th</sup>- and 12<sup>th</sup>-grade mathematics textbooks revealed that the content of these tests is 89% to 93% inconsistent with the content of the 11<sup>th</sup>-grade mathematics textbook and 98% to 99% inconsistent with the content of the 12<sup>th</sup>-grade mathematics textbook.

*Keywords:* external exams; curriculum; high schools; qualitative; content analysis; consistency.

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## 1. Introduction

In the Turkish Republic of Northern Cyprus (TRNC), 17- and 18-year-old Turkish Cypriot students sit for the Examination for Admission to Higher Education (YGS), the first test in the university entrance examination process in Turkey. Those who earn the passing score of 140 can sit for the Examination for Placement for Undergraduate Studies (LYS), the second test in the process. Thus, these two examinations are crucial for students aiming to attend higher education in Turkey. As they are administered by the Student Selection and Placement Center (ÖSYM), which works under the Board of Higher Education (YÖK) in Turkey, these two examinations are considered external examinations for Cypriot students. In the TRNC, the curricula and the text-books used in public high schools are prepared by the Ministry of National Education (MEB) of Turkey.

As stated by Fırat and Yaratan (2013), teachers and students, as well as the TRNC media, have expressed disappointment regarding the poor scores of Cypriot students on the YGS and LYS, and many teachers and leaders in the education system have been reprimanded for these low scores. Kelecioğlu (2002) reported that teachers and students in Turkey have in turn complained about the inconsistency between the content of the YGS and LYS and the content of the curricula implemented at their schools. Research by Fırat and Yaratan (2013) revealed that not only teachers but also students have observed inconsistency between the content of the YGS and the 12<sup>th</sup>-grade curricula in public high schools. Baykul (1990) and Kelecioğlu (2002) also identified a lack of

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parallelism between the contents of the matriculation examinations (both the YGS and LYS) and the 12<sup>th</sup>-grade curriculum. In their report, the Turkish Academy of Sciences (TÜBA, 2004), which referred to the high school curricula revised in 2003 as the “new curricula” (p. 3), asserted that the lack of coordination between the MEB and YÖK has led to inconsistency in the alignment between “the required skills in the university entrance exams and the skills aimed in the new curricula,” and argued that this inconsistency results in rote learning.

In the 2005–2006 academic year, the TRNC education system was reconstructed to include three main periods: “Basic Education” from play-class to Grade eight, “High School Education” from Grades 9 to 12, and “Higher Education” (DEPPD, 2005, p. 8). In their high school education, students can choose to attend one of the following schools: “Fine Arts High School,” “College,” “Anatolian High School,” “Multi-program Modern High School (MPMHS),” “Modern Vocational Technical High School,” or “Apprenticeship Education.” At the end of the Basic Education period, students choose a school based upon consideration of their interests, preferences, success, and skills, and are usually advised to attend a MPMHS. At one of the twelve public MPMHSs in the TRNC, students can participate in one of the following programs (DEPPD, 2005): the Science Program (SP), the Turkish-Mathematics Program (TMP), the Social Studies Program (SSP), or the Foreign Languages Program (FLP). The following courses are given priority in each program: physics, chemistry, and biology in the SP; mathematics and Turkish language and literature in the TMP; history, geography, and philosophy in the SSP; and English, German, and French in the FLP.

Higher education in the TRNC begins at the age of 18 and is generally for those aiming to earn a Bachelor’s Degree. As the scores on the YGS and LYS are the main criteria for acceptance, students who wish to attend universities in Turkey must earn at least passing scores on these entrance exams. Since 1974, nearly all universities in Turkey have been admitting students through the Student Selection and Placement Center (ÖSYM). The structure and content of these exams have been revised since then, with the last revision occurring in 2006. In 1981, the ÖSYM introduced a two-stage examination and began adding the candidates’ high school grade-point averages to the calculation of the composite score. Initially referred to as the Student Selection Examination (ÖSS) and the Student Placement Examination (ÖYS), since 2010 the two examinations that constitute the exam process have been referred to as the Examination for Admission to Higher Education (YGS) and the Examination for Placement for Undergraduate Studies (LYS), respectively.

A 160-minute test, the YGS is usually administered to all students on one date in March at 167 centers throughout Turkey and the TRNC. The distribution of the 160 questions in the test is as follows: 40 questions in the Turkish Language section, 15 in the History section, 12 in the Geography section, 8 in the Philosophy section, 5 in the Religious Culture and Moral Knowledge section, 40 in the Mathematics section, 14 in the Physics section, 13 in the Chemistry section, and 13 in the Biology section. After the sums of correct and incorrect responses in all the tests are separately calculated, the raw score is obtained by cancelling one correct answer for every four incorrect answers (ÖSYM, 2013).

The YGS is a criterion-referenced test (CRT), a type of test that aims to determine how well one has learned a specific body of knowledge and skills (Oliva, 2005; Worthen, Sanders, & Fitzpatrick, 1997; Cronbach, 1970; Glaser, 1963). In view of the fact that over a million of students take the YGS simultaneously, the ÖSYM set 140 as the passing or “cut-off” score for the YGS such that students who earn a score of 140 or above can take the second-stage LYS, while those who do not can take that exam again the following year. As the YGS is the first exam in the university entrance exam process, it is a significant external examination that can affect various elements of the curricula. Research into the effects of external exams has revealed that external exams can be indicators of school and college performance (Golstein & Thomas, 1996) and teacher professionalism (Runté, 1998), and may affect content, methodology, and teachers’ attitudes (Wall, 2005) on curriculum development (De Luca, 1994) as well as learning and school priorities (Bishop, 1995).

As indicated by Firat and Yaratana (2013), university entrance exams are not only essential to students for admission to higher education but also important to teachers and the majority of Turkish society (Ekici,

2005). For that reason, several studies have investigated them, among which those relevant to this study, as identified by Firat and Yaratana (2013), are those that investigated the relationship between the items in examinations and the achievement of students (Çepni & Kaya, 2002; Yılmaz, Atav, Erökten, & Morgil, 2000) and those that conducted item analysis of ÖSS questions (Doymuş, Canpolat, Pınarbaşı, & Bayrakçeken, 2000). Being indicators of success, external exams and their results are also a focus of the media. For instance, the TRNC media announce YGS and LYS results school by school and compare them to the test results of students in Turkey, and then place the blame for low scores on the education system. This displeasure, together with teachers' grievances about the inconsistency between the content of the YGS and the content of the school curricula, grievances supported by Firat and Yaratana's (2013) identification of inconsistency between the content of the YGS and the 12<sup>th</sup>-grade curricula in public high schools, indicates the need for further research into this inconsistency.

To fill this research need, this qualitative study conducted document analysis to determine the extent of consistency between the content of the 2010–2012 YGS mathematics tests and the content of the 11<sup>th</sup>- and 12<sup>th</sup>-grade mathematics textbooks, which the majority of teachers perceive as setting the curricula for their classes (Firat & Yaratana, 2013). The following research questions were addressed to meet the study aim:

1. In which content areas does consistency exist between the content of the 11<sup>th</sup>- and 12<sup>th</sup>- grade mathematics curricula and the content of the YGS?
2. To what extent does the content of the YGS correspond to the content of the 11<sup>th</sup>- and 12<sup>th</sup>-grade mathematics curricula?

## 2. Method

Using a qualitative research paradigm and a purposive sampling method, the content of the three YGS mathematics tests administered in 2010, 2011, and 2012 and the content of the two mathematics textbooks used to teach Grades 11 and 12 were analyzed using a conventional content analysis technique (Miles & Huberman, 1994; Marshall & Rossman, 2011). The data obtained were presented in accordance with Miles and Huberman's (1994) *category-based data display approach* and used only to reveal and generalize the phenomenon as it exists in the TRNC. The main topics of the textbooks were used as elements for the content analysis and as the codes in the analysis (Miles & Huberman, 1994, p. 56). The content of the three YGS mathematics tests administered in 2010, 2011 and 2012 were analyzed in terms of their agreement with these topics and the frequencies and percentages were then calculated accordingly.

During the design phase, the coding of the topics and exam question topics was performed by two field teachers from different schools. After these codes had been compared and any differences identified, the codes were modified to ensure consistency in the reliability of the subsequent analysis (Sanders, 1994, p. 153). After one exam question set had been analyzed by the researchers, two field teachers and an expert from a private teaching institution were consulted regarding the content validity of the analysis (Sanders, 1994, p. 145). Finally, content analysis of the content of the 2010–2012 YGS mathematics test was performed.

### 3. Findings

*Consistency between the content of the 2010 YGS mathematics tests and the content of the high school mathematics curricula*

Of the 40 questions in the 2010, 2011, and 2012 YGS mathematics tests, 5 pertained to geometry in the 2010 and 2011 tests and 6 to geometry in the 2012 test. The distribution of the 35 questions in the 2010 YGS mathematics test according to topic and grade(s) covered is shown in Table 1.

*Table 1. Distribution of Mathematics Questions on the 2010 YGS Mathematics Test*

Topic	Number of questions <sup>†</sup>	Grade
Rational numbers	3	9
Square roots	2	-
Factorization	2	10
Exponential numbers	3	-
Equations	2	9,10,11
Ranges and series	1	-
Inequalities	1	10,11
Divisibility rules	1	9
Functions	1	9,10,11,12
Logic	1	9
Modular arithmetic	2	9
GSD-LCM	1	9,10
Process	1	9
Sets	1	9
Probability	1	11
Basic topics	3	-
Number-fraction problems	3	-
Percentage-interest problems	2	-
Reading tables and graphics	4	-

<sup>†</sup> Throughout the paper, this column is provided in all tables to show the number of questions on the tests. These numbers were not considered while calculating the frequencies or the extent of consistency between the content of the tests and the content of the textbooks.

As seen in the above table, the 2010 YGS mathematics test covered 19 topics, of which 6 were covered in the 9<sup>th</sup>-grade mathematics textbook, one in the 10<sup>th</sup>-grade textbook, and one in the 11<sup>th</sup>-grade textbook. Although three of these topics were common topics for Grades 9, 10, and 11 and one a common topic to all high school mathematics textbooks, 7 were among the middle school mathematics textbook topics. The extent of consistency between the content of the 2010 YGS mathematics test and the content of the Grades 9, 10, 11, and 12 mathematics textbooks was found to be 37%, 14%, 11%, and 1%, respectively. The content of the 2010 YGS mathematics test was found to be 37% inconsistent with the Grades 9, 10, 11, and 12 mathematics textbooks.

### 1.1. Consistency between the content of the 2011 YGS mathematics tests and the content of the high school mathematics curricula

Table 2 shows the distribution of the 35 questions in the 2011 YGS mathematics test according to topic and grades covered.

Table 2. Distribution of Mathematics Questions on the 2011 YGS Mathematics Test

Topic	Number of questions	Grades
Rational numbers	2	9
Square roots	2	-
Factorization	3	10
Exponential numbers	2	-
Ranges and series	1	-
Modular arithmetic	1	9
Absolute value	1	9
Divisibility rules	1	9
Functions	2	9, 10, 11, 12
Logic	1	9
Sets	1	9
GSD-LCM	1	9, 10
Ratio	1	9
Probability	1	11
Basic topics	6	-
Pool problems	1	-
Number-fraction problems	3	-
Percentage-interest problems	3	-
Reading tables and graphics	1	-

Similar to the YGS 2010 mathematics test, the 2011 YGS mathematics test covered 19 topical categories, of which 8 were covered in the 9<sup>th</sup>-grade mathematics textbook, one in the 10<sup>th</sup>-grade textbook, and one in the 11<sup>th</sup>-grade textbook. Although two of these topics were common, of which one was a topic in Grades 9 and 10 and the other a topic in Grades 9, 10, 11, and 12, eight were among the middle school mathematics textbooks topics. The extent of consistency between the content of the 2011 YGS mathematics test and the mathematics textbooks for Grades 9, 10, 11, and 12 was found to be 41%, 9%, 7% , and 1%, respectively. The content of the 2011 YGS mathematics test was found to be 42% inconsistent with the contents of the Grades 9, 10, 11, and 12 mathematics textbooks.

## 1.2. Consistency between the content of the 2012 YGS mathematics tests and the content of the high school mathematics curricula

Table 3 shows the distribution of the 34 questions on the 2012 YGS mathematics test according to topic and grade(s) covered.

Table 3. Distribution of Mathematics questions on the 2012 YGS Mathematics test

Topic	Number of questions	Grades
Rational numbers	2	9
Square roots	2	-
Operations	2	-
Exponential numbers	3	-
Absolute value	1	9
Divisibility rules	1	9
Functions	2	9,10,11,12
Sets	1	9
GSD-LCM	1	9,10
Ratio	4	9
Probability	2	11
Basic topics	5	-
Speed and motion problems	1	-
Age problems	1	-
Number-fraction problems	2	-
Percentage-interest problems	3	-
Reading tables and graphics	1	-

As shown in Table 3, the 2012 YGS Mathematics test covered 17 topics, 5 of which were covered in the 9<sup>th</sup>-grade textbook, one in the 11<sup>th</sup>-grade textbook, and 2 were covered in the 10<sup>th</sup>-grade textbook. Nine of these topics were among the middle school mathematics textbook topics. The content of the 2012 YGS Mathematics test was found to be 34% consistent with the content of the 9<sup>th</sup>-grade textbook, 3% consistent with the content of the 10<sup>th</sup>-grade textbook, 8% consistent with the content of the 11<sup>th</sup>-grade textbook, and 2% consistent with the content of the 12<sup>th</sup>-grade textbook, but 53% inconsistent with the content of all high school mathematics textbooks.

## 2. Conclusion and Discussion

The extent of consistency between the content of the 2010, 2011 and 2012 YGS mathematics tests and the content of the 11<sup>th</sup>-grade mathematics textbook was found to be 11%, 7%, and 8%, respectively. The reason for the variation in this percentage was the variation in the number of topics covered in these exams. The same reason is valid for the variation in the consistency between these tests and the 12<sup>th</sup>-grade mathematics textbook, which was found to be 1%, 1%, and 2%, respectively. The analysis also revealed a 89% to 93% inconsistency between the contents of the 2010–2012 YGS mathematics tests and the 11<sup>th</sup>-grade mathematics textbook and a 98% to 99% inconsistency between these tests and the 12<sup>th</sup>-grade mathematics textbook.

In education, *alignment* refers to “how well all policy elements in a system work together to guide instruction and, ultimately, student learning” (Webb, 1997, as cited in Rothman, Slattery, & Vranek, 2002). In this study, *consistency* was used to mean a state of “being in agreement” or existing in “a condition of close cooperation.” To address the large inconsistency between the YGS mathematics tests and the mathematics

textbooks, teachers must revise the curricula to instruct students in topics not covered in the 11<sup>th</sup>- and 12<sup>th</sup>-grade mathematics textbooks or, if teachers cannot do so due to time constraints, students must attend private institutions for further instruction. Thus, this inconsistency can cause students to put pressure on their teachers to revise the instruction that they provide in their classes.

Research has shown that many teachers revise classroom instruction to align it with the content of university entrance tests, leading to a focus on not only test content but also test-taking skills, to the detriment of topics not covered in the tests (Firat, 2013). According to Stecher and Barron (as cited in Abrams et al., 2003), use of standardized examinations can limit teaching and learning in undesirable ways. For instance, teachers may place more focus on the test content and teach toward the tests, leading some teachers to feel that their know-how is not being used to its utmost capacity and that “their ideas of valid education for students” (Ballard & Bates, 2008, p. 564) cannot be put into practice. On the other hand, these tests can cause great anxiety among students, who must perform well in order to enter universities.

Research by Firat (2013) revealed that both teachers and students perceive much inconsistency between the content of school curricula, specifically that which is covered in the textbooks, and the content of university entrance exams. As indicated by Kırkgöz (2009), textbooks may become “potential agents for change” according to their suitability in meeting “curriculum goals and objectives, and learner needs” (pp. 79-80). Essentially, the content of the YGS mathematics tests should be much more consistent with the curricula used for instruction in each grade, or these tests should be administered at the end of Grade 10 instead of at the end of Grade 12, as the majority of the YGS content was from middle school, and Grade 9 and 10 contents.

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4<sup>th</sup> International Conference on New Horizons in Education

# Impact of mobile technologies at the University in Argentina

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## Abstract

The spread of mobile devices in Argentina, emphasized by the Conectar-Igualdad program, motivated the research of the impact of this available equipment at the university. A number of issues arise. For example: Do university professors plan their lessons including these devices? Do they suggest the use of these devices to the students?

From some data built from surveys and interviews conducted during 2012, attitudes and social practices of professors and students in the first year of university are analyzed, and possible explanations related to the use of mobile technologies are shown, together with expectations and suggestions made by both professors and students in this new environment.

*Keywords:* mobile devices; teaching; University

## 1. Introduction

The technological equipment that teachers and students that enter the Public Argentine University have, has substantially changed in recent years: there was a time in which technological devices were concentrated inly in technological labs and informatics centers. Nowadays, almost all students and teachers have mobile technological devices such as notebooks, netbooks and smart phones, that they carry or may carry with them across the different contexts they pass through. This change has been produced by the combination between the Conectar Igualdad Plan –the state program for the distribution of technological equipment to high school students, that has already delivered more than 2.500.000 netbooks ([www.conectarigualdad.gov.ar](http://www.conectarigualdad.gov.ar))– and the proliferation of mobile devices in daily life.

In this context it is worth asking:

- Which usage does this equipment have at university?
- Do university professors include these devices in their lesson plans? How do they do that? Do they suggest the use of these devices to students for activities within or outside the classroom?
- Do students carry these devices to university? Do they use them for academic purposes? What does this use consist of?

Besides, beyond the reference or the specific instruction for the use of these technologies, one of the most frequent social practices in the academic commonness is the access to the information, to the accumulated knowledge. In this regard, the new screens offer new supports, formats and paths for the information, and for social practices related to communication. In this way, there are a number of questions that arise: What format do

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the study materials have in the first year of university? How are these formats related to the students' preferences and their social practices in everyday life? Moreover, How do they read with these technologies? How do they look for information? Where did they learn? Are these issues addressed in the first year of college?

This paper, which is framed within the research being conducted by the Tecmovae group, "Mobile Technologies Applied to the Education" at the National Technological University of Argentina, presents some responses related to the use of mobile technologies at university, and the expectations formulated by teachers and students in the different stages of data gathering planned within our project.

## 2. Theoretical approaches

The issue addressed in this article fits within a context in which further changes are seen as a logical step forward for university. Some authors, such as Platini and Mengual (2008), even talk of new educational institutions where Information and Communication Technologies (ICT) are recognized as a key enabler for innovation. Other writers like Dondi and Moretti (2007), Martines (2011) and García Peñalvo (2008), provide useful clues on how to carry out this process of change. García Peñalvo (2008) describes a methodological shift: learner-centred instruction. ICT are central to this process as this author says, because students will have mobile devices that would help them to take autonomous decisions during their learning experience. Instead, Dondi and Moretti (2007) are more concerned about –and thus they give greater relevance to– the adaptation of “Technology Platforms” and the design of new learning approaches. Accordingly, Martinez (2011) asks for the adaptation of existing methods to the new era determined by the proliferation of mobile technology.

According to Goodyear (2011) and Ng and Nicholas (2012) the potential of these modern tools would probably have significant impact as they can, for instance, facilitate the learning experience in different settings of students' working, academic or daily life. Nevertheless, Ng and Nicholas (2012) examine and present different dimensions of sustainable development to achieve these potentials.

Conversely, instead of this critical approach of “activating” (Spiegel, 2013) ICT in higher education institutions, the “obvious” and “automatic” need to respond to the changes that the new generation of digitally empowered students' demands is appealed frequently (Pedró, 2012). Generally, these changes are expressed more significantly at the levels of infrastructure, rather than at pedagogical levels. Within this framework, it is not surprising that, for instance, Conole, De Laat, Dillon and Darby (2008) argue that there are few if any teachers' directions that involve the use of mobile technologies in the first year of English Universities. Moreover, at a global level, “not all teachers are eager to incorporate ICT into their teaching” claims Pedró (2012). In this regard, it is interesting to ask these issues in a context in which the demands are much clear than the ways to bring them into concrete actions.

### 3. Analyzing of some results of the research of the project UTN1612

#### 3.1. Students and their access to the information

In the first survey made in 2012, the students who had just enrolled the engineering careers in “Facultad Regional San Nicolás”, were asked about their daily use of technology, their experience of using it in high school, and their expectations for their first year of college.

One of the issues being investigated was how students learnt to use the Internet. From the data shown in Table 1, it can be seen that 80% of the students learnt mostly on their own, and 12% did it by means of some relative or friend. Only a 5% reported having learnt from the teachings of a teacher.

Table 1. How students learnt to use Internet

Who has taught you to use Internet?	%
A friend	7 %
A family member	4.5 %
A teacher	5.5 %
I learnt on my own	80 %

They also expressed that these abilities to use the Internet helped them to satisfy their own needs related to the material search in Internet. This can be seen in Table 2.

Table 2. How comfortable do the students feel performing different tasks using their mobile devices.

How comfortable do you feel with your skill to....	My skill satisfies my needs	I'd like to know more about its use	I don't know about it	No answer
find in Internet what I am looking for	85%	12 %	0 %	3 %
use libraries online	50 %	41 %	6 %	3 %
use e-books	14 %	39 %	43 %	5 %

Here we can also see that students are not practical in the use of e-books, but some of them are interested: four out of ten students want to learn about their use.

On the other hand, from surveys completed about the end of the year, it could be seen that 8 out of 10 students sought information on the Internet related to their academic work during 2012 ie, during their first year in college. The 84% of them were satisfied with their ability in performing these searches, only 12% would like to know more about the subject and a 1.2% admitted not knowing. However, through interviews with teachers, it came out that they believe that students do not know how to search; they have no criteria for doing so. However, in the interviews was not seen as a concern the improvement of this habit: professors do not guide, or teach information literacy skills to students.

With regard to the searching resources best known by students, according to surveys data, 73% use search browsers like Google, 81% wikis, and 62% state they do it by instinct.

### 3.2. *Choosing a screen instead of paper for reading*

In students' survey, data on the reading habits of students were also collected: why they read, and what kind of format they use for reading. 71% of the students surveyed cited comfort as the great advantage for reading and searching for information on the Internet. As it can be seen from the data summarized in Table 3, whatever the purpose or motivation of reading is, students choose screens instead of printed materials for reading.

Table 3. Reading habits of students

Regarding to your reading habits...	In books	In Internet	Others
Because I like it, I enjoy it	39%	54 %	13 %
Because it is more convenient	37 %	55 %	4 %
So as not to get bored	24 %	55 %	13 %
To complete work study	42 %	75 %	7 %
Because I have to	30 %	11 %	17%

Nevertheless, from the analysis of interviews done to teachers, they expressed that from their point of view, students prefer to read on paper, and also they said that most of the materials offered to students in college are printed notes. According to some teachers, the "official materials" of the subjects are printed, but sometimes they add extras and they send them in digital format.

### 3.3. *Students' expectations versus their first year of university experience*

The poll conducted on students at the beginning of first year at the college, also enquired about students' thoughts regarding to the use of mobile devices in the year coming. It was found that students expressed great expectations for this fact: the vast majority imagined that teachers would use these devices as resources for teaching, and that they would recommend them to use these technologies to help their learning processes, and also that they would use to communicate with them. Figures 1 and 2 show the survey's results on these topics.

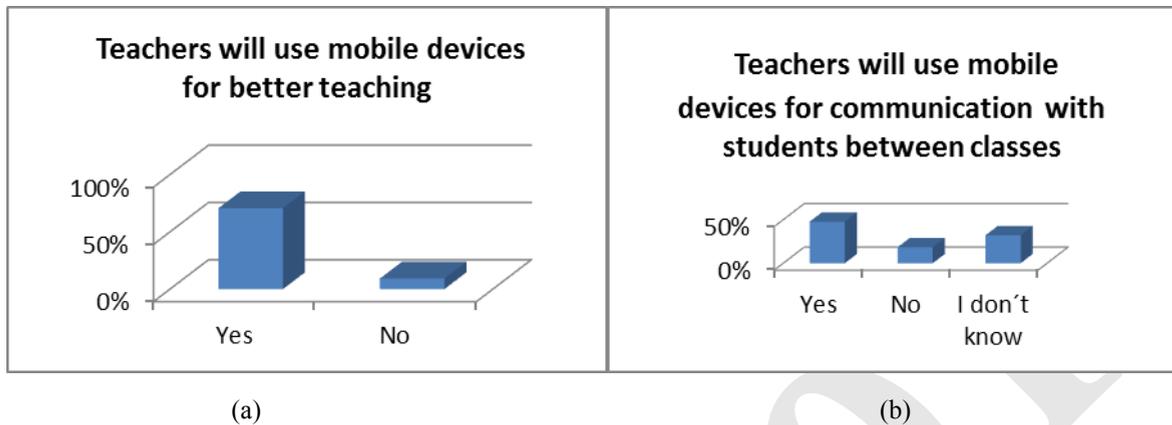


Fig. 1. Students' expectations about teachers' use of mobile devices

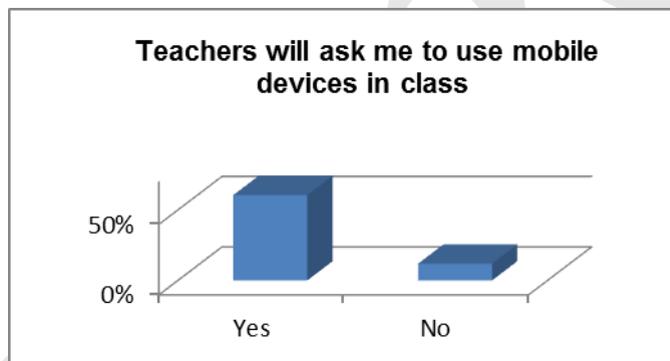


Fig. 2. Students' expectations about whether teachers will ask to use devices in class

As it is shown, the high expectations of students are not mere wishful thoughts; they involve the display of very concrete scenarios of application, where mobile technology has an important place as regards to the update expected at university.

Nevertheless, the results shown on Figure 3 revealed a different reality. A remarkable 71% of students said they had never used the netbook on a teacher's indication. This was also shown in the teachers' interviews: from there we could see that, in general, there was no initiative from the teachers to make the students carry their devices to the class. The 13% obtained in "sometimes" could be interpreted as: an isolated course, in one subject, once a teacher asked his/her students to bring computers for working in class, or to perform some extra activity outside the classroom.

However, when students were asked if their teachers had used netbooks/notebooks for teaching, 48% said "sometimes", as shown on Figure 3. This may seem contradictory to what is shown in Figure 1, but it is not quite so. Taking into account the records of request of computer equipment, it appears that "mobile technology" may

have been the projector and the teacher's netbook (or the one provided by the department), for example, for PowerPoint presentations.

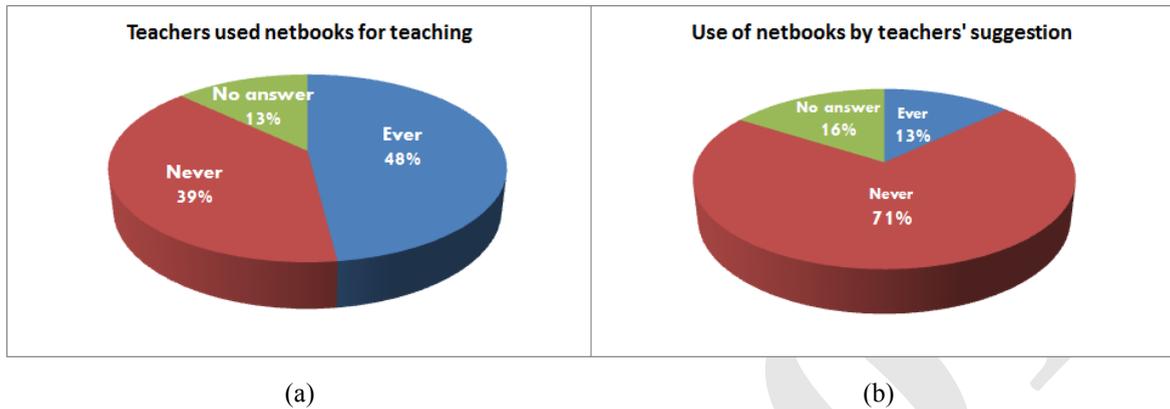


Fig. 3. (a) Teachers' use of devices for teaching; (b) Use of devices by students by teachers' suggestion

In this scenario, what did students do? Did they stop using the mobile devices they had? At the end of the year, students took part in another survey, where they answered several questions as regards their usage of mobile technology during their first year of college. The results can be seen in Table 2. It is shown there that a significant percentage of students used their mobile devices on their own initiative: 70% said they have done Internet researches, 47% said they have studied using the netbook, and also 56% said they have used information from online libraries and encyclopedias.

Table 4. Students' use of devices

Did you use your netbook for...	Ever	Never	No answer
doing your homework	47%	39%	13%
searching in Internet about the issues being developed	82%	5%	13%
communication so as to coordinate study meetings with peers	63%	18%	18%
studying	58%	24%	18%
using specific engineering software	58%	29%	13%
finding information from on-line libraries	63%	18%	18%
using Facebook or Twitter	63%	16%	21%
using online programs	42%	37%	21%

In other words, despite the lack of teachers' instruction, students decided to use these technologies for academic life, as they do in the rest of their daily lives.

#### 4. Conclusions

The students that begin first year at university have mobile devices. Furthermore, they frequently carry them to university in their backpacks, and use them during the breaks. However, the majority of teachers do not

instruct students to use these devices either inside or outside the classroom. Likewise, students – as part of the social practices they develop in the rest of their daily lives – use them to communicate and to search information in the network.

As regards this last activity- the most frequently quoted when referring to the use of technology at university – as it is previously said, students are able to perform these activities because they learnt on their own or with the help of their peers. They do not recognize formal learning at this respect. Moreover, there are no teachings of these specific issues at university, as it is assumed that they are “dominated” by the new generations. This assumption probably comes from the confusion between the knowledge about how to handle technologies (Bilbeny, 1997) and the knowledge related to clicking and typing, with the others, related to the logical or intellectual access (Spiegel, 2013) to these technologies. Equally, this presupposition is not confirmed: It is assumed that students have “sufficient” intellectual tools to seek and to select information, assumption that is often incorrect. Students’ reading habits and the information support they use or prefer are not assessed or contrasted, either. Moreover, the majority of the consulted professorships continue offering the materials of study and consultation in printed format.

Therefore, the statement about the massive availability of mobile technologies potentially used for the teaching and learning process in the first year of college, coexists with some "negatives" (in terms of non-visualization of):

- the existence of this equipment, that is expressed by the absence of concrete usage in the classroom and/or instructions for the academic utilization of its potential.
- about the expectations of use of this equipment that the students bring and that might be capitalized in the shape of genuine motivation for the learning;
- the need to qualify students in the search, in the access to information, in the management and the utilization of the information published in the Network, as part of the instances of the new 21<sup>st</sup> century professionals’ formation.
- about the new learner’s preferences and reading habits, that implies new cognitive overloading (Spiegel, 2013, Perkins, 1995) for students.

Thus, it can be said that although there is already an ongoing process of change, it is still incipient; it still requires management policies that facilitate the overcoming of this situation. In these terms, for instance, it would be interesting to design teacher training instances and ways of pedagogical support for teachers to recognize the ways of knowing of the new subjects of learning and more easily tap the potential of new mobile equipment inside and outside the college classroom.

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4<sup>th</sup> International Conference on New Horizons in Education

# Improving the quality of disabled people's life at work via iso 9001 standard

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## Abstract

The quality of life is influenced by many elements. One of them is employment. People with disabilities have a lot of problems at work (if they are so lucky to get one) – starting with adaptation to a workplace and team, through difficulties during the working process or communication between them and the employer. The aim of this paper is to introduce ISO 9001 standard as a suitable element that positively influence the quality of life of disabled people.

This paper represents one of the outputs of sub activity of the project called The Research on Quality of Life of People with Special Needs (IGA\_PdF\_2013\_006), which was realised by Students grants contest of Palacký University in Olomouc.

*Keywords: person with disabilities, quality of life, satisfaction, employment, ISO 9001 standard.*

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## 1. Introduction

The current economic situation in the Czech Republic is not ideal for employing people. There is no need to emphasize, that various specifics of people with disabilities makes this category of our fellow citizens (as for as searching for a job and keeping it) very „vulnerable“. If this person is so lucky to be exercisable in the job market, there comes in many cases certain disillusionment on both sides (employers and employees). So the question is, weather there are any procedures or methods to eliminate the eventual disproportional expectations of both sides. If so, there comes another question. Can there be, as one of the option of elimination or lowering the negative factors influencing the quality of working life, the implementation of ISO 9001 standard? The following text can be understood as a way for searching for the answers.

## 2. The quality of life

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The issue of quality of life infiltrates in the last decades a lot of science disciplines e.g. medicine, psychology or sociology, but the look back to modern history says, that the term quality of life was first used in economy. It was in 1920, when Pigou in his work *The Economics of Welfare* mentions this term for the first time. In this work Pigou also deals with the role of state as a provider of subsidies for underprivileged. It is obvious, that each science discipline applies different point of view to the term quality of life and its use. It makes it then difficult to summarize one universally binding definition of this term. This estate illustrates very well Payne, who says: „There are a lot of definitions of the term „quality of life“ in the literature. But none of them was in the last 30 years generally accepted“ (Payne, 2005, s. 207). From the aforementioned is clear, that the quality of life is a multidimensional category, containing both the objective and subjective perspective of this phenomenon. That is why the approach containing many concepts (theoretical frameworks) of quality of life, with all its dimensions, is the most suitable for description of the topic. One of the most quoted frameworks is the Conceptual QOL framework of Centre for Health Promotion, which works with quality of life in complex. It divides it to three basic and particular domains.

**Picture no. 1 Conceptual QOL framework of Centre for Health Promotion, University of Toronto**

<b>Being who one is</b>	
<b>Physical Being</b>	physical health , personal hygiene, nutrition, exercise , grooming and clothing, general physical appearance
<b>Psychological Being</b>	psychological health and adjustment , cognitions , feelings, self-esteem, self-concept and self-control
<b>Spiritual Being</b>	personal values, personal standards of conduct, spiritual beliefs
<b>Belonging connections with one's environments</b>	
<b>Physical Belonging</b>	home, workplace/school , neighbourhood, community
<b>Social Belonging</b>	intimate others , family, friends, co-workers, neighbourhood and community
<b>Community Belonging</b>	adequate income, health and social services, employment, educational programs, recreational programs, community events and activities
<b>Becoming achieving personal goals, hopes, and aspirations</b>	
<b>Practical</b>	domestic activities, paid work, school or volunteer activities ,seeing to health or social

<b>Becoming</b>	needs
<b>Leisure Becoming</b>	activities that promote relaxation and stress reduction
<b>Growth Becoming</b>	activities that promote the maintenance or improvement of knowledge and skills, adapting to change

Source: Made by author, inspired by The Quality of Life Model ( [http://www.utoronto.ca/qol/qol\\_model.htm](http://www.utoronto.ca/qol/qol_model.htm))

### 3. The quality of working life and the Quality management system

Even though we can see, thanks to research and application of acquired knowledge, the positive move in the area of quality of life (thereinafter QOL) of people with disabilities (particularly in relation to health or provided services), there is none or barely some move in the area of quality of working life (thereinafter QOWL) of those persons. One of the limiting factors is limited resources (e.g. financial or human). This fact forces us (willingly or not) to find new innovative approaches, which have, without the need of subsequent expenses, the potential to improve the QOWL of people with disabilities. One of the rather perspective options, how to improve the QOL at work, is the usage of quality management system (thereinafter QMS). QMS is „*a system by which an organization aims to reduce and eventually eliminate nonconformance to specifications, standards, and customer expectations in the most cost effective and efficient manner*“ ( [www.businessdictionary.com](http://www.businessdictionary.com)). There is no space to follow the economic influence of the implemented QMS in the organization like competitive advantage, customer's satisfaction etc. in this paper. It focuses only on expected impact of the implemented QMS on the employees, on their QOWL.

#### 3.1 People with disabilities and the quality of life

„*Person with disabilities is a person, whose physical, sensual and/or psychical abilities or sanity is different from the typical estate of appropriate age and therefore it is legitimate to assume that this unfavourable estate lasts longer than 1 year. The difference from the typical estate according to appropriate age must be of that kind or range, that it usually makes barriers or even makes it impossible to socially assert the person.*“ (Novák, Kalnická, 2008, <http://panda.hyperlink.cz/cestapdf/pdf08c6/novak.pdf>). This definition was determined by the interdepartmental working group in connection with the first statistical survey about people with disabilities in the Czech Republic (2007). Its aim was to find out, what kind of barriers in the process of improvement of QOL is possible to eliminate. The health handicap influences not only the daily life of the person, but also the process of education, self-realization and last but not least his/hers professional assertion (Finková, 2012, s. 44). Even though Finková deals in her work only with people with visual impairment, it is possible to generalize this thesis to most of other disabilities.

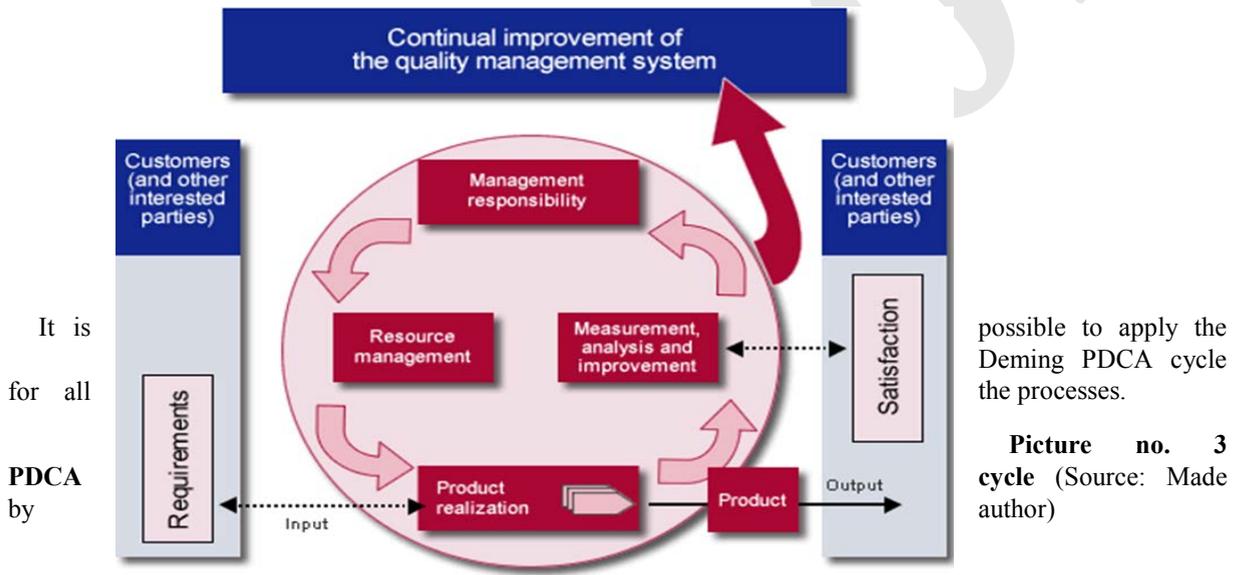
#### 3.2 ISO 9001 Standard

This standard is not the only way to implement and maintenance QMS, but it was chosen by the author on purpose. It is the most used one. There is no need to know the standard in details, only the basic principles of it for a better orientation will be described in the paper.

One of the crucial attributes of the standard is the accent on procedural approach: „An advantage of the process approach is the on-going control that it provides over the linkage between the individual processes within the system of processes, as well as over their combination and interaction (ISO 9001, 2009, s.11) For a better illustration, there is a model of the procedurally oriented QMS in the picture no. 2

**Picture no. 2 ISO 9001:2008 Model – The Systems Approach (QMS)**

(Source: [http://www.technopeers.co.uk/?page\\_id=246](http://www.technopeers.co.uk/?page_id=246))



It is possible to apply the Deming PDCA cycle to the processes.

**Picture no. 3 cycle** (Source: Made author)



**Plan:** Recognize an opportunity and plan a change.

**Do:** Test the change. Carry out a small-scale study.

**Check:** Review the test, analyse the results and identify what you’ve learned.

**Act:** Take action based on what you learned in the study step: If the change did not work, go through the cycle again with a different plan. If you were

successful, incorporate what you learned from the test into wider changes. Use what you learned to plan new improvements, beginning the cycle again. (ASQ, 2013:<http://asq.org/learn-about-quality/project-planning-tools/overview/pdca-cycle.html>)

The advantage of the standard is its universality: „*All requirements of this International Standard are generic and are intended to be applicable to all organizations, regardless of type, size and product provided*“ (ISO 9001, 2009, s. 15).

Basically, the standard provides „manual“ how to maintain through the process management the best results. When first seen it could be said, that the standard focuses only on outside, on customers. But when we look deeper, we can see the cohesion of all processes, so it is only logical, that the standard deals also with inner area of the organisation.

The standard is formally divided into eight chapters; in most of them the links on activities that directly influence the employees could be found. Chapter no. 6. 2, Human resources, apply itself on employees directly:

#### *„6.2.1 General*

*Personnel performing work affecting conformity to product requirements shall be competent on the basis of appropriate education, training, skills and experience.*

#### *6.2.2 Competence, training and awareness*

*The organization shall*

- a) determine the necessary competence for personnel performing work affecting conformity to product requirements,*
- b) where applicable, provide training or other action, to achieve the necessary competence*
- c) evaluate the effectiveness of the actions taken,*
- d) ensure that its personnel are aware of the relevance and importance of their activities and how they contribute to the achievement of the quality objectives, and*
- e) maintain appropriate records of education, training, skills and experience“ (ISO 9001, 2009, s. 20-21).*

The standard, particularly its requirements makes it easier for the employee to orient him/herself in the organizational structure (supervisor, colleagues, and responsible person) or communication thanks to perfectly described situations. Without the standard the employee would be forced to improvise. And it is not the only advantage of this standard.

The aforementioned facts implies, that the employee in the organization, where the standard ISO 9001 is implemented, could be in his/hers job more satisfied so there is an assumption, that his/hers QOWL could be also higher. The question, whether is this assumption corrects, remains. The next lines are dedicated to show the planned research on the topic.

#### *3.3 Research*

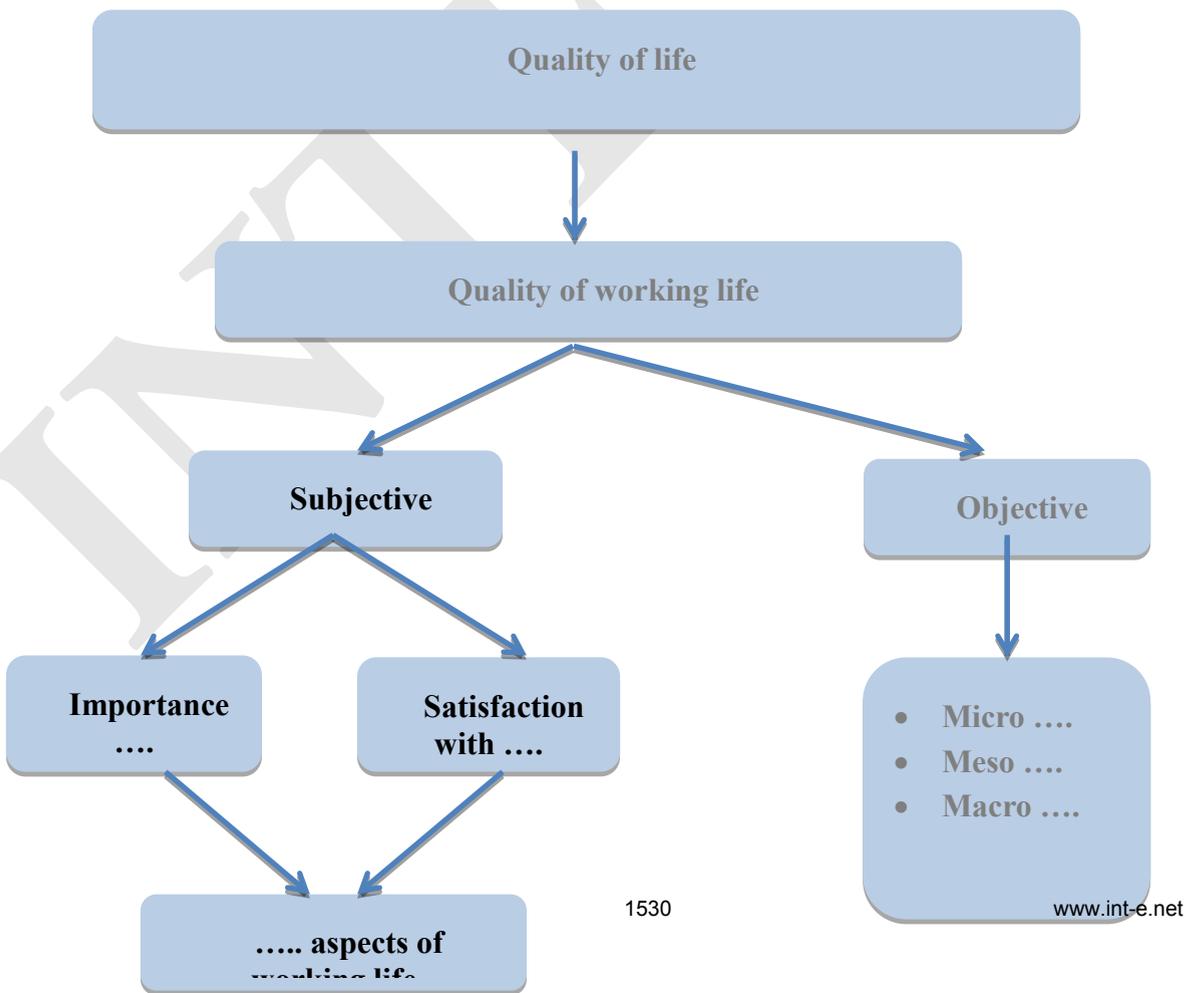
The design of the research, or more precisely its pilot phase, is not difficult. The needed data would be achieved by a questionnaire. There will be two respondent groups. The first one will contain people with disabilities working in organizations, where the standard is not implemented. The second one will contain people with disabilities working in organizations, where the standard is already implemented. The results will be compared.

The complicated phase in the described survey was the search for an appropriate tool – questionnaire. There was a discussion, whether to trace both levels of the QOL, which means the subjective and the objective one, or to focus only on one of them.

According to the range of various specifics resulting from various types of health disabilities, we decided to use only the subjective QOWL level for the survey. We assume that this approach would better illustrate the given estate. To explain it, we introduce here a practical example. The lightening in the workplace corresponds with all the legislative requirements – objectively we can say, it corresponds with quality standards. But the person with visual impairment can subjectively perceive this situation as not sufficient – he/she is not satisfied, which implies lower QOWL. For the questionnaire, the concept of subjectively perceived QOWL designed by the Institute of Sociology of the Academic of Sciences of the Czech Republic was chosen.

**Picture no. 4 The conceptualization of subjectively perceived quality of working life**

(Source: Made by author, inspired by Vinopal (Vinopal, 2011, s. 943))



The concept for measuring the subjectively perceived QOWL is based on three basic pillars: (1) Dual conception of QOWL, (2) the conceptualization of subjective perceived QOWL as a combination of two dimensions – importance and satisfaction, (3) the definition of structure of material domains and aspects of quality of life and its coverage by adequate indicators (Vinopal, 2011, s. 939). The questionnaire itself consists of two batteries containing 18 questions. In the first battery the respondents evaluate the satisfaction with existing aspect, in the second one its importance. The aspects by detail are written in the picture no. 5.

**Picture no. 5 The questionnaire**

DOMAINS	ASPECTS
SALARY	<ul style="list-style-type: none"> <li>• salary</li> <li>• justice</li> <li>• nonfiscal benefits</li> </ul>
SELFREALIZATION	<ul style="list-style-type: none"> <li>• independency</li> <li>• education</li> <li>• interesting rate</li> </ul>
RELATIONS	<ul style="list-style-type: none"> <li>• with colloquies</li> <li>• with supervisors</li> <li>• bully</li> </ul>
TIME	<ul style="list-style-type: none"> <li>• distribution of working hours</li> <li>• time demandingness</li> <li>• Reconciliation with free time activities</li> </ul>
Conditions	<ul style="list-style-type: none"> <li>• equipment</li> <li>• cleanness</li> <li>• safety</li> </ul>
Assurance	<ul style="list-style-type: none"> <li>• type of employment</li> <li>• assurance of having the work</li> <li>• chances on the labour market</li> </ul>

Source: Made by author, inspired by Vinopal (Vinopal, 2011, s. 945)

Data from each battery could be evaluated separately, or together as an overall QOWL index. (If you are interested in getting more information about construction of this empirical tool see Vinopal 2006, 2009, 2011). The comparison of obtained data (the organization with and without implemented standard) should confirm the assumption of positive influence of the standard on employees or more precisely on their satisfaction (subjectively perceived QOL). But the validation of this assumption (in which we hope) is not enough from the point of view of usage of this fact. It is completely legitimate to ask, whether the expected results of the survey have also the potential of practical use. The answer to this question is, by our meaning, positive. One of the options of the practical use of our surveys results is to create methodics (based on the standard) that would help the current or future employers of people with disabilities in various areas of working life to increase the satisfaction of their employees (and with that also better the production rate of their own company). The second and even more important option is to refer to readiness of the organizations with implemented standard to employ people with disabilities. The provable data can help to break the barriers and stereotypes in the mentality of employers, who are afraid to employ person with disabilities. For a lot of organizations it would be contribution disabilities without the need of significant changes and to satisfaction of both sides. This approach than makes the to get to know, that by implementing the standard and its adherence to it, they would be able to employ the person with need of special programmes, customization of a work place, specialized experts on communication etc. irrelevant.

#### 4. Conclusion

Today's dynamics forces us to think in wider circumstances. It forces us to search for innovative solutions, to use the synergy of seemingly not connected science fields. This paper works on the same bases. Its aspiration is to search for new methods and approaches to increase the QOL of people with disabilities. Limited fiscal resources give us no other chance. Even though the most of the text is focused on subjective perceive of QOL, it would be a mistake not to mention in this conclusion also the point of view respecting the objective dimension of QOL. „The only scale of QOL (observed in general macro social point of view – not seen the subjective factors of experience) of a group or a single person with disabilities is the ability and willingness of the major society to redistribute a piece of produced social product for saturation of the objective needs of this group of people!“ (Michalík in E-pedagogium, 2009, s. 96). So there we are, back in the level of resources and still searching for a solution – not only flashy, but particularly effective.

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4<sup>th</sup> International Conference on New Horizons in Education

## Increasing retention and student satisfaction utilizing an online peer mentoring program: preliminary results

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### Abstract

**Background:** Anxiety and apprehension have been observed in beginning nursing students as a recurrent pattern, particularly when students are entering upper level foundational nursing courses. This anxiety contributes to increased withdrawals from nursing programs and decreased satisfaction in retained nursing students.

**Purpose of Study:** To determine the effect of an e-mentoring program that pairs junior and senior level undergraduate nursing students on student satisfaction and student retention.

**Methods:** This mixed methods design utilizes an online peer mentoring strategy. 20 junior mentees and 20 senior level mentors participated in the study. Students completed surveys after one semester of participation, to evaluate the success of their mentor-mentee relationship, and gauge student satisfaction with the program. All information was utilized to assess retention implications, and implement changes with the e-mentoring program for future nursing students.

**Results and Conclusions:** 14 mentors and 16 mentees returned surveys. The majority of students felt that they had benefitted from participation after one semester. Students indicated they preferred the online format to in-person meetings. Mentors were able to share studying tips, time-management skills and organizational strategies. Responses to open-ended questions indicated that the success of the mentor-mentee relationship depends on the mentee communicating with the mentor.

**Implications for Practice:** While preliminary data suggests that promising results in student satisfaction, retention rates of students will be determined after one year of the mentorship program. An e-mentoring program could be a necessary component to foster relationships between excelling senior nursing students and junior nursing students, and allow for support in class load, coursework, school, and outside stressors. This relationship allows for collaboration of ideas, and provides perspective for the senior mentor in terms of growth and knowledge base.

Keywords: Mentoring, nursing student, undergraduate, education, innovation

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## 1. Introduction

Anxiety and apprehension have been observed in beginning nursing students as a recurrent pattern, particularly when students are entering upper level foundational nursing courses (Giordana & Wedin, 2010). This anxiety, coupled with an increased amount of information that the student must retain in order to be successful in didactic and classroom experiences, contributes to increased withdrawals from nursing programs nationwide and decreased satisfaction in retained nursing students.

The baccalaureate nursing curriculum is designed to prepare students for work within the growing and changing health-care environment (American Association of Colleges of Nursing, 2013). With nurses taking more of an active role in all facets of health care, they are expected to develop critical-thinking and communication skills in addition to receiving standard nurse training in clinics and hospitals. In a university or college setting, the first two years include classes in the humanities, social sciences, basic sciences, business, psychology, technology, sociology, ethics, and nutrition. In some programs, the nursing classes start in the sophomore year, whereas others have students wait until they are juniors. Many schools require satisfactory grade point averages before students advance into professional nursing classes. On a 4.0 scale, admission into the last two years of the nursing program may require a minimum GPA of 2.5 to 3.0 in pre-professional nursing classes, but the cutoff level varies with each program. The pressure to succeed is thus very high in such nursing programs, and there is great concern for the need to retain nursing students throughout the program.

In the junior and senior years, the curriculum focuses on the nursing sciences and emphasis moves from the classroom to health facilities (Warren, 2010). This is where students are exposed to clinical skills, nursing theory, and the varied roles nurses play in the health-care system. Courses include nurse leadership, health promotion, family planning, mental health, environmental and occupational health, adult and pediatric care, medical and surgical care, psychiatric care, community health, management, and home health care. Such courses starting in the junior year have high levels of knowledge and critical thinking, and are dense in theory and information. This is often the time when there is an increased need for support.

### 1.1. *Peer mentoring*

Mentoring early in a nursing program has been shown to reduce student anxiety, provide a positive learning environment, boost self-confidence and lessen confusion (Davison & Williams, 2011; Dennison, 2010). Improved retention rates and satisfaction among first semester clinical nursing students have also been observed with early mentoring (Colalillo, 2007; Dorsey & Baker, 2004). Dennison also notes that mentors benefit from the mentoring experience by incorporating new perspectives into their practice; demonstrating improved leadership, coaching, and listening skills; and becoming more engaged in their work.

Because mentoring is actually about process rather than product, certain key elements need to be in place at the outset of a mentoring program. This includes commitment by both mentor and mentee to the work of the relationship that is grounded in mutual respect, trust, and comfort (Bierema & Merriam, 2002). The ability for the pair to develop “just in time” strategies to answer questions and solve problems by e-mail or telephone is also essential to accomplishing the agreed-upon outcomes, which in turn, moves the relationship forward (Dahl, 2005). (Giordana & Wedin, 2010).

Although there is positive research on the impact that a peer mentoring program can have on nursing program outcomes, there are many challenges to instituting such a program. Among the challenges cited by students, it is evident that the most common issue was finding the time to meet with the student’s mentor, on top of studying and preparing for such a heavy course load (Giordana & Wedin, 2010; Warren, 2010). An online peer mentoring program, however, could be a potential solution to this issues. There is a dearth of research on the impact that an online peer mentoring program can have specific to nursing students.

### 1.2. *E-Mentoring*

Although electronic communication technology has grown rapidly and globally, literature related to e-mentoring is limited. A working definition of e-mentoring is that of Bierema and Merriam (2002) “computer mediated, mutually beneficial relationship between a mentor and a protégé which provides learning, advising, encouraging, promoting, and modeling, that is often boundary-less, egalitarian, and qualitatively different than face-to-face mentoring” (p. 212). Unlike web-based instruction, e-mentoring is sharing information with the goal of mentee growth. The virtual nature of the e-mentored relationship allows online conversations that may not take place in face-to-face relationships and give a degree of objectivity to the relationship. E-mentoring offers flexibility within a school setting, allowing the mentor and mentee to blend routine work and mentoring during school time. However, there are risks associated with e-mentoring programs. A loose, unstructured relationship and insufficient administrative support for the mentoring commitment can lead to mentoring problems early on (Akin & Hilbun, 2007). Miscommunication is also a common issue. More serious is the opportunity for disengagement by either the mentor or the mentee, often resulting in forfeiting the relationship (Bierema & Merriam, 2002). Nursing literature has typically focused on attributes of a positive mentoring relationship and its benefits to individual professional development within the organization (Hayes & Sexton Scott, 2007; Heller et al., 2004), essentials of novice-expert models for student clinical experiences and new staff orientation (Andrews & Wallis, 1999; Butler & Felts, 2006), and the use of mentoring for nursing research. There is no known research, however, exploring the effect of an e-mentoring program on nursing retention in a baccalaureate nursing program.

## 2. Purpose of the Study

The purpose of this study is to examine the effect of an e-mentoring program on nursing student satisfaction and nursing retention in a baccalaureate nursing program. Specifically, it aims to answer the research question: *Does implementation of an e-mentoring program increase nursing student retention and nursing student satisfaction in a baccalaureate nursing program?* It is important to note that this report reflects preliminary results of this 2-year online mentoring program.

## 3. Methods

This pilot study utilizes an explorative mixed-methods, convergent parallel design, which involves simultaneous collection of qualitative and quantitative data, followed by subsequent merging of multiple data sources (Creswell, Klassen, Clark, & Smith, 2011). A pilot study is designed to preliminarily explore a topic or phenomenon, with a limited sample size (Leon, Davis, & Kraemer, 2011).

### 3.1. *Online Peer Mentoring Intervention*

To reduce student anxiety and empower senior nursing students to acknowledge their own growth as a nursing student, an online peer mentoring strategy was developed, pairing junior level nursing students with senior nursing students in a baccalaureate nursing program. Outcomes include nursing satisfaction, acceptability, and nursing retention rates. There are major objectives of instituting this e-mentoring program. Firstly, it is necessary to foster relationships between excelling senior nursing students and junior nursing students, allowing for the support with regards to class load, coursework, school and outside stressors. This relationship will allow for collaboration of ideas, and also provide perspective for the senior mentor in terms of growth and knowledge base. It will also foster the service component that is a pinnacle of the institution’s mission.

Because of the challenges of a remote e-mentoring program, it was extremely necessary for faculty to closely monitor and support this mentor/mentee relationship to ensure appropriate usage of the relationship. Two nursing faculty served as coordinators for student learning to facilitate the mentorship process.

### 3.2. *Setting*

This e-mentoring program takes place in an undergraduate baccalaureate nursing program at an East Coast private college.

### 3.3. *Sample selection and mentor program*

The investigators recruited 20 junior level student mentees and 20 senior-level student mentors during the beginning of the Fall semester. All students enrolled in the junior-level nursing foundations course were eligible to participate. Junior-level students who were identified as high-risk for failure based on previous GPA were strongly encouraged to participate. All senior-level students enrolled in the senior-level foundations course were eligible to participate as a mentor, but were selected based on GPA, collegiality, and past clinical evaluations. Students were excluded that were on a leave of absence from the program, or that had a GPA below 2.5.

Once mentors and mentees were selected, they were paired up and contact information distributed. Faculty will met with the mentors initially to detail responsibilities, expectations, and provide tips and skills important in the mentorship process. Literature was provided to show evidence of successful mentorship and potential benefits of the program. Faculty also described successful mentoring and establishing boundaries of the mentor-mentee relationship.

A forum on the distance education site was created to facilitate the mentor/mentee relationship. This forum was only be open to mentors and mentees within the e-mentoring program, with the facilitation of the faculty members. Participants will be required to correspond at least weekly with their partner, in order to create continuity within the program and successfully attain program goals. Semi-monthly postings by faculty regarding issues in nursing programs and professional nursing can help generate discussion among pairs, and stimulate the relationship to start. In addition, students will be asked to complete monthly online surveys to evaluate the success of their mentor-mentee relationship, and gauge student satisfaction with the program.

After graduation of the senior nursing student mentors, the relationship was encouraged and fostered as well, as new graduate nurses can be very valuable mentors to their nursing student mentees. Graduates are encouraged to discuss NCLEX preparation, securing first nursing jobs, transition from student to professional nurse.

### 3.4. *Study Duration*

In order to allow for implementation of this program, the duration of this study will be 2 years long, with 2 separate cohorts of mentees. It is important to note that, when possible, the junior nursing student mentees will transition into mentors when they enter their senior year.

### 3.5. *Outcome Measurement and analysis*

This study will begin to compare retention rates of nursing students from 1-5 years prior to institution of the e-mentoring program to retention rates of the junior level nursing student cohorts participating in the program. In addition, student satisfaction among participants was gauged by utilizing anonymous online surveys with Likert-type and open-ended questions. Student satisfaction was analyzed using descriptive statistics (Likert-type questions) and thematic analysis to report common themes (open-ended questions).

### 3.6. *Informed Consent*

Each participant was aware of the purpose of study and intended data collection. Students were aware that their consent was implied upon participation in the mentor program, and completion of online surveys. Potential participants were made aware that there was no benefit to taking part in this study, and that choosing to complete or not complete this study would have no effect on the ability to successfully complete the nursing program. There would be no direct benefit to a student's grades or GPA by participating in this program and/ or study. All surveys were completely anonymous and distributed via Survey Monkey. It is also important to note that both

investigators did not have any of the students in class, so there was no risk of grade inflation or deflation based on participation.

#### 4. Preliminary Results

Twenty junior-level mentees and twenty senior-level mentees participated in the first year of this online mentoring program. Two mentees lost due to student attrition and specific reasons are unknown. The sample was predominately female (85% female mentees, 80% female mentors). The report of preliminary results from this online mentoring program will only include nursing student satisfaction, as it is premature to report student retention rates at this point. Qualitative and quantitative data are integrated in the results presentation below.

##### 4.1 Nursing student satisfaction

The majority of mentors (77%) indicated they felt they had a lot to offer their mentee. All of the pairs were able to communicate at least once per week, often utilizing cell-phone texts, emails, or phone conversations. The majority of mentees (74%) considered the mentee relationship to be positive, and the most useful information provided by mentors was study habits, stress relief, and time management strategies.

It is important to note that there were some challenges noted by the mentors. Some mentors (46%) felt that the relationship was dependent on the initiative of the mentee; that they need to be open to learning, and ask questions often. At least one mentor felt that he could have been utilized more by his mentee, and was disappointed because he felt he had a lot to offer.

Select quotes from open-ended responses of the mentees demonstrate the preliminary success of the program: *"Very helpful for first tests/study hints"*; and, *"You did a great job matching us up; better than some dating services!"*. The mentors also noted positive aspects of their role as mentor: *"It brought back memories of the first time going to clinical"*; and, *"It made us realize how much we have actually grown as students"*.

#### 4. Discussion

The preliminary findings from this study indicate that an online mentoring program could offer the support that undergraduate nursing students need. The benefits of this program from a qualitative perspective indicate that there was reduced student anxiety, a positive learning environment, increased self-confidence, and increased student interaction among peers. From a faculty perspective, the investigators gained significant insight into the role of an online mentoring program in this population. Mentors benefited by incorporating new perspectives into their practice, demonstrating improved leadership, coaching and listening skills, and becoming more engaged in their work. This supports the findings of Giordana and Wedin (2010), who studied peer mentoring in multiple levels of nursing students. It was also evident that support of the organization was critical, giving permission for the mentoring interaction to occur on work time and allowing use of agency resources. This idea is also supported in the literature (Dennison, 2010).

The format of the online-mentoring program was ideal for all of the students, which is supported in the literature (CITE HERE). The virtual nature of the e-mentored relationship allows online conversations that may not take place in face-to-face relationships and give a degree of objectivity to the relationship. In addition, e-mentoring offers flexibility within a school setting, allowing the mentor and mentee to blend routine work and mentoring during school time.

The challenges of the peer mentoring program include time and effort needed to facilitate the relationship. The investigators also noted that collaboration must occur from both mentor and mentee, and when the mentee is not likely to seek out help, it is necessary for the mentor to step up and offer more often. In addition, it was evident that weaker students seek out less help from mentee, and that encouragement from faculty was essential.

#### 5. Limitations

Because this was a preliminary report of a pilot study, results are not generalizable nor transferrable to other populations. Although all efforts were made to match students according to gender and interests, this was

not always possible, and it is likely that one or more of the pairs may have had personality differences that affected the relationship. In addition, the small sample size limits the inferences that can be made from the findings of this pilot study. The aims reflect the exploration of the intervention itself; thus analysis for effect size is not appropriate (Leon, et al., 2011), 2011). There are several potential moderating and mediating variables present within the sample. It is not possible with this small sample size, however, to control for these variables or perform regression analysis.

## 5. Conclusion

It appears that the research on mentorship during nursing school demonstrates potential benefits to students' learning and success throughout nursing school. Through ongoing investigation and continuance of this program, it will be possible to investigate nursing retention rates and continued satisfaction of nursing students. While it is evident that mentoring programs have the potential to be of marked benefit to the participants, there remain issues which need to be further explored.

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4<sup>th</sup> International Conference on New Horizons in Education

# Infidelity as a Threatening Factor to the Existence of the Family

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## Abstract

One of the numerous factors affecting family stability is undoubtedly the infidelity of one of the partners. This contribution comprises a personal definition of infidelity, including the most common practices and ways, which in the minds of adolescents are influenced by the subjective "definition" of infidelity. The research contains the results of the quantitative investigation shown in the sample of adolescents (n = 796). This is the view of individuals who are currently in their first partnerships and establishing a system of values concerning their relationship to the partner, to love, to loyalty, and to infidelity. Additionally, they form their image of a well-functioning family. The results of the research point to a growing tolerance towards infidelity. The focus of this paper is on responsible partner selection in the context of fostering stable partnerships, marriages, and parenting skills with the aim to eliminate the negative factors involved in infidelity, particularly concerning the spread of sexually transmitted diseases (especially HIV/AIDS) and other accompanying socially undesirable phenomena in order to contribute to the stability of the family.

Keywords: family, infidelity, partnership, sexually transmitted disease

## 1. Introduction

Partnership and family life are inseparably connected with the danger of the situations when the written or unwritten rules of coexistence are being broken and the relationship is ailing. One of the phenomena causing such a situation is infidelity and the related problems, such as divorce and others.

Everyone has undoubtedly personally encountered the issue of infidelity, either in his/her own life or in the life of one of his/her friends or relations. This issue is a matter of personal life as well as the legal system, although infidelity is not a legal term. Infidelity has its own history, it is a frequent motive in literature, it is a prominent issue in psychology and it has an important place in education towards marriage and parenthood as well. One of its consequences is divorce, which is reflected in demographic statistics, becomes a topic of political campaigns and a part of the value system etc. Whatever is our perspective of looking at infidelity, it is the definition of the term which becomes the first obstacle.

This article presents suggestions for discussion over a current topic.

Recent discussions often focus on the various forms of socially undesirable coexistence, arguments and examples are searched for not only in the above-mentioned areas but also e.g. in nature. *"Nevertheless, infidelity is not an actual primary cause but a consequence of another cause or causes which arose in the marriage or even before it."* (Havlíček, 1992, p. 79).

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It is the responsible choice of a partner, which is the crucial step leading to the socially desirable model of a family which does not fall apart. The time of the emergence of long-term partner relationships being usually the period of professional preparation at secondary schools or universities, the choice is influenced by a number of factors with a more or less positive (or negative) impact. Using a gross simplification, we can describe these factors as certain limits restricting our chance to succeed, resp. to have a long lasting relationship and later a functioning family, just as the society expects. What can such limits be?

### *1.1. The limits of infidelity*

#### **Demographic limits**

If we work with the prevalent European model of family based on the Christian tradition, it means that there is always one man and one woman, i.e. the typical monogamous model. However, the number of women in population becomes higher than the number of men with rising age. Various calculations show that in the age group above 30, every 7th – 8th woman is “free”, having no stable partner (we have to differentiate between the so-called singles and the impossibility to live with a partner permanently).

#### **Educational limits**

The issue of infidelity has to be included in different school subjects at primary and secondary schools, primarily in moral education, but also in education towards partnership, marriage and parenthood.

#### **The limits of social and sexual maturity**

Women become socially “mature” much sooner than their male peers, they have clear priorities, value system, life strategy etc. This is firmly connected with sexual maturity as well. On the other hand, the traditional idea of every woman’s dream “to have a baby” is being continuously disrupted. The number of women who find the sense of life in things utterly different than the mother role is increasing. It has not been long since such women were unanimously thought fit to be treated by a psychologist, however this is no longer the general view. It is true that besides a number of subjective reasons of the women’s choice, there is often the objective reason – the continuously rising infertility.

#### **Family limits**

The view of family as a social institution is conditioned by a number of factors, the most dominant ones being stability and fidelity. They determine the ethical quality of the relationship. An adolescent often experiences a pre-crisis situation or even the crisis itself and s/he carries this negative experience into his/her adult life. Since the divorced parents usually enter into another relationship, the child loses one of the many certainties – family stability and s/he takes the loss with him/her into his/her future partnership, marriage and parenthood

#### **Historical conditioning**

The attitude to infidelity was constantly changing throughout the history. It usually consisted in double approach (double morals). Men were allowed to have a harem or a great number of lovers, while the position of women was completely different. A woman was basically untouchable, being a possession or even a piece of goods belonging to the man.

#### **Media limits**

Few television series are completely unconcerned with infidelity, relationships outside marriage or partnership, including the birth of a child outside family environment. At the same time, it is mass media, which have a strong impact on the opinions, attitudes and the value system of adolescents.

### Medical limits

One of the important things connected with infidelity is sexual intercourse, which is often unprotected. This makes infidelity one of the causes of the spread of sexually transmitted diseases, which can happen in geometric progression. Worries about the woman becoming pregnant are no longer the chief factor here.

#### 1.2. An attempt to define infidelity

The definition of what is infidelity and what is not provokes violent quarrels between partners, while none of them admits that there is no universal answer. The generally accepted definition of infidelity as sexual intercourse with a person outside one's current relationship does not hold against the voices of those who become jealous and accuse their partner of infidelity because of a kiss, a glance or a mere thought of someone else.

Christian environment identify infidelity with adultery. See e.g. Riegerův slovník naučný (Rieger's Dictionary) (1862, volume 2, p. 145) which defines adultery as "*deliberate sexual converse of a married person with another not married to him/her as well as the converse of a single person with a married one. The breach of conjugal fidelity, but also of chastity connected with adultery made it a crime punishable by the most severe punishments.*"

Ottův slovník naučný (Otto's Dictionary) (1882) does not contain the word infidelity, however it gives an extensive definition of adultery. The same dictionary (1892, volume V., p. 418) defines adultery as "*extramarital intercourse of a husband or wife or intercourse with one of the married couple*". Furthermore, it differentiates between simple adultery (jednoduché cizoložství) involving just one married person and double adultery (dvojnásobné cizoložství) involving two married persons. In historical context, the term "cizoložství" (adultery) was originally equivalent to "nevěra" (infidelity), while adultery was defined as extra-marital intercourse of a husband or wife. Another source identifying infidelity with adultery is Masarykův naučný slovník (Masaryk's Dictionary). Besides adultery, there are other terms connected with infidelity. As we have already written, there is no precise definition of infidelity, however, using a simplification we may say that infidelity is the opposite of fidelity, which represents one of the conditions of a well-functioning marriage as well as one of the elements of prevention of sexually transmitted diseases, domestic violence, failure of some functions of family etc.

Logically, every individual in the social environment experiences uncountable social contacts necessitated by his/her duties at work, family relationships, ways of spending free time etc. One of the possible beginnings of infidelity is the so-called flirt and possibly virtual infidelity.

The issue of infidelity appears in a number of studies dealing with the different inclinations to infidelity in men and women, the appropriate reactions to learning about infidelity, the means of prevention of infidelity etc.

#### The means of prevention

- responsible choice of a partner proving his/her worth during the relationship before marriage
- open communication between the partners
- sexual life without problems and adequate emotional satisfaction
- happy and full life together, common interests etc.

Our society is unusually tolerant to infidelity. Numerous surveys realized by the authors of this text showed that 25 % of partners approximately are willing to tolerate infidelity. 33 % on the other hand, consider infidelity an insoluble problem resulting in the disintegration of the relationship and, in the case of marriage, divorce.

#### The most common motives and causes of infidelity:

- momentary diversion,

- search for a new experience (adventure),
- a means of revenge to an infidel partner,
- unfulfilled wishes and desires in the current relationship (the search for a prince/princess),
- the desire to “go for the better”,
- escaping a stereotype,
- sexual dissatisfaction in the current relationship,
- permanent presence of children (unsatisfactory housing conditions),
- models of behaviour from adolescence.

In practice, we differentiate mainly between two types of infidelity:

- **physical infidelity** – extra-marital or extra-partnership relationship which involves sexual intercourse;
- **mental infidelity** – emotional separation from the current partner/husband/wife, gradual disappearance of common activities, the absence of imaginations concerning common future and last but not least the decrease of the interest in sexual life. Mental infidelity develops into physical infidelity in most cases, which means that the new relationship is sooner or later connected with intercourse.

Some authors, mainly those from the past, distinguish between several types of infidelity Capponi and Novák (1995, p. 47) give the following types:

1. Odskok (bounce): one-time, usually accidental, without emotional ties, use of or submission to an opportunity unaccompanied by emotions.
2. Dobrodružství (adventure): motivated mainly by the desire to have a new sexual experience, diversification of life. Purely sexual motives can be accompanied by emotional ties.
3. Vztah (relationship): long-term affair having certain stages similar to the stages of married life

Various definitions help us to differentiate between two elements of infidelity:

- mental-erotic activities (they play an important role at the beginning of the relationship, but they also have their place in more advanced age),
- sexual activities (they play the crucial role in most relationships).

**The disintegration of the traditional idea of family is related to the rising tolerance of some risk phenomena threatening the family**, mainly infidelity. A society based on institutional monogamy must have the concepts of institutional form of adultery (prostitution) and of infidelity. Compared with the past, modern science and technology offer far more means and conditions resulting in risk situations (we speak about mobile phones, PCs and the increased mobility of persons).

Moreover, there is no ideal image of fidelity in nature, though many will argue that there are enough examples of long-term or lifelong fidelity. It can be claimed that fidelity in nature can become an obstacle to natural selection of partners. Various codes appeared throughout the history (e.g. The Old and New Testaments), they described mutual relationships and in the case of the choice of a partner they practically allowed for no changes.

Men are generally more promiscuous than women, they are programmed to maximize the transmission of genes and their genitals enable them to transmit the greatest number of genes possible in a short time to their descendants.

Recent research (e.g. Weiss, Zvěřina, 2001) points to the generally known fact that women tend to enter longer extra-marital relationships than men.

To make the overview of problems complete, let us notice that infidelity is usually discussed in connection with marriage. Considering that more and more people prefer partnership to marriage, it would be appropriate to focus not only on infidelity in the context of marriage, but mainly in the context of partnership.

Table 8: Reasons of divorce on the part of man (%)

<i>Prevalent reason of divorce</i>	19 60	19 70	19 80	19 90	20 00	20 05	20 06	20 07
infidelity	29, 4	15, 7	18, 3	14, 9	7,9	5,8	5,5	5,2
differences in natures, opinions, interests	10, 6	19, 9	26, 0	40, 5	47, 0	52, 1	54, 6	65, 9
<i>total</i>	40, 0	35, 6	44, 3	55, 4	54, 9	57, 9	60, 1	61, 1

(Source: Czech Statistical Office)

Table 9: Reasons of divorce on the part of woman (%)

<i>Prevalent reason of divorce</i>	19 60	19 70	19 80	19 90	20 00	20 05	20 06	20 07
infidelity	28, 6	12, 4	16, 9	13, 2	5,6	3,7	3,3	3,3
differences in natures, opinions, interests	10, 9	21, 7	26, 0	40, 5	49, 1	50, 5	52, 7	64, 5
<i>total</i>	39, 5	34, 1	42, 9	53, 7	54, 2	54, 2	56, 0	67, 8

(Source: Czech Statistical Office)

The data given in the tables makes it clear that infidelity ceases to be the cause of divorce for both men and women in the last decades. One of the possible explanations could be the fact that at the end of the partnership/marriage both mates are usually in new relationships already, which means that the stress is on the differences in natures, opinions and interests rather than on the infidelity itself (see Table 2). The increasing number of divorces caused by differences in nature, opinions and interests is a sort of warning. It is undoubtedly an argument for paying special attention to the choice of future partner at school.

Kinsey's (1948, 1953) reports in sexual behaviour state that about 33% of men and 20 % of women have extramarital intercourse some time in their lives. Czech research on sexual behaviour conducted by Weiss and Zvěřina (2001) suggest that almost 66 % of married men had extramarital intercourse during their marriage. (64

% in 1993 and 63 % in 1998). As for women, 46 % admitted to have had extramarital intercourse in 1993 and 42 % in 1998. The average number of partners given by men was 6,4 (50 % had 3 partners or less) and the same number for women was 3,9 (more than 50 % had one or two partners). Furthermore, women tend to have long-term extramarital relationships, while men have rather occasional ones. The authors believe that the greater number of infidel men is the result of their greater sincerity or the possibility that they often had intercourse with unmarried women. They also explain the greater number of infidel persons in comparison with foreign studies by the more liberal attitude of the Czech population to infidelity. The data presented in the CVVM report from 2003 are no less interesting: 32 % of respondents believe extramarital relationships to be “always wrong” and 38 % believe them to be “almost always wrong”. 21 % consider them to be “sometimes wrong” and 4 % “never wrong”. Another survey of the same agency (CVVM) from 2012 shows that infidelity of the husband is judged morally unacceptable by 60 % of female respondents, while 63 % of male respondents have the same opinion of the infidelity of women. 11 % of men and 8 % of women regard it as morally acceptable.

## 2. Method

### 2.1. Research objective

The aim of the research was to identify the trend in the attitude of young girls to infidelity. We addressed two groups of respondents and asked them to express their opinions of problems in partner relationship. One part of the research was concerned with the comparison of the opinions of secondary school students and university students, all the respondents being female.

### 2.2. Method

The research is based on quantitative survey using a questionnaire of our own making consisting of 22 items. 2 items were open questions and 20 were answered on a five point scale (yes, rather yes, rather no, no, I do not have a decided opinion). Respondents were further asked to put the items in order according to their preferences.

### 2.3. Research sample

The respondents were secondary school students (aged 16-19, n=548) and university students of the bachelor program (aged 20-22 let, n = 248) in the Czech Republic.

Table 10: Structure of the research sample (N=796)

n = 548		n = 248	
age	%	age	%
16 years	22,8	20 let	33,5
17 years	29,8	21 let	31,8
18 years	26,3	22 let	34,7
19 years	21,1	-	-
<i>Total</i>	<i>100,0</i>	<i>Total</i>	<i>100,0</i>

## 3. Results

One of the first questions was whether the respondents are currently in a relationship and, if not, whether they have recently been in one. It is reasonable to suppose that their experience can affect their view of the issue of

infidelity, especially in respondents whose relationships fell apart. We may also expect the experience with a partner relationship to increase with age. At the given moment (n = 248) 198 of university students were or had been in a relationship (i.e. 79,8 %). As for secondary school students (n = 548) 280 of them had a relationship (i.e. 51,1 %) mainly those in the final year. Respondents were not asked to indicate how many relationships they already had before the current one.

The obtained data can be compared with the results of many similar studies, mainly the research conducted by P. Weiss and J. Zvěřina (2001) concerned with sexual behaviour of the citizens of the Czech Republic. This research shows that men tend to regard extramarital intercourse as natural and normal, while women do not denounce it but they are not interested in having it themselves.

Table 11 of infidelity: What is the respondents' idea

	n = 548 (age 16-19)	n = 248 (age 20-22)
	%	%
tentative flirt, chasing	12,3	11,3
mutual touches and fondling with another woman	15,1	13,7
kissing a stranger	14,8	5,6
written communication over the Internet, SMS	5,8	6,0
meeting another woman – walks, dinners etc.	13,2	14,1
accidental intercourse	28,5	19,4
parallel relationship with another woman	48,0	38,3
contact with ex-girlfriend without sex	4,0	6,0
sleeping over in a friend's house	8,2	6,3
forced intercourse under threat	-	1,6
watching porn movies	1,2	1,6
repeated infidelity	24,2	12,7
using the services of a prostitute	-	2,8

There were interesting attempts to define infidelity claiming that it is **deliberate and intentional disrespect for the fixed limits and rules between partners given beforehand**. The definition has to include also: scorn, neglect, ridiculing, using another girl's name in an intimate moment, finding of another girl's underwear etc. The results make it clear that the range of indications of infidelity according to the respondents is extremely wide. They show that women perceive flirt as well as situations connected with intercourse as infidelity

Table 12: What can be tolerated?

	n = 548	n = 248
	%	%
tentative flirt	17,0	14,1
mutual touches and fondling with another woman	20,0	18,1
kissing a stranger	15,9	15,3
written communication over the Internet, SMS	19,8	16,6
meeting another woman – walks, dinners etc.	15,8	14,1
accidental intercourse	78,5	7,3
parallel relationship with another woman	58,8	38,3
contact with ex-girlfriend without sex	30,8	14,1
sleeping over in a friend's house	15,9	4,8
forced intercourse under threat	2,0	1,6
watching porn movies	22,5	25,0
repeated infidelity(exceptionally)	48,2	7,3

Some items raise the question why the respondents are willing to tolerate some activities which can threaten their current relationship (e.g. accidental intercourse, which is connected with the risk of contracting a venereal disease).

The results show that **younger girls are more tolerant of infidelity than older girls**. We believe that liberal education, the influence of media and high divorce rate are conducive to the general tolerance of an undesirable social phenomenon. That is an appeal for all individuals responsible for education. It is desirable that young generation builds its future on good foundations, which include the following terms: fidelity and commitment.

#### 4. Conclusion

The research showed that similarly to the term “family”, which is difficult to define precisely (Havigerová, Haviger & Truhlářová, 2013), the term “infidelity” is not only difficult but essentially impossible to define, since it has a different meaning for every one of us. That is why it is important for partners to clarify their idea of infidelity at the beginning of their relationship and to agree on what they consider (will consider) to be infidelity and what are the limits. The influence of their environment must necessarily be taken into account as well, since it is one of the factors affecting the relationship of partners (Levická a kol., 2012).

Trust is the basis of all good relationships. A breach of mutual trust (by word or deed) creates an opportunity for infidelity. If one of the partners continuously suspects the other of infidelity the natural result is jealousy.

It is surprising that despite the extensive and long information campaign many say that it is impossible to tolerate accidental intercourse, while a third of the respondents admits that such an activity exists. The risk is high as it is improbable that reliable barrier contraceptive is used during accidental intercourse.

Infidelity is connected with the danger of disturbing the mental well-being, deterioration of family climate and consequent negative impact on children. Another danger seems to be the spreading of sexually transmitted diseases. It suffices to realize that every intercourse with a new partner is that a pyramidal increase of potential transmission of some sexually transmitted disease occurs.

The most important finding of this research is the **need to pay increased attention to the education towards partnership, marriage and parenthood**. Another important point is the responsible choice of a partner. The space for education in this area could be found in the subjects **Basics of Social Sciences and Ethical Education**.

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# Influence of the higher education on the investment climate

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## Abstract

The investment climate is influenced by different factors: political, economic, social, juridical, ecological, etc. The present article represents the analysis of the higher education influence on the country's investment climate, expressed by the rank of the indicator of investment attractiveness by materials of "Doing Business". The authors of the article suppose that a greater number of students, acquiring the higher education favours the investment climate of the country. This hypothesis was proved using correlation method on the basis of Eurostat data by countries of the Central-Eastern Europe.

Keywords: investment climate, human capital, higher education

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## 1. Introduction

The problem of attracting investments is one of the key problems of the modern society. Investment resources are limited, and it is impossible to fully satisfy the existing necessity in them. The investment climate plays a significant role in activation of investment activity in the region. According to the World Bank data by the investment climate they mean the set of local factors, which form abilities and incentives of firms for productive investment, creating new working place and expansion of operations (World Development Report, 2005).

One of the most important factors more and more influencing the economic growth and directly the investment climate is human capital. Scientists having assessed the ration of human capital, natural and production resources of countries came to a conclusion that the part of human capital in developed countries constitutes up to 80% of potential of countries, developing up to 70% (Where is the Wealth of Nations: Measuring Capital for the 21st Century, 2004).

The roots of human capital idea lie in works of W. Petty, A. Smith and A. Marshall. Schultz, Mincer and Becker (Schultz 1961, Mincer 1962, Becker 1964) formulated this theory more clearly in their generally known works in the frame of human capital theory (Stiglitz 1975). It was projected that education increases human productivity. The additional limit productivity obtained in the training process is paid in the labour market as an addition to a salary.

G.Stigler and M.Spence (G.Stigler 1962, M.Spence 1973) also have contributed to the human capital theory. These authors with K.Arrow, J.Riley (K.Arrow, J.Riley) have explained connections between the level of the market participants' education and incomes.

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According to A. Ciccone and G. Peri (A. Ciccone, G. Peri 2006) the influence of human capital can be explained due to interstate differences in economic development, insufficient flows of capital into poor countries, and other macroeconomic phenomena.

In this connection the authors estimate that the issue of the presence of macro-level connection between definite indicators of human capital and investment climate in countries of Central-Eastern Europe, characterised by the recent transfer to the market type economy.

The authors in the present research answer the question how such a component, characterising human capital, as a percentage of students acquiring the higher education by types of programmes and spheres influences the investment climate.

## 2. Method

In order to check the hypothesis about the connection between the percentage of students acquiring the higher education and ranks of investment climate of countries the authors used a correlation analysis.

*The correlation analysis* is a method of statistical data processing, the essence of which is the study of correlation coefficients among variables. The study of correlation dependences is based on the study of such connections among variables, at which the value of one variable-dependent alters on average depending on which values are taken by other variables. The mathematical correlation measure of two random quantities is correlation coefficient (Ефимова, Петрова, Румянцев 1998). Correlation connection reflects the tendency when one variable quantity with the growth of another variable quantity correspondingly either decreases (negative correlation), or increases (positive correlation).

*Spearman's correlation* is of rank-type, i.e., for estimation of connection strength scientists use corresponding ranks, but not numerical values. The coefficient is an invariant in relation to any monotone measurement scale transformation.

As an operational indicator, characterising the investment climate of countries, the authors used the ranks of the ease of doing business index according to annual surveys of the World Bank „Doing Business” (Doing Business 2011: Making a difference for entrepreneurs, 2010).

One of the human capital components is the part of population acquiring the higher education (according to International Standard Classification of Education it is the 5<sup>th</sup> and the 6<sup>th</sup> stage of the higher education). *The authors have made the analysis of the connection degree between ranks of the ease of doing business indices and the part of people studying in different programmes: theoretical (stage 5A of the higher education) and professional, technical bachelor and master programmes (stage 5B), and also doctor programmes (stage 6).* The authors have made a more detailed analysis of the connection degree *between ranks of the ease of doing business and the part of people studying in different fields of the higher education: teacher training and pedagogical science; humanities and art; science (life sciences, physical sciences, mathematics and statistics, computer studies); engineering, manufacturing and building sector; agriculture and veterinary medicine; public health and social maintenance; services (consumers services, transport, environmental protection, security services); social sciences, entrepreneurial activity management, law (International Standard Classification of Education, 1997).* The research information basis was the *Eurostat basis of statistical indicators.*

The analysis was made by countries of Central-Eastern Europe: Estonia, the Czech Republic, Poland, Lithuania, Latvia, Slovenia, Hungary, Bulgaria, Slovakia, Romania, and Croatia for the period of the year 2010. The data correlation analysis was made in the programme SPSS 17.

### 3. Results

As the correlation analysis shows in general in countries of Central-Eastern Europe the investment climate is influenced by the part of students acquiring the higher education including bachelor, master and doctor programmes (Spearman's correlation coefficient -0,430,  $p < 0,01$ ). *It means the bigger is the part of students, the lower is the investment climate rank, and correspondingly, the region is more attractive to investors* (Table 1).

Table 1. Correlation matrix of rank of the ease of doing business and the part of all students in countries of CEE, year 2010.

The part of all students in country population	The rank of the ease of doing business
<i>The part of students studying in bachelor, master, and doctor programmes</i>	$r$ (Spearman's) = -0,430**

Note \*\* significance value 0,01

Source: authors' calculation according to the data of rating of the ease of doing business and statistical base of the European Statistical Office – Eurostat

As a result of the conducted research it was stated that the investment climate is influenced by the part of students studying in **professional**, technical bachelor and master programmes (Spearman's correlation coefficient -0,343,  $p < 0,01$ ) and **doctor** programmes (Spearman's correlation coefficient -0,291,  $p < 0,01$ ), but not influenced by the part of students, studying in **theoretical** bachelor and master programmes, giving either preparation to the scientific work or access to professions, requiring the high qualification (Spearman's correlation coefficient -0,191,  $p > 0,05$ ).

However, the depth and breadth of knowledge, acquired in professional, technical programmes in their quality differs from knowledge, acquired in theoretical programmes. Professional programmes concentrate on professional knowledge and skills, connected with the entrance to labour market. The successful graduation of such programmes usually gives for students a qualification, which is in demand in the workforce market (Table 2).

Table 2. Correlation matrix of rank of the ease of doing business and the parts of students in different programmes in countries of CEE, year 2010.

The part of students in different programmes	The rank of the ease of doing business
The part of students studying in theoretical bachelor and master programmes	$r$ (Spearman's) = 0
<i>The part of students studying in professional, technical bachelor and master programmes</i>	$r$ (Spearman's) = -0,343**
<i>The part of students studying in doctor programmes</i>	$r$ (Spearman's) = -0,291**

Note \*\* significance level 0,01

Source: authors' calculation according to the data of rating of the ease of doing

business and statistical base of the European Statistical Office – Eurostat

The research has revealed the influence of the part of students by different fields of the higher education on the investment climate of a country. It established the medium degree linear connection between investment climate indicators and the part of students, studying in programmes of such sectors of education as **public health and social maintenance** (*Spearman's correlation coefficient* -0,547,  $p < 0,01$ ); it also established the weak linear connection between investment climate and the part of students, studying **humanities and art** (*Spearman's correlation coefficient* -0,281,  $p < 0,05$ ); and also **natural sciences** (*Spearman's correlation coefficient* -0,284,  $p < 0,05$ ); **engineering, manufacturing and building sciences** (*Spearman's correlation coefficient* -0,304,  $p < 0,05$ ); and also **social sciences** (*Spearman's correlation coefficient* -0,334,  $p < 0,01$ ). There was no influence revealed on the investment climate of the part of students, studying **pedagogy** (*Spearman's correlation coefficient* -0,239,  $p > 0,05$ ); **agriculture and veterinary medicine** (*Spearman's correlation coefficient* 0,180,  $p > 0,05$ ).

Table 3. The correlation matrix of ranks of the ease of doing business and the part of students by different sectors of education in countries of CEE, year 2010.

<i>The part of students, studying in bachelor, master and doctor programmes by sectors</i>	The rank of the ease of doing business
teacher training and pedagogic science	$r$ (Spearman's)= 0
humanities and art	$r$ (Spearman's)= -0,281*
science (life sciences, physical sciences, mathematics and statistics, computer studies)	$r$ (Spearman's)= -0,284*
engineering, manufacturing and building sectors	$r$ (Spearman's)= -0,304*
agriculture and veterinary medicine	$r$ (Spearman's)= 0
public health and social maintenance	$r$ (Spearman's)= -0,547**
services (consumers services, transport, environmental protection, security services)	$r$ (Spearman's)= 0
social sciences, entrepreneurial activity management, law	$r$ (Spearman's)= -0,334**
<b>Note</b> ** significance level 0,01 * significance level 0,05	

**Source:** authors' calculation according to the data of rating of the ease of doing business and statistical base of the European Statistical Office – Eurostat

#### 4. Conclusions

According to results of the conducted research we can make the following conclusions:

One of the factors influencing the investment climate of countries of Central-Eastern Europe for 2010 is such a component of human capital as the degree of population participation in the higher education.

The part of students in population of CEE countries studying in programmes of the higher professional education and doctor programmes attracts investors. *However, the research has not revealed the influence of the part of students, studying in theoretical bachelor and master programmes, on the investment climate. Probably, this influence does not have a linear character, which requires a more deep separate research. And also it has more likely an indirect influence, because students graduating these programmes do not have a professional qualification unlike professional programmes, in which the direct customer of the level and type of acquired knowledge and skills is an employer (firms, enterprises and others). The possible explanation of the influence of the part of doctoral students in country population on the investment climate is the fact that doctoral students usually are excellent specialists in definite narrow area and constitute the basis for development of innovations in country economies.*

*Concerning the influence of the population participation in the higher education by fields on the investment climate, we can state that investors are attracted by the presence in countries of potential engineers, specialists in manufacturing and building sector, and also professional specialists in sector of natural and social sciences and in sector of humanities and art. The established connection of medium degree between the participation of population in the education field of public health and social maintenance and entrepreneurial climate probably can be explained in the following way – as the specialists of these fields are in demand in labour market, the expression of care about public health and welfare promotes the improvement of the human capital quality in CEE countries. The established absence of linear connection between the participation of population in pedagogical training and investment climate can be explained by the fact that the number of personnel for preparation of population with secondary and primary education does not directly influence the investment climate of CEE countries. However, in authors' opinion the latter requires a separate research. The established absence of linear connection between the participation of population in acquiring education in fields of agriculture, veterinary medicine and entrepreneurial climate possibly can be explained by the low added value in this field, which correspondingly influences the investors' interest.*



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4<sup>th</sup> International Conference on New Horizons in Education

# Innovations in seniors' education at the Czech Technical University in Prague Faculty of Transportation Sciences

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## Abstract

The paper discusses the education of seniors at the University of the Third Age at the Czech Technical University in Prague Faculty of Transportation Sciences. It analyzes the current situation of the offered courses and proposes a new approach to training for older people. It focuses on the need to educate seniors on modern information technologies and security technologies. As an example, it states the seniors' education in the field of identification and verification using biometrics.

*Keywords:* seniors; education; modern technologies; identification; verification; biometrics

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## Introduction

The Faculty of Transportation Sciences was founded in 1993 after the break-up of Czechoslovakia. It became part of the Czech Technical University in Prague. In the first academic year 1993-1994, 200 students enrolled in the day-time study in the engineering programs. In the subsequent academic year 1994-1995, the Faculty opened also the bachelor's program in Decin in northern Bohemia. In 1998, the first 70 students graduated in the engineering studies, while the first 15 students graduated in the bachelor's program. In March 2000, the Institute for Bachelor Studies was founded at the Faculty of Transportation Sciences in Decin. In the academic year 2003-2004, a new form of study – the so-called “structured study form” – was launched. The aim of this method was to reflect contemporary European trends in education.[1][6]

## Education at the Faculty of Transportation Sciences

Currently, the Faculty of Transportation Sciences offers a three-year bachelor's program “Technologies in Transportation and Connections,” divided into seven subjects fields. Further, it offers a two-year master's program in the same field, divided into eight subject fields. It is also possible to study in three different doctoral programs: besides “Technologies in Transportation and Connections” (divided into three subject fields) also “Engineering Informatics” and “Logistics.” Table 1 shows complete study programmes, which Faculty of Transportation Sciences has accredited.[1]

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Table 1. Study programmes and subject fields at the CTU in Prague Faculty of Transportation Sciences

Type of studies	Study programmes	Subject field
Bachelor study programme	Technology and Technics of Transport and Communications	Automation and Informatics
		Transportation Systems and Technology
		Intelligent Transport Systems
		Air Transport
		Management and Economics of Transportation and Telecommunications
Master study programme	Technology and Technics of Transport and Communications	Professional Pilot
		Technology of Aviation Maintenance
		Safety of Transportation Vehicles and Infrastructure
		Security of Information and Telecommunication Systems
		Transportation Systems and Technology
Doctoral study programme	Technology in Transportation and Telecommunications	Engineering Informatics of Transportation and Communication
		Logistics, Technology and Management in Transportation
		Air Traffic Control and Management
		Intelligent Transport Systems
		Transportation and Logistic Systems
Doctoral study programme	Logistics	Technology and Management in Transportation and Telecommunications
		Transportation Systems and Technology
		Air Traffic Control and Management
Doctoral study programme	Engineering Informatics	Transportation Logistics
		Engineering Informatics of Transportation and Communication

### Continuing Education

Besides the above mentioned study programs, the Faculty of Transportation Sciences also offers possibilities for continuing education. This program is divided into three parts: entrance exams preparatory courses, career courses and the so-called University of the Third Generation.

The entrance exams preparatory courses are intended for prospective students and they focus on providing coherent knowledge of high school level mathematics and physics. They prepare the applicants not only for the entrance exams, but also for the studies at the Faculty, since mathematics and physics are an integral part of technical training and can pose difficulties to some incoming students.

The career courses are intended for the graduates of technical and natural sciences schools, who want to expand their knowledge by the newest findings, hereby keeping up with the latest scientific developments and increasing their attractiveness on the job market. Table 2 shows the offer of preparatory courses and career courses in the spring semester 2012 – 2013[2].

Table 2. Spring Courses, academic year 2012-2013

Preparatory courses	Mathematics Physics Mathematics and Physics
Career courses	Management Course to obtain basic theoretical knowledges for aircraft maintenance technician European aviation law commission regulation (EC) number 2042/2003 Electrical wiring interconnection systems (EWIS) Continuation courses from human factors and human performance Safety of fuel tank

### University of the Third Generation

University of the Third Generation is intended for senior citizens, who seek to expand their knowledge and professional skills. A senior citizen is eligible to enroll upon presenting a proof of collecting a pension. The courses of the University of the Third Generation are offered both in Prague and Decin. The following tables (table 3 and table 4) show the courses currently offered [3].

Table 3. Spring Semester 2012-2013

Courses in Prague	Exploring of Prague 2
Courses in Decin	Work with computer – basic course Work with computer – advanced course Multicultural Communication

Table 4. Fall Semester 2013-2014

Courses in Prague	Revamp your Russian
Courses in Decin	Work with computer – advanced course English – intermediate course Man and society – sociology of everyday life

As apparent, the offer of courses for senior citizens at the Faculty of Transportation Services is limited. In addition, it focuses on instruction of foreign languages and computer skills. This focus prevails at other departments of the Czech Technical University, as well as some other universities in the Czech Republic. Technical subjects comprised only 11,6% out of the entire offer of subjects at the University of the Third Generation at the Czech Technical University in Prague in the spring semester 2012-2013 and 20% in the fall semester 2013-2014[3]. The Faculty of Transportation Sciences offers no specialized technical subject, despite the fact that it is a technical school and should expand the education for seniors in these very subjects. According to my survey, seniors are interested not only in foreign languages or computer studies, but also in specialized subjects focused on new technologies, which they encounter in their daily lives.

As the life expectancy is constantly increasing, more and more seniors wish to spend their retirement years in an active and meaningful way. They are interested in current events and often also in new trends and modern

technologies. Since they are increasingly also users of these technologies, they want to gain a more profound understanding of them beyond the mere use. It would therefore be a mistake to limit the education in modern technologies only to the knowledge of computers and other contemporary devices.

### **Biometrics and seniors**

In my opinion, it is highly desirable to offer to seniors technical courses, which will allow them to familiarize themselves with modern technologies, which are commonplace today, for example problems of departure vehicles from light-controlled intersections [4] or problems of authentication in ITS applications [5], etc. Biometrics is one of such next technologies. As a result of constant advancement in research and development in the area of modern technologies, their financial accessibility, as well as increased security risks worldwide, biometrics has been gaining a lot of attention and finding new possibilities for application in the last several years. Identification and verification of individuals by utilizing biometric features used to be the domain of criminologists or organizations requiring high degree of security for its operations. Today, however, all the segments of the population, including seniors, are exposed to different biometric applications in their daily lives. A good example of this trend are biometric passports, which are gradually replacing the former types of passports. The use of biometric features for verification of customers paying with a credit card is less used as of yet. Within a couple of years, however, the use of biometric data can be expected to find its way into more and more areas of our daily lives – they are unique, untransferable and inalienable for each person and since they are derived from different body parts, we are carrying them with us all the time.

Given this trend, the Faculty of Transportation Sciences wants to offer such courses in the context of the University of the Third Generation to seniors, which would provide them with the basic knowledge and understanding of biometrics, such as methods for identification and verification of individuals: fingerprints, geometry of hand, geometry of face, and the vein structure in the retina, back of the hand or a finger. They would also become familiar with both the advantages and disadvantages of these individual methods and their suitability for practical purposes. Practical demonstrations would be part of the course.

The Czech Technical University has been conducting research in the area of biometrics for some time now. The staff and students at the Faculty of Transportation Sciences examine different biometric indicators, such as geometry of an ear, structure of veins on a retina, fingerprints, and structure of the bloodstream of the palm and wrist. In a biometric laboratory, seniors can become familiar with the newest research and the laboratory apparatus used for biometric data collection. The laboratory is equipped with a thermocamera by Fluke, electronic fingerprint scanner by Hitachi, apparatus PalmSecure by Fujitsu for scanning of the bloodstream, apparatus for scanning of the retina and by a camera with infrared additional lighting used for research into scanning of the geometry of the ear and structure of veins of the wrist by Nikon. Part of this research is designed specifically to study collection of biometric data from senior citizens, since it analyzes the influence of age and medication intake on biometric indicators and examines possibilities of compensation of possible negative quality of the scanned sample. Attention is paid particularly to scanning of the structure of veins of the wrist, so that this biometric indicator would be used without any negative influences that diminish clarity of the collected data. Seniors could become part of this research by providing their samples to the database of the biometric laboratory and participating in their analysis.

### **Conclusion**

The Faculty of Transportation Sciences at the Czech Technical University offers, along with the bachelor's studies programs, subsequent master's studies programs, and doctoral studies programs also possibilities for continuing education, which includes also studies for senior citizens at the University of the Third Generation.

Unfortunately, the range of courses offered for this type of studies is currently narrow and focuses only on broadening of the computer literacy of seniors and study of foreign languages and humanities. Considering that the Faculty belongs the oldest technical university in central Europe, such a situation is neither satisfactory nor sufficient. The Faculty should be able to offer also specialized technical subjects, so that seniors would receive education in the area of modern technologies (transportation, security information) to become familiar with the latest trends and their applications. Such understanding would enhance their acceptance of use of the modern devices. With some dedication, this is certainly within the reach of the Faculty. The benefits for the entire society are clear – participation of seniors in both active life and university research has a significant potential. The article cites as an example courses for seniors focusing on the principles of biometrics and their involvement in the research in the biometric laboratory at the Faculty. Gaining knowledge and understanding of the many applications of modern technologies, such as biometry, in the daily lives, makes the users, particularly the senior citizens, less apprehensive about using them and helps them to fully participate in the modern society.

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# Innovative course for future math teachers

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## Abstract

Future teachers need to advance their conceptual understanding of mathematics, ability to think mathematically and learn how to convey these skills to high school students. In the innovative course “Mathematics for Teachers” these goals are attained through developing specific types of knowledge (basic concepts in education, knowledge of mathematical proof and reasoning, process of mathematical thinking, mathematical language), skills (problem-solving, interpersonal) and ability to see connections within mathematics to other subjects and to the real world. Future teachers explore concepts by “doing mathematics in a similar way, as their own students” and by working on topics connected to the school curriculum through tasks that are challenging at a university level. Student have the unique opportunity not only to learn basic educational concepts, but also apply them to teaching mathematics to freshman university students in the form of review modules, seminars virtual tutorials and lectures on history of mathematics.

Keywords; Future Teachers, Mathematics, Active Learning, Reflection

## Introduction

The course Mathematics for Teachers (MATC82) in University of Toronto is designed for students enrolled in the Concurrent Teacher Education Program (CTEP) and aiming to teach mathematics at K-12 level. The course gives students an opportunity to form their views of mathematics and attitude to the subject for the purpose of teaching. Recently developed, CTEP is the strongest undergraduate teacher preparation program in Ontario. It integrates the study of education across the province and focuses on the improvement of teacher education.

Students of the Mathematics for Teachers course have the unique opportunity to practice teaching mathematics under the supervision of the course instructor and the coordinator of the Math & Stats Learning Centre (MSLC). MSLC is designed as an innovative support system that helps freshman students to overcome challenges of transition from high school to university. The Centre offers various programs that encourage the students to learn mathematics on a deeper level. Participation in these programs helps CTEP students to understand the difficulties they can face as teachers and simultaneously master their individual approach in a supportive educational environment. Close collaboration between MSLC and CTEP resulted in the creating of new type of University course that dramatically enhances the learning experience of future teachers.

### 1. Effective Teaching Requirements

In order to become a successful and productive high school teacher our student have to develop a strong understanding of the historical background of mathematical concepts and their connections to each other. It is also necessary for the prospective teachers to practice teaching of problem-solving skills to the students with different learning preferences and has an opportunity to apply various teaching strategies in

order to learn how to meet needs of students on all stages of their cognitive development. It is important that these teaching opportunities be designed in a way that prospective teachers work with real students looking for assistance in learning certain topics.

## 2. The Aim of the Course and the Course Objectives.

The *overall Aim* of the course is:

- to further student's understanding of teaching and learning,
- to form their views of mathematics and attitude to the subject for the purpose of teaching,
- to improve student's conceptual understanding and ability to think mathematically,
- to teach them on how to convey mathematical ideas to high school students.

In the course Mathematics for Teachers these goals *are attained* through:

- developing specific for educators types of knowledge: basic concepts in education, types of learning styles, nature of a process of mathematical thinking, high school curriculum, creating and maintaining lesson plans, mathematical language,
- pedagogical skills: problem-solving, interpersonal, organizational, technological (document camera, smart podium, transparencies/overheads, etc.),
- ability to see and convey connections within mathematics to other subjects and to the real world.

In order to reach all the above aims, students of the course are being introduced to several learning style models and taught how to use these models in their teaching under supervision of the course instructor. Future teachers unfold the processes of logical thinking and experience “doing mathematics in a similar way, as their own students will, and reflect on the learning experience at the same time” (Watson and Mason, 2007). Students learn how to be teachers by conducting lessons on advance level of school curriculum related topics (peer teaching) and by overcoming public speaking anxiety through delivering open lectures in History of Mathematics to the university students and staff.

The learning experience is enhanced by writing weekly journals, discussing the methodology used and by analyzing the pros and cons of chosen strategy in small groups.

Students of Mathematics for Teachers extensively apply newly acquired skills by teaching and instructing freshman students in Teaching and Learning Centre (MSLC).

Traditionally the *Objectives* of the course can be divided into two following categories: *understanding* and *skills*.

By the end of the course students **shall understand**:

a) different learning styles (auditory, visual, kinaesthetic) and how to use Myers–Briggs, Colb’s and Felder–Silverman models in their teaching. They will also see the rational of alternate approaches to teaching and their impact on selection of a material for lesson planning.

Attaining this objective helps students to cross a bridge between traditional math courses (*Analysis, Algebra, Geometry, etc.*) and methods course *Curriculum, Instruction and Assessment in Mathematics* that they will take later in their studies. We believe that there is no exact boundary between subject knowledge and methodology and “rather than ignore the overlap, it is better to include it in both courses” (Reka Szasz, 2009) with emphases on practical aspects. Future teachers are interested in learning more about teaching and eager to apply the methodology during their peer-teaching lessons. The instructor of MATC82 distributes topics for the peer teaching at the beginning of the course. During first two weeks of classes, when learning styles are being introduced, the students of the course work on lesson plan incorporating methods of presentations that address all learning preferences.

b) the processes which lie at the heart of mathematics.

Unfolding the processes of mathematical thinking is achieved by formalization of logical process that stands behind every mathematical problem. George Polya’s techniques of modern problem solving are used to connect all areas of mathematics and systematize general approach to problem solving. In Mathematics for Teachers course students learn problem-solving techniques by applying them to math problems appeared to be challenging at university level. Schoolteachers have much more difficult task than their university colleagues: they have to help their students not simply develop logical (mathematical) way of thinking but also encourage them to pursue a career in the area of sciences.

By the end of the course students **will be able to**:

a) connect, extend and relate mathematical ideas to each other. And analyse common problems of high school mathematics from a deeper mathematical level.

All educators agree that active learning is the most effective, but most university courses cannot afford to learn the whole material actively due to time limitation. This course focuses mostly on profound understanding of chosen topics rather than large variety of material, which enables active learning. Active learning is traditionally preferred at school level, which is another reason to use these methods as a model for future teaching. Problem solving activities, group work, peer-teaching sessions, discussions and hands–on group activities are building blocks of the course.

b) to discuss topics in historical context.

This objective is attained through public lectures in History of Mathematics, prepared by groups of 2-3 students and delivered by means of extensive use of modern teaching tools such as: animations, Power Point presentations, and video and sound recordings.

The list of objectives for Mathematics for Teachers explains the reason for creating this course and justifies the use of methods foreign for university education.

### **3. The Structure of the Course and the Assessment.**

Unusual goal of the course gives rise to application of different assessment components.

#### **Teaching done by Students (30%)**

##### Peer-Teaching

Peer-teaching lessons are students to students teaching sessions. Each session is prepared by two students and consists of preparation of precise lesson plan, extensive (no less than three) consultation with the instructor of the course and one 'rehearsal' followed by the 50 minutes lesson. The name 'peer-teaching' reflects the nature of the task: engaging students in active learning by means of hands-on activities, problem solving assignments and games that foster intensive small group communication.

Topics for the lessons are chosen from the school curriculum, but presented in great depth in order "to form students' view of mathematics for the purpose of teaching: their conceptual understanding, their ability to think mathematically and their attitude for the subject" (Cooney, 1999; Gadanidis & Namukasa, 2005)

Teachers need deep understanding and advanced knowledge of all curricular topics, but a one-term course cannot (and should not) cover the whole curriculum. The extensive learning of a new material is not the goal of the course. We are focusing on understanding of the importance of multicomponent structure of school teaching. The textbook used for the course is *Mathematics for High School Teachers* by Usiskin, Peressini, Marchisotto and Stanley, offers eleven 'in depth' topics that cover the whole high school curriculum. Such variety of the material allows changing the set of topics from year to year.

The evaluation of peer-teaching lesson consists of two parts: peer evaluation and instructor evaluation.

##### Lectures in History of Mathematics

Unlike peer-teaching sessions, lectures in History of Mathematics are full scale presentations which are focused on use of modern technology (Power Point, animation, incorporate live on-line examples, performance art and even videotaping). The course instructor provides a list of topics for the lectures but students are also encouraged to choose their own topics. The evaluation of the presentation takes into consideration several parameters and is being prepared by the course instructor.

### Math & Stats Learning Centre

Conducting Math Modules, providing assistance and helping first year students in Math and Stats Learning Centre is the third component of the teaching assignment in the course. (See section 4 of this paper) The coordinator of the Centre provides the evaluation of students' performance in MSLC.

### Assignments and Quizzes (10%)

Students are responsible for the mathematical content of the course. 'Hand in' assignments alternate with 'in class' quizzes and cover the set of topics chosen for the course.

### Weekly Journals (5%)

Students of the course write and then hand in journals during all 12 weeks of classes. Students are learning to record all knowledge significant for them and reflect on their ideas and individual feelings about what they have learned. Such journals are helping future teachers to learn more about themselves and their personal way of thinking. Journals also promote the development of individual teaching style. On the other level, writing one page per week prevents new experiences from being lost. The Journals are collected by instructor at the end of every week and returned to the students at the beginning of next class with comments and analysis that can be studied later by students. Journals are unique tools for cognitive development of future teachers. Evaluation of every entry is done by instructor in a friendly fashion. The marks and comments of the instructor are guiding students through new experiences and teaching them to pay attention to their personal feelings instead of focusing on description of what has been done in the class.

### Midterm Test (20%) and Final Exam (35%)

Both Midterm Test and Final Exam test methodology (about 1/3 of the content) and deep knowledge of mathematics (about 2/3 of the content).

## **2. Math & Stats Learning Centre**

Many first year students face serious challenges to successfully finish their first year university math courses. At MSLC various programs are offered in order to help students to adopt effective learning strategies and learn concepts on a deeper level. One of the most effective and popular strategies that have been employed for designing MSLC programs is the use of peer mentors. MATC82 students are given the chance to be leaders of these sessions and to discuss their understanding of the topics to their freshman counterparts, as well as to share effective learning tools with first year students. These sessions can considerably enhance the first year students' learning experience (Holton, 2001) and proficiency in challenging topics by providing a comfortable and engaging atmosphere. Many first year calculus courses are taught to a large group of students (often more than 200), thus course instructors are not able to create the necessary interaction for a rich learning experience during the lectures. As well, it is often the case that few students who dominate the class discussions intimidate the rest of the class. Mainly due to these facts, many students report their learning experience in mathematics as unpleasant and their confidence level as low. . Students enormously benefit from small-group consultations where they freely discuss challenging topics and ask questions in a non-threatening environment. This experience

not only enhances students' study skills and knowledge of subject material, but will also aid in developing confidence and interest in mathematics.

These small-group consultations also confer benefits to the MATC82 students who act as group mentors, providing them with an opportunity to practice the role of teachers. As prospective teachers, they must be able to examine deficiencies in the math and statistics education curriculum in preparing students for university, and to design the appropriate solutions. Mentors are able to deepen their own understanding of subject material during each session through the reiteration of concepts using techniques such as on-the-spot examples. Mentors will be able to develop their oral and written communication skills, as well as to learn about the important social factors that enable them to become better teachers. In these sessions the learning is a two way process; both the students and mentors benefit from the interaction. (Figure 1)

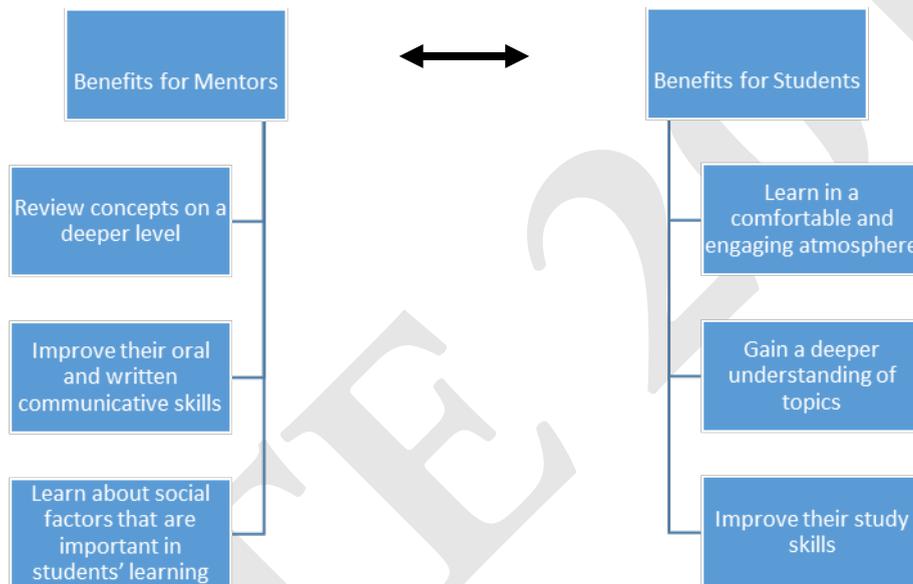


Figure 19: Benefits of small-group consultations for both first year university students and MATC82 mentors

### 3. Review Modules and Seminars

Review modules are eight two-hour sessions which have been constructed to help incoming UTSC students to experience a smoother transition from high school to university calculus. The sessions focus on the students' background and confidence in math concepts by covering algebraic manipulations, inequalities, and functions including trigonometry functions and inverse functions. Seminars are interactive sessions that help boost students' knowledge of and interest in challenging topics such as Intermediate Value Theorem and its application, application of derivatives, integration techniques and applications.

The MSLC coordinator trains MATC82 students to run these sessions as mentors. Training involves the discussion of topics and related assignment questions in order to deepen the understanding of the mentors and improve their teaching skills. In addition, effective teaching techniques, such as collaborative learning and the

promotion of creativity in the classroom, are introduced to the mentors to maximize student engagement in learning (Barkley, Cross & Major, 2005).

Each mentor needs to record his/her experience in the teaching of the review modules and seminars, and explain which techniques worked and which needed to be modified. The MSLC coordinator meets with the mentors after each session and provides them with feedback. Mentors are guided to assemble a teaching portfolio as an effective tool for reflection and to ultimately identify areas of improvement. (Figure 2)

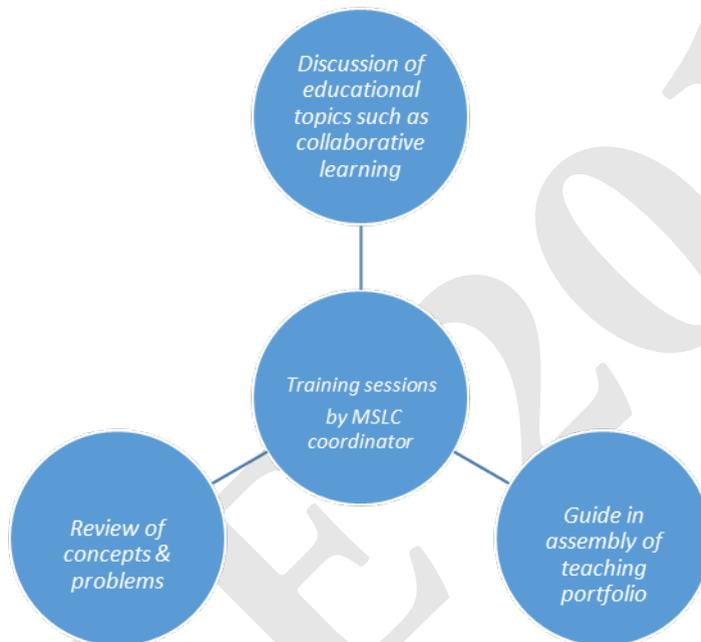


Figure 20: Training mentors (MATC82 students) by MSLC coordinator

#### 4. Virtual Tutorials Virtual Tutorials

In order to open another avenue for student engagement in their studies and for the purpose of extending MSLC services to afterhours Virtual Tutorial Service (VTS) is offered. These online help sessions which are basically questions and answer sessions utilize a chat room (MathIM) which is equipped with a tool set for typing mathematics notation. Students mentioned that VTS was able to enrich their education and engage them successfully. Here are few comments from students about VTS:

*“There will always be those seeking an alternative method to a math problem that best suits their style of learning. The introduction of VTS provides an avenue of such learning.”*

*“Bridging the world of mathematics and the vanguard of social networking, VTS adds a new dimension to*

*mathematics courses that caters to the non-conventional learning methods of many students.”*

MATC82 students are provided with the chance to interact with first year university students in the virtual tutorials as mentors. Mentors help with promotion of the service and with the enhancement of the quality of the sessions. In return they are trained to teach mathematics in virtual environments. With the proliferation of online university classes, it is important for the educators to have a good understanding of online education. Mentors with this unique training could contribute in mathematics e-learning in the future job market. In addition to all the above mentors and students are able to learn basic typesetting rules in LaTeX in the online chatroom. (Figure 3)

MathIM: A LaTeX web-based chat

<http://mathim.com/MSLC-UTSC>

MathIM

TeX enclosed in dollar signs. EX: Hello  $\sqrt{2}$  is irrational.  
To invite a friend, link them to this page.

**MSLC-UTSC**

15:49:08 \* Amy has joined the channel.

15:49:19 <Duy Minh (TA)> Recall that  $0 = x_0 < x_1 < x_2 < \dots < x_n = 1$ , so

$$\sum \Delta x_i = (x_1 - x_0) + (x_2 - x_1) + \dots + (x_n - x_{n-1})$$

So it is just 1.

15:49:36 <Amy> I see now.

15:49:39 <Duy Minh (TA)> So you see that we got two different values for

$$\lim_{n \rightarrow \infty} \sum_{i=1}^n f(x_i^*) \Delta x_i$$

. This means that the limit does not exist. So we can not attache any number to  $\int_0^1 f(x) dx$ . That is, why we say this

$\int_0^1 f(x) dx$

Preview:  
Thank you so much.

Send

Figure 21: A sample calculus virtual session

## 5. Presentations and MSLC newsletter

MSLC organizes one day conference that MATC82 students are able to present their papers and interact with faculty members and other students. This opportunity will allow MATC82 students to explore different areas of math education and improve their presentation skills. In addition, some of the students' papers get published in the MSLC newsletter. Sample topics together with a paragraph from students' papers are listed below:

- **Mathematics and Culture, Michelle H.** *“The cultural differences and mathematics learning is crucial in the language being used. Numerous studies have shown that students in Asia seemed to have outperformed their counterparts in Europe and North America. Thus, many cross-cultural studies have therefore suggested that language and cultural differences may very well be the*

important factor in mathematics achievement and teaching. As for the question why Chinese speaking children seems to have better mathematical skills than English speaking children, there is a general thinking that it is because of the difference in the numbering systems, often known as the counting systems. English speaking children seems to have the most difficulty in learning the numbers of 11 to 19, as it is totally different than the rules that other numbers follows. The number 11 is pronounce as eleven but not ten-one, where starting from the number 13 to 19, it is pronounce as thirteen, where the “teens” are different than the normal idea of ten-three as in the number 23 is pronounce as twenty-three. Only if a child can get over this bump in the road of counting, they are basically count numbers as large as it can get. On the other hand, Chinese adopt a concept of ten-one, ten-two to represents the numbers 11 and 12. In comparison, the Chinese counting system is easier to learn since there is not much of a discrepancy from numbers to numbers.”

- **Teaching Gifted Students, Judie S.** “Most of these kids were admired by their intelligence and specialness during their childhood, however they encounter a lot of emotional and factual problems while them growing older. One of the common observations of these kids is that they are emotionally sensitive – high level of self-criticism, low self-concept and poor peer relations. Because they spent most of their childhood in developing their intellectual skills they missed out the chance to well develop self-concept or relationships with other people. While them growing older they start to ask questions like who I really am, what I want or what I want to be. At the same time the competition among their peers grows, and some start to fail because they can’t accept the fact that they are not as recognized as they were used to be, and some can’t bear high level of competitions.”
- **Math with Abacus, Manal H.** “During the abacus training students are encouraged to explore a different and unique style of math, where the students are temporarily weaned off the abacus board and are encouraged to perform the mathematical operations mentally by visualizing the abacus board without actually manipulating one with one’s hands. As a student graduates from each level successfully, students are given classes on performing mental calculations corresponding to that level. Likewise, the student is moved on to the next level only when the student performs better on the mental calculations. The mental math part of abacus is in my opinion the strongest aspect of learning abacus. Again students are never forced to participate in mental math classes but are given a choice of whether or not to learn mental calculation appropriate to each level.”
- **Using Technology in the Mathematics Classroom, Nathan E.** “Finally, a third technological tool which is commonly used to teach mathematical concepts is a program called *The Geometer’s Sketchpad*. This is a program commonly used in classes discussing geometry, including investigating lines, circles and triangles. More advanced concepts such as trigonometry and calculus can also be tackled using the software. Similar to the TI-83, the *Geometer’s Sketchpad* allows students to directly manipulate mathematical constructs and view ideas and concepts as tangible and concrete. The *Sketchpad* offers greater functionality in its software however and can be used to construct geometric figures, take midpoints and angle bisectors, ratios of line segments and sums of angles, among other things.”
- **Math and Art, Rebecca N.** “In the past, math was used as a tool for creating art. There were certain ideas about what was considered beautiful and mathematical concepts were used to judge

*this beauty. Math was seen as something uniformly beautiful and perfect. Certain shapes, lines, ratios and patterns were seen as aesthetically pleasing. These things were used to create art works and judge them to determine if they were beautiful or not. For example, one very popular thing that was used to determine beauty amongst multiple cultures was the golden ratio."*

- **Bringing the Real World into the Mathematics Classroom, Ritu G.** "Wolfram (2010) discusses that math is made up of four components: posing the right questions, real world to math formulation, computation, and then math formulation back to the real world. Wolfram (2010) further argues that we spend about 80% of the time in mathematics classrooms teaching step 3, computation, when computers are able to do this faster than anyone else. Thus, he argues, that we should be spending more time on teaching steps 1, 2, and 4. Calculation by hand isn't just tedious; it is mostly irrelevant to real mathematics and the real world. It is true, after all, that in the real world, such as in the work place, calculations are handled by computers. Wolfram (2010) pushes for the curriculum to stop teaching calculating and start teaching math."

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4<sup>th</sup> International Conference on New Horizons in Education

## Innovative curricular change and contextual factors

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### **Abstract**

Within the last decade, mainly due to the technological advancements, educational institutions have witnessed a great deal of change. In a constantly evolving environment, all stakeholders have felt a kind of urge to invest in new technologies to provide a better learning/teaching environment for their prospective students and therefore innovation and innovative curricular change has become a fundamental issue in educational institutions. However, while some innovations flourish in some institutions, they simply turn out to be epic fail in some others. This paper argues on the importance of acknowledging the fact that innovative change - especially when it involves technology - is shaped and influenced by contextual factors such as leadership, teachers' attitudes, institutional policies and context specific norms and values. The current paper firstly aims at focusing on "change" phenomenon and its friction generating nature, and then proposes – and – argues on the relevance of a certain model for the sustainability of classroom innovation.

Curriculum; Innovation; Teaching and Curriculum Management.

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## Introduction

Research studies have revealed that understanding the nature of change and developing adequate change management strategies is a necessary condition for an effective curricular change in educational institutions. Drawing upon the change management strategies, this paper tries to describe how these strategies may facilitate diffusion of a curricular innovation that involves use of technology for teaching/learning purposes.

### 1. Change and educational context

We all live in a world of relentless change. As far as teaching and learning context is concerned, in its simplest definition, change denotes a difference in the state or quality of teaching/learning practices. Strangely enough, we both embrace change and resist it. We acknowledge its inevitability, and yet a profound conservative impulse governs our psychology, making us naturally resistant to change and leaving us chronically indecisive when confronted with innovation (Evans, 2001, p.21).

Change urges us to come to terms with and master new knowledge, skills and experiences. Since it means letting go of old routines and attachments in order to acquire new ones, it would be suffice to say that change also involves loss (Hargreaves, 2002).

In education arena, change tends to fail mainly because individual change efforts are poorly designed. According to research literature the reasons might be as follows:

- The goals of the change may be unrealistic or unclear (teachers cannot achieve what is expected of them),

- The perpetrators of change may have low credibility ( their reasons may raise questions and suspect; the intensions regarding real improvement for students may be in doubt),
- Changes may be too complex and overwhelming (requiring teachers to work on too many fronts at once).

### *1.1 Contextual levels that affect pedagogical innovation*

As is noted by Owston (2007), innovative pedagogical practices are affected and mediated by three contextual levels. First is the micro level, consisting of such factors as classroom organization and personal characteristics of the teachers and students. Proceeding the micro level is the meso level, which includes the school organization and personal characteristics of administrators and leaders. If administrators and leaders involved in the process display a positive attitude towards change and their staff who are supposed to adopt to change in question, the innovation stands a better chance to make the desired impact. Third is the macro level, which encompasses the previous two levels, and concerns state and national policies and international trends. At this level, classroom practices can be influenced by national policies and international trends in areas such as curriculum and assessment or professional development.

Evans (2001) emphasizes the importance of helping the teachers during the transition phase by focusing on four dilemmas that the teachers are likely to experience. These are helping them to move:

- from loss to commitment
- from old competence to new competence
- from confusion to coherence
- from conflict to consensus

I will get back to these issues after explaining use of technology in TEFL context and why we need implementing change theories to be able to make best use of information and communication technologies in TEFL classes.

## 1.2 Technology in TEFL class

Recent advances in Information and Communication Technologies (ICT) forces all teachers and administrators to reshape their teaching methods and curricula. In this sense, EFL teachers and programme administrators are no exception. Every passing day the number of EFL professionals who are seeking possible ways of incorporating technology into their existing curricula increases. Computer Assisted Language Learning (CALL) seem to offer certain solutions for more communicative and more student-centred classes, however, some caution must be exercised and CALL on its own can not be considered as a “silver bullet”.

Alongside use of technology in the form of computers, CALL also involves a transformation process in the educational context where it is implemented. Therefore, as is argued elsewhere by Timucin (2006), CALL should be perceived as an interdisciplinary issue demanding change management strategies as well as the knowledge of the use of computers and relevant language teaching methodologies.

Since the primary aim of the current paper is to argue on the relevance of the readiness of “change management” strategies, I now want to focus on tasks of TEFL administrators who are supposed to integrate use of technology into their existing curricula and offer a model that is hoped to ease the transition.

## 2. Tasks of transition

On the issue of implementing change, Evans (2001) argues on “unfreezing” approach, which I personally find extremely relevant. Evans (2001, p.56) posits that innovation requires the learning of something new, usually in place of something old, which unavoidably makes people anxious. And when people are informed about change, they naturally cling to their current skills and are afraid to try new ones, especially when the changes involved are large and complex, here as an important note, I must say that CALL implementation is by all means large and complex issue since it requires changes in teaching materials, alterations in teaching approaches and beliefs. This is even more prevalent when the time frame is short or the tolerance for error is low. *Unfreezing* is a matter of lessening one kind of anxiety, the fear of trying.

*Unfreezing* is the start, after this start, the change agent must enable the teachers to move from loss to commitment, from old competence to new competence, from confusion to coherence, from conflict to consensus. I will be elaborating on each of these tasks during the rest of my paper presentation.

The goal of each task and the key factors involved are shown in the table below:

Tasks of Change (Evans, 2001)

Task	Goal	Key Factors
<i>Unfreezing</i>	Reduce the fear of trying	Appropriate anxiety and guilt Psychological safety
<i>Moving from loss to commitment</i>	Make change meaningful	Continuity Time Personal Contact
<i>Moving from old competence to new competence</i>	Develop new behaviours (skills), beliefs, and ways of thinking	Training that is coherent, continuous, and personal
<i>Moving from confusion to coherence</i>	Realign structures, functions and roles	Clarity regarding responsibility, authority, and decision making
<i>Moving from conflict to consensus</i>	Generate broad support for change	A critical mass Pressure Positive use of power

### 3. Conclusion

This paper argues that as far as managing innovative changes in the form of technology integration in TEFL context is concerned, it is of vital importance to come to terms with change management theories and develop context specific change management strategies before and during the implementation process. The model proposed in this paper for sustainable innovations should not be considered as definitive. Nevertheless, it can be said that the model provides a base for discussion about the reasons why some curriculum innovations fail while others hit the target.

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4<sup>th</sup> International Conference on New Horizons in Education

## Institutional Repositories of Open Access: A paradigm of innovation and changing in Educational Politics

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### Abstract

In the Lisbon Summit (2000), the European Commission adopted the triangle of knowledge (education, research, innovation). These three concepts are fundamental “ingredients” of the European educational policy. In today’s societies, education is the tool leading to research and then, to innovation. Thus, institutional repositories play a key role here. They represent a major and an alternative gate of knowledge. In conclusion, this paper will examine relevant and current initiatives (open access initiatives) and policies among European countries.

*Keywords:* institutional repositories; information society; open access; research; innovation; educational politics

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### 1. Introduction

At both the European level, within initiatives, programs, decisions, directives, recommendations, cooperation and partnerships, and the international level, there is a steady increase of interest in the development of open access repositories (Koutras, 2012). There is today no doubt that information, theoretically and practically, should always be open and accessible to as many users as possible.

The European Union, a loyal host of the Information Society, is keen to implement educational politics that will assist to overcome current and forthcoming obstacles as regards means of entry. Information ought to be reached conveniently. Access should not be restrained by unjust legal rules nor bureaucracy. Therefore, institutional open access repositories come to play a crucial role in offering open access publications to researchers, scientists etc.

However, the current controversy as regards Institutional Repositories is characterized by an unbalanced mixture of technology push, a discussion on the level of academic autarchy and the debate on the role of (commercial) publishers (Kircz, 2005).

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## 2. Historical overview and definitions

### 2.1. Open access as a term

The term ‘learning object’ (a collection of content items, practice items and assessment items, combined, based on a single learning objective, providing smaller, reusable units of learning) originates from Wayne Hodgins in 1994. It rapidly became one of the important aspects of higher education and scientific research. The full concept of a ‘learning object’, though, was first described by Gerard in 1976 (Polsani, 2003). Learning object repositories are similar to digital libraries, and enable the sharing and managing of educational resources, in an open content model (like the Orange Grove, Florida’s digital repository for instructional resources, such as open textbooks). A main feature of Open Educational Resources (OERs) is the dissemination of the idea that information may be designed and promoted in such way it may be easily re-used within various educational forms (Makridou, Araka and Koutras, 2011).

In 1998, David Wiley coined the term ‘open content’ by analogy with open source. ‘Open content’ targeted the educational community, but the term quickly entered the vernacular of internet users. One role of the open content in the history of OERs is the popularization of the idea that the principles of the open source can be productively applied also to content. Hence, the creation of the first widely adopted open license for content (Open Publication License).

Indeed, open access can be defined as the practice of providing online access to scientific content that is free to charge to the reader. In the context of research and development, open access typically focuses on access to ‘scientific information’, which refers to two critical categories:

- Peer-reviewed scientific research articles (published in academic journals);
- Scientific research data (data underlying publications and/ or raw data)

It is imperative to stress that:

- Open access publications follow the same peer review process as non-open access publications;
- As an open access requirement comes after the initial decision to publish, there is no obligation to publish anything as open access: it depends upon the researchers whether they want to publish their work or not under open access;
- As the decision on whether to commercially exploit research outputs (for instance through patents or otherwise) is made after the decision to publish (open access or not), open access does not interfere with the commercial exploitation of research results.

### 2.2. Open access models

There are two open access models:

- ‘Green’ (self-archiving) open access means that the published article or the final peer-reviewed manuscript is archived by the researcher in an online repository before, after or alongside its publication. Access to this article is often delayed (‘embargo period’). Publishers recoup their investment by selling subscriptions and charging pay-per-download/view fees during this period during an exclusively period. This model is promoted alongside the ‘Gold’ route by the open access community of researchers and librarians, and is often preferred.
- ‘Gold’ open access (open access publishing or the author pays for publishing costs) means that a publication is immediately provided in an open access mode by the scientific publisher. Associate costs shift from users to

the university or the research institute to which the researcher is affiliated, or to the funding agency supporting the research. This model is usually the one promoted by the community of well-established scientific publishers in the business.

Most well-established publishers have adapted to the research community's interest in publishing in open access mode, yet usually in favor of 'Gold' open access. Nevertheless, a large number of journals, including those with high prestige and/or high impact factors have also developed self-archiving policies ('Green' open access) that are compatible with the policies of research funding bodies such as the Commission for Horizon 2020.

### 3. Institutional repositories nowadays—their significance

The initial point of the usual debates on institutional repositories is the assignment of the universities and other institutions of higher education and/or scientific research. In particular, the center of the discussion is scientific research and education, as well as the kinds of communication regarding these activities via the institutions and towards society at large.

The organization, the management and the operation of an institutional repository consists on a complex set of actions which contains various initiatives such as: data collection and digitization, appropriate forms and subject matter of archives, adherence to a legislative framework on intellectual property and correct determination of rules and standards on scholarly communication, metadata and development of repository infrastructure (Barton and Waters, 2004). Institutional repositories should aim at specific targets in order to work efficiently.

Therefore, institutional repositories, as an innovative model of knowledge dissemination, reform the whole educational framework on research methods, information management and education alike. Under these circumstances, it is necessary to keep a rational eye on all processes, stakeholders and governmental decisions about educational politics. Definitely, effective interaction is a crucial as regards education politics with great efficiency.

To sum up, an institutional repository is an online resource for the storing (in digital form) of academic materials, such as theses, dissertations and research articles, in the setting of a university or other institution. The institutional repositories' history, starting from the early 1990s, is a relatively short one. The average 'age' of a repository in 2010 is about six years. Such materials, which would once only have existed in print format, and secreted in basements and other more primitive storage facilities, are scientific, technological, artistic, cultural or historical and other.

#### 3.1. Education and open access initiatives

The movement of open educational resources is rising in the higher education environment. Throughout the world there are presently more than 2.500 open access courses (opencoursewares) from over 200 universities (Wiley, 2007).

- In the United States 1.700 courses have been made available by seven university-based projects (<http://ocw.mit.edu>, <http://cnx.rice.edu>, <http://ocw.jhsph.edu>, <http://ocw.tufts.edu>, <http://www.cmu.edu/oil>, <http://ocw.nd.edu>, <http://ocw.usu.edu>).
- In China, 451 courses are offered to 176 university members of the China Open Resources for Education (CORE) consortium ([http://www.core.org.cn/cn/jpkc/index\\_en.html](http://www.core.org.cn/cn/jpkc/index_en.html)).
- In Japan, 350 courses are offered by ten universities participating in the Japanese OCW Consortium (<http://www.jocw.jp>).
- In France, 178 courses are offered by eleven universities, members of the ParisTech OCW project (<http://graduateschool.paristech.org>).

There is a vast amount of educational resource projects underway with targeted external funding in support of their realization. Particularly, the William and Flora Hewlett Foundation has put millions of dollars into university-based open educational resource projects around the world.

### 3.2. *European perspectives on institutional repositories of open access*

There is constant rise of scientific information and its' use in the European Union (Koutras, 2010).

A communication issued on 14<sup>th</sup> February 2007, regulates access, dissemination and preservation of scientific information among European Union members. Thus, open access institutional repositories can be used as an alternative means in relation to additions and changes regarding the European educational framework.

Access, dissemination and preservation of information have acquired intense attention among member-states of the European Union. The outcome of this focus is the creation of a specific operational framework which would include the crucial parameters described above.

In recent years, rising subscription prices for scientific journals have put a strain on university library budgets and research institutions. Businesses also experience problems in accessing scientific information. According to a 2009 UK survey, a significant share of Small and Medium sized Enterprises (SMEs) (55%) said that they had recently experienced difficulty accessing a research article (against 34% in the case of large companies), with the cost reported as the key difficulty (Publishing Research Consortium, 2009).

Two recent European Commissions public consultations show that researchers, libraries, research funders and businesses believe that there is a problem with access to scientific information and that this is a major barrier to the optimal circulation of knowledge in Europe, affecting both academic research and industrial intake of research results. Respondents to these consultations indicate that open access is a very important tool to overcome access limitations (European Commission, 2012). Over 90% of respondents expressed the view that publications resulting from publicly funded research should, as a matter of principle, be available in open access mode.

Open access is backed by a growing number of universities, research centers and funding agencies in Germany, UK, the Nordic countries and all across Europe as well as beyond. National initiatives and practices are still fragmented, thus preventing the European Union from realizing its full research and innovation potential.

## 4. Conclusion

There are no national policies encouraging institutions to maintain publicly accessible websites gathering information concerning their admissions policies, available facilities and services.

Open access educational resources offered by institutional repositories become an alternative service of education. This invaluable service needs to be founded upon an effective *equilibrium* between copyright law and open access. It can also be seen as another way realizing the potential of the Lisbon Strategy and its 'triangle' of knowledge: education-research-innovation.

To sum up, institutional repositories offer an innovative platform of education and research. Education combined with research leads to innovation-this is the triangle of knowledge we need to have in mind. Therefore, there should be adequate and constant interaction between information scientists who are responsible for the services of the institutional repositories, and scholars or end-users, interested in collecting and studying further informational resources.

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4<sup>th</sup> International Conference on New Horizons in Education

# Integrated enterprise management system for higher education institutions based on strategic and process management: the case study of Sakarya University

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## Abstract

Today, the higher education institutions should consider multiple concepts to manage in an integrated manner such as strategy, quality, process etc. to confront the challenges. Especially, strategic and process management in the higher education have recently been considered in many universities over the world. Strategic management serves as a mechanism to provide long-term direction of the higher education institutions and at the same time to allocation of resources in line with this direction. Furthermore, the process management provides the necessary mechanisms to achieve the vision of the higher education institutions and disseminate the approaches through the whole enterprise. The main purpose of this study is to develop the model which integrates the strategic management and process management to administrate the higher education institutions. Also, the institutional management system which is designed as the information support system to manage the higher education institutions is presented with the case study of Sakarya University.

Keywords: Strategic management, process management, higher education.

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## 1. INTRODUCTION

The higher education institutions (HEI) should contribute to the development and support of economic, social and cultural progress for countries in everywhere, as they are among the oldest institutions in the world. The HEIs have to respond to the demands of changing and evolving conditions of society, and have to develop the internal structures in order to accomplish their visions. These conditions cause the challenges for the HEIs which include the Bologna Declaration and the European Higher Education Area, a mixed profile in the student population, the emergence of new competitors, the global knowledge economy, a technology-driven society, the new horizons in education, increasing external demands, accountability and transparency. Addressing these changes and challenges has meant finding ways to align organizational capacities with environmental demands and opportunities, as well as a big responsibility for governance and management at the institutional level (Taylor&Machado, 2006). The strategic management approach can help to prepare HEIs to face these emerging challenges.

Strategic management is a tool to forecast the future and place the institution in the best possible position for future success (Van Niekerk et.al, 2006). Furthermore, it allows the institution to analyze the present conditions and to take personnel, students and other stakeholders into account in order to create and sustain competitive

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advantages. By implementing the strategic management, the HEIs focus on strategic and operational goals, objectives and strategies based on organisational policies, programs and actions designed to achieve the institution's aims and desired results. The success of the institutions is derived from the correct implementation of strategic plans. Therefore the strategic management becomes an extremely important tool for organizational effectiveness.

On the other hand, the desired new outcomes of strategic management cannot be reached without renewed actions. The institutions need to determine and monitor the short-term action plans at the operational level in order to implement the strategic plan successfully. The process management is the most effective way to implement the necessary tools and to disseminate developed approaches to accomplish the strategic targets in the enterprise. Business process management has taken hold in private companies, but recently process management has reached higher education institutions (Kettunen, 2012). Also, the integration of information systems to quality assurance is another main driver to describe processes in higher education (Kettunen&Kantola, 2005).

As a result, the strategic and process management approaches provide necessary managerial tools for the HEIs to manage the institution effectively and efficiently. However the implementation of both two approaches together emergence the other challenge of the HEIs. So the main purpose of this study is to integrate these two approaches as a management model for the HEIs. The integrated enterprise management model and the information support system are presented by the case study of Sakarya University. The strategic management is explained in the first section and the process management is presented in the second section of the paper. After that, the integrated university management model is presented as the proposed model with the Sakarya University case study. Finally, the results of the study are discussed and summarized in the conclusion.

### *3.3. Strategic management for the HEIs*

Strategic management is concerned with the character and direction of the enterprise as a whole. It is concerned with basic decisions about what the enterprise is now, and what it is to be in the future. It determines the purpose of the enterprise. It determines what the enterprise should be capable of achieving, and what it will not choose to do. It will determine whether and how the organization will add value, and what form that added value should take. It is also concerned with management planning and decision-making for the medium to long-term future. It is concerned with the anticipation of that future, and while the establishment of a vision or view of how the enterprise should develop into the future that it must face (Morden,2007) Strategic management is a holistic process with many components that must effectively interact and execute together (Taylor&Machado, 2006).

Since the good management makes a difference to the quality schools and colleges and the educational outcomes of their students, strategic management is getting important for the higher education institutions. The main benefits of the strategic management for the HEIs can be summarized such as (Lerner, 1999):

- Creates a framework for determining the direction a university should take to achieve its desired future,
- Provides a framework for achieving competitive advantage,
- Allows all university constituencies to participate and work together towards accomplishing goals,
- “Raises the vision of all key participants, encouraging them to reflect creatively on the strategic direction” of the university,
- Allows the dialogue between the participants improving understanding of the organization’s vision, and fostering a sense of ownership of the strategic plan, and belonging to the organization,
- Aims to align the university with its environment,
- Allows the university to set priorities.

Generally, the strategic management process is accepted as consists of three phases such as strategy formulation, implementation and control. In the other perspective, the strategic management is regarded as a two-step process consisting of strategy formulation and strategy implementation. However, the strategic management process consists of assessing environmental opportunities and threats, determining organisational direction, strategy formulation, strategy implementation and strategic control. These three steps of the strategic management process is also named as environment analysis, strategy formulation and strategy implementation (Van Niekerk et.al, 2006). It has become generally accepted over the years by both academics and practitioners that a vital starting point for these strategic considerations is the formulation of a mission statement, a vision for the future. After that, the self-assessment and external analysis are executed. The strategies involves consideration of this analysis are determined and implemented.

Strategic management has been implemented by the HEIs for the different purposes (Penbek et al.,2011; Letturen,2012; Taylor&Machado,2006) by using several framework and techniques (Kaplan&Norton, 1992; 1993,1996; Cullen et.al.,2003; Shawyun, 2005; Asan and Tanyaş,2007).

#### *3.4. Process management in the HEIs*

Processes are generally defined as "a set of interdependent tasks transforming input elements into products". A process generally comprises the following elements: a purpose; the responsibilities of the participants in the process and their duties; the entrance criteria for the elements or conditions needed to begin the process; the inputs (artifacts, information or material) needed to perform the process; the activities, tasks or actions which make up the process; the outputs (artifacts or assets) that result from produced or modified by the process; the exit criteria (elements or conditions) needed for process completion; the process measures that support the process performances or future performances; tools, techniques and knowledge used in enactment the process; the adaptation patterns for tailoring the process in several contexts; the interfaces with others processes; and, records of information to future use (Llamosa-Villalba&Mendez,2010). A process comprises the network or a series of value-added activities performed by the collaborator to accomplish the assignment.

Process management is an approach that has been becoming more popular recently and gets increasingly implemented in more and more companies. Process management can be understood from two perspectives. One is the process management as a managerial discipline. The second aspect understands the process management as a technology that supports process-oriented management. Process approach allows organizations to eliminate the biggest disadvantage of the traditional functional approach that cannot be considered as an approach

appropriately flexible for changes in the corporate environment, variety of procedures, or excessive substitution of workers. Processes are always understood in relation to the customer. Only if the management processes are effective, then the companies can effectively manage, modify, improve efficiency, improve performance, identify and resist market risks (Tuček&Basl,2011).

Process management has taken hold in private companies, but recently process management has reached the higher education institutions (Kettunen,2012). For example, El-Sharef and El-Kilany (2011) used the business process modeling and analysis to identify the process needed for a Quality Management System in the HEIs. Tucek and Basl (2011) presented the business process management for process analyses of the HEIs.

**2. INTEGRATED ENTERPRISE MANAGEMENT SYSTEM FOR THE HEIs**

The HEIs are responsible to implement the education policy, their own strategic objectives and quality assurance. Therefore, they have to implement the several management approaches together such as strategic management, process management, total quality management, quality assurance etc. On the other hand, the implementations of these approaches cause the great challenge for the HEIs. It’s obvious that there is a need to a framework for the integration of these approaches, especially a strategic management and a process management to augment their benefits.

So, the main goal of this study is to develop this framework for the management of HEIs to realize the strategies, improve the processes and ensure the quality assurance as an integrated model. The proposed model is based on both the strategic management and the process management, as shown in Figure 1.

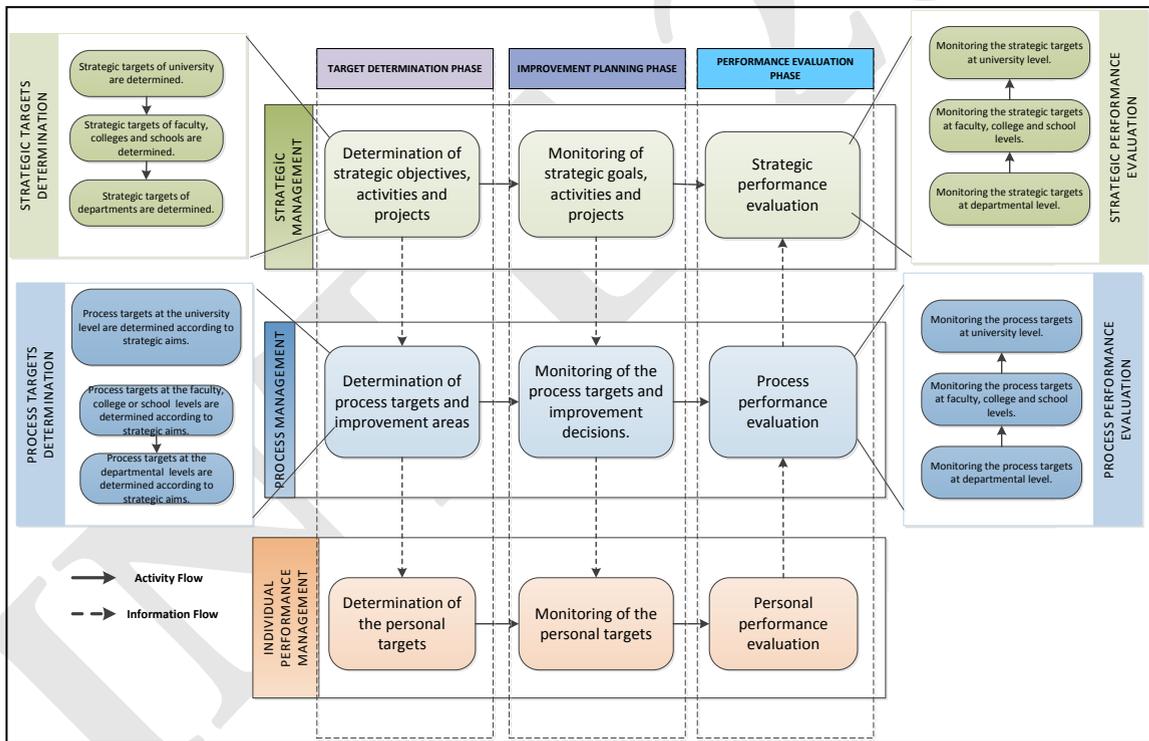


Fig 1. Integrated Enterprise Management (IEM) Model for HEIs.

The Integrated Enterprise Management (IEM) Model has got three dimensions which are strategic management, process management and individual performance management, and three phases such as target

determination, improvement and performance evaluation. These phases are executed for the each dimension for the HEIs in interrelated manner. In the other words, after the institutional goals are determined by strategic management, the necessary mechanisms and tools are implemented by the processes to achieve these strategies. Essentially, the integration of this model is structured into three phases:

- *Target determination phase*: After the targets of the process are derived from the strategic goals, the individual targets are determined according to these process targets.
- *Improvement planning phase*; the individual progress plans are determined from the process improvement plans which are comprised according to the strategic plans.
- *Performance evaluation phase*; the performance evaluation process is executed from by monitoring the performance results of each dimension. For instance, the process results comprise the institutional performance results.

The other integration issue of the model is the performance indicators of the institution. The performance indicators are named in accordance with these integration dimensions such as strategic performance indicators and process performance indicators. While the strategic performance indicators are used for measuring the achievement of the institutional goal, the process performance indicators can be used to monitor the processes which are executed in the institution. Furthermore, the strategic performance indicators consist of the process performance indicators, as shown in Figure 2.

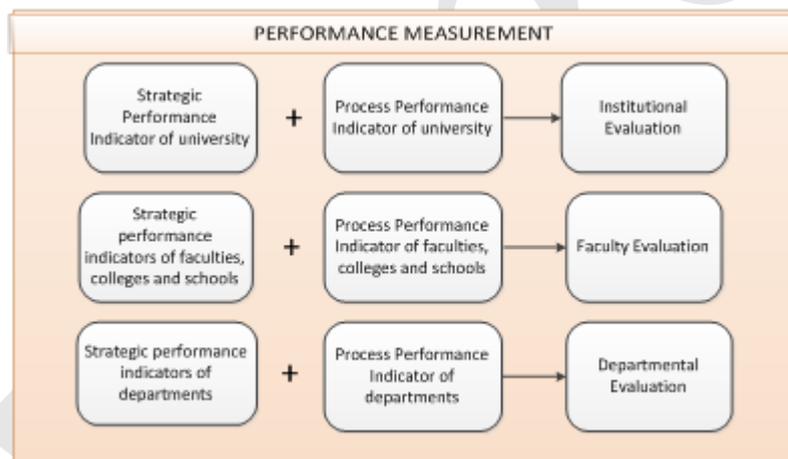


Fig 2. Enterprise Performance Measurement Model.

On the other hand, the HEI has got so many and different kinds of departments, faculties and schools. So each dimension must be executed at the each units of the HEI. This means the huge amount of information which must be obtained, used and evaluated to manage the HEIs effectively. This necessitates that the model must be supported by the management information system for the HEIs, as shown in Figure 3.

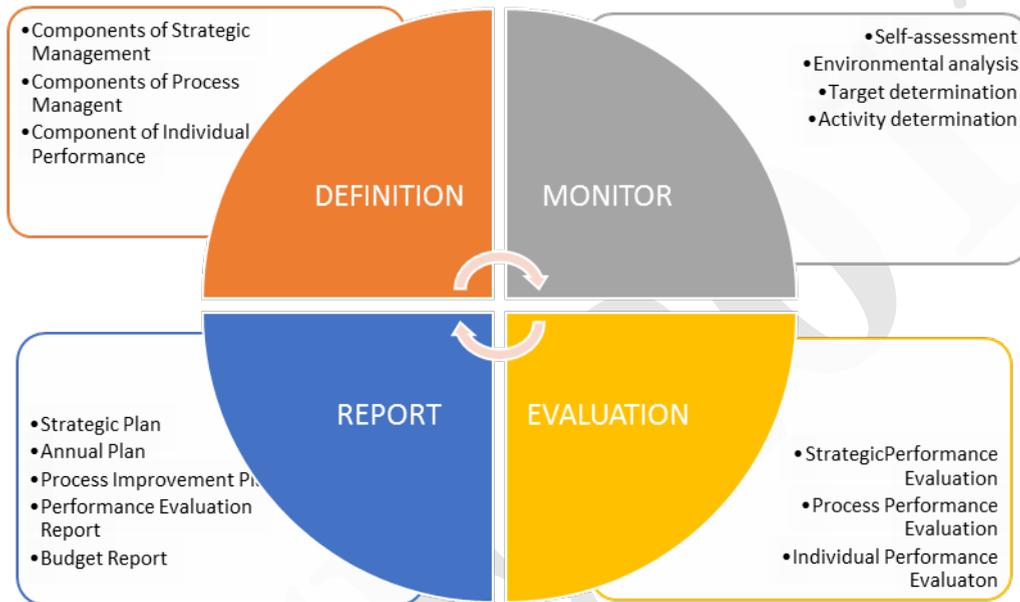


Fig 3. Integrated Enterprise Management System for the HEIs.

Thence the additional dimension is put into the model. This information system consists of four modules such as definition, monitor, evaluation and reports. In the definition part, all component of the system and concepts of the management model are identified by the users. The monitoring part is based on the activities of each dimensions of the IEM Model. The performance results are obtained for each units of the HEI by use of the evaluation part. As final part is for reporting which is suitable for each dimension of the IEM Model.

### 2.1. The Case Study of Sakarya University

In this section, the proposed model is detailed by using the Sakarya University Case Study. Sakarya University has been implemented the strategic management and process management separately since 2003. The strategic management process of Sakarya University is summarized in Figure 4.

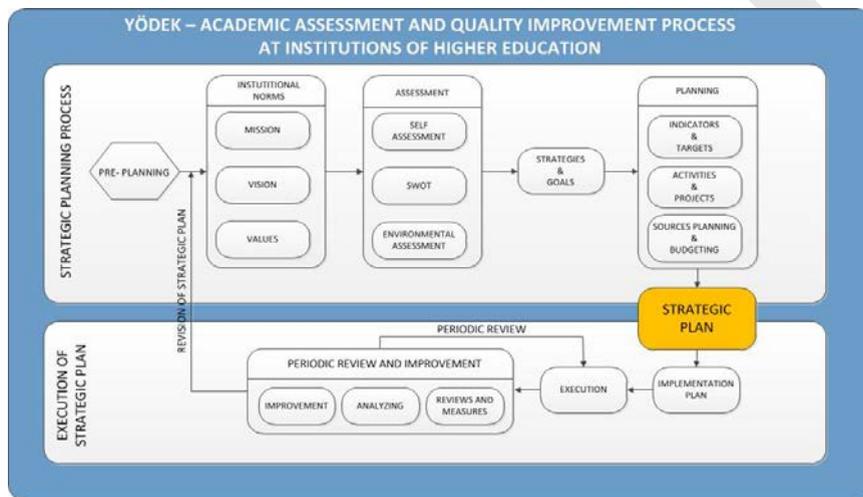


Fig 4. Strategic Management Process of Sakarya University.

Especially the target determination phase of the IEM Model is exemplified by using the values belong to the Sakarya University, as shown in the Table1. Each process targets are determined according to the related strategic objectives. For example, if the institutional objects are to get the higher score in the university rankings, HEI has to increase the number of papers as a process target.

Table 1. Performance Indicators Examples of Sakarya University based on the model.

ENGINEERING FACULTY					
STRATEGIC PERFORMANC INDICATORS					
	2014	2015	2016	2017	2018
Number of accredited programmes	4	5	6	7	8
Rank among the university ranking	54	50	45	40	35
Satisfaction rate of the society	%67	%70	%72	%75	%78
PROCESS PERFORMANCE INDICATORS					
	2014	2015	2016	2017	2018
Ratio of revised courses according to the accreditation criteria	%60	%70	%80	%90	%100
Number of published paper per faculty	1,5	1,8	2	2,2	2,4
Number of activities carried for social benefits	120	150	170	200	220

### 3. CONCLUSION

The higher education institutions can respond to the changes in its environment, demands of partnerships and developments in the related areas including education, technology, social etc. through strategic management. Strategic management adapts to a rapidly changing environment and provides the strategic themes and objectives for the desired future of the HEIs. On the other hand, the process management provides the necessary mechanisms to achieve the vision of the higher education institutions and disseminate the approaches through the whole enterprise. It is a great challenge to conceptually integrate strategic management and process management in higher education institutions to ensure high quality outcomes.

The main purpose of this study is to develop the model which integrates the strategic management and process management to management the higher education institutions. Also, the institutional management system which is designed as the information support system to manage the higher education institutions is presented with the case study of Sakarya University.

### Acknowledgements

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4<sup>th</sup> International Conference on New Horizons in Education

# Integrating learning technologies and autonomy: a CLIL course in Linguistics

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## Abstract

The project we intend to present arises from the need of enhancing the process of teaching and learning academic disciplines through and with an additional language. In this paper we shall describe some online modules of a CLIL course in Linguistics dedicated to foreign students of L2 Italian. The modules are part of a course delivered both in presence and at a distance with a dual focus: learning a content - Linguistics - through a foreign language - Italian - in an integrated dimension. The online course, inspired by constructivist and learner-centred approaches, presents a series of collaborative and communicative technology-based activities developed in a virtual classroom and structured around three main sections: thematic, social and linguistic. The first presents the contents of the course (Morphology) through a video lesson with a series of interactive multimedia activities, the second promotes interaction between teachers and students through forums and chats, the third offers a virtual self-access centre with pathways and resources that students can choose, according to their levels and needs, to learn the Italian language.

*Keywords:* CLIL; technologies; autonomy; blended learning; Linguistics

## 1. Introduction: the blended course in Linguistics

In this paper we shall look at how learning academic disciplines through a CLIL (Content and Language Integrated Learning) approach might be enhanced integrating face-to-face classroom instruction and online learning in a virtual classroom. Our aim is to present some online CLIL modules developed to help foreign students of L2 Italian study academic disciplines, such as Linguistics, which require the development of some complex cognitive processes that are scarcely activated in language courses. The Language Centre of the University of Naples "L'Orientale" (CILA), on the basis of its long experience in teaching Italian language and culture courses to international exchange students, has recently developed a blended CLIL course in Linguistics addressed to Erasmus students with a B2 level of competence in Italian.

The course lasts 75 hours and consists in a 50-hour course in Linguistics in presence addressed both to Italian and foreign students of Italian Studies and a 25-hour online course. Classroom learning is articulated in five 10-hour modules dealing with the fundamentals of General Linguistics, with particular attention to the following areas "Phonetics and Phonology", "Morphology", "Syntax", "Linguistic Typology" and "Pragmatics". Every module delivered in presence is accompanied by a supplementary online module, developed with CLIL methodology and hosted in the e-learning platform of the university, CILA MoUVE. Each online module lasts 5 hours and aims at expanding a specific topic of the modules in presence. The module dedicated to "Phonetics and Phonology" is accompanied by an online module dealing with the International Phonetic Alphabet (IPA) and with phonetic transcriptions. The classification of morphemes and immediate constituent analysis are instead the

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foci of the supplementary modules dedicated to “Morphology” and “Syntax”, while the typological and genealogical classifications of world languages and speech acts are linked to the modules of “Language Typology” and “Pragmatics”.

In this paper we shall describe the online CLIL module on Morphology. It focuses, in particular, on the classification of morphemes according to their position in the word (prefix, root, suffix, infix, circumfix, transfix) and to the type of affixes (derivational or inflectional) in order to enable foreign students with mother tongues distant from Italian to recognize and use the most common Italian morphemes.

## **2. Creating a virtual CLIL learning environment: a framework of reference**

The blended course in Linguistics was developed combining face-to-face classroom instruction with technology-enhanced activities, delivered through the Moodle platform of the university, CILA MoUVE. The online CLIL learning environment was created to offer students a scaffolding structure (Wood, Bruner & Ross, 1976) where they could learn specific contents, specific vocabulary and improve their competence in Italian. The core of this online environment was a virtual classroom whose structure and activities were planned integrating the resources available on MoUVE, and other open source software: eXeLearning, HotPotatoes, Skype, Survey Monkey. This online environment was implemented on the basis of a theoretical and technical framework and developed according to the main tenets of the CLIL approach.

“Content and Language Integrated Learning (CLIL) is a dual-focused educational approach in which an additional language is used for the learning and teaching of both content and language. That is, in the teaching and learning process, there is a focus not only on content, and not only on language. Each is interwoven, even if the emphasis is greater on one or the other at a given time. CLIL is not a new form of language education. It is not a new form of subject education. It is an innovative fusion of both” (Coyle, Hood & Marsh, 2010:1).

To integrate content and language and to balance the focus between them, we planned some learning units responding to Willis’ task-based methodology (1996). Each unit of the course is organized in three phases: pre-task, task-cycle and language focus (Figure 1).

The pre-task phase is aimed at activating students’ expectations about the theme of the module and their prior knowledge. Support is also provided to make subject matter comprehensible to students and to help them perform the task. Vocabulary explanations, texts and references about the topic of the task, links to online language tools such as dictionaries, grammars are indeed available in the classroom.

The central phase, task-cycle, starts with a video-lesson, followed by a series of interactive activities intended to improve oral comprehension and lexical competence. These exercises were created with the authoring tools provided by MoUVE and with the Hotpotatoes suite. Each activity offers students a feedback and a link to online resources useful for further readings.

Central to the task-cycle stage is a forum where students perform a task-based activity designed on the basis of Jonassens’ concept of meaningful learning: “in order for meaningful learning to occur, the task that students pursue should engage active, constructive, intentional, authentic, and cooperative activities” (Jonassen, 2008). Tasks have to be guided, provide clear instructions and feedback, focus both on content and language.



### Unità 1: Morfologia

In questa unità lavoreremo sui diversi tipi di morfemi e sul riconoscimento del loro valore all'interno delle parole italiane. L'unità presenta una videolezione che ripropone alcune parti fondamentali della lezione in aula. La videolezione è accompagnata da attività ed esercizi.

Vi preghiamo di svolgere le attività rispettando l'ordine proposto.

Buon lavoro!

#### 1. Attività da svolgere prima della visione del video

Parole e morfemi: discutiamone insieme

Termini & Definizioni

#### 2. Attività da svolgere durante la visione del video

Prima del video: uno sguardo alle domande

Video lezione: La classificazione posizionale dei morfemi e dintorni

Sarà vero o sarà falso?

Completiamo il testo

#### 3. Attività da svolgere dopo la visione del video

Diamo un ordine ai morfemi

Riflessione sulla lingua: I suffissi alterativi

I trabocchetti dell'italiano 1: Caccia all'intruso

I trabocchetti dell'italiano 2: Occhio ai sinonimi

I trabocchetti dell'italiano 3: Occhio agli omofoni

Derivazione & Composizione

Affissi alterativi

Focus contrastivo tra L1 e L2

Questionario di autovalutazione: cosa ho imparato?

Questionario di autovalutazione linguistica

La chat del corso: incontro con i docenti al termine dell'unità

Materiali per l'approfondimento

Fig. 1. The learning unit on Morphology

The language focus-phase presents language and vocabulary activities with a section dedicated to autonomous learning: the online Self-Access. In this area students are offered language learning pathways, guided activities aiming at enhancing language abilities and at improving specific vocabulary (Figure 2).

In each phase, all materials were planned to engage students in active learning. Particularly in this section students could perform both tasks guided by the teacher and autonomous activities proposed by the language counsellor. In such a structure, the learning materials were considered as potential resources that students could use according to their preferences (Holec,1987).

To enhance a learner-centred environment and to foster the development of autonomy, particular attention is also given to meta-cognitive reflection. According to Nunan (1988) self-assessment provides "one of the most effective means of developing both critical self-awareness of what it is to be a learner, and skills in learning how to learn", therefore students are invited to reflect both on learning outcomes and on their learning process. Through Survey Monkey, tutors prepared a set of resources aimed at helping students self-evaluate their learning in terms of both content and language. For example, students are asked if they are able to understand the difference between words and morphemes or if they are able to classify their mother tongue according to morphological criteria. As regards language, they have to reflect about the aspect that has caused them more difficulties: listening, reading, writing, speaking, vocabulary or grammar. This self-assessment is also useful to tutors as it provides additional feedback about learner outcome in terms of both contents and language.

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**Self-access online**



Questa sezione è dedicata all'apprendimento autonomo dell'italiano L2.

**Per elaborare il tuo percorso di apprendimento autonomo puoi:**

- chiedere un percorso di apprendimento autonomo al consulente linguistico;
- lavorare utilizzando un percorso già pronto;
- scegliere da solo le risorse da utilizzare.

**Per iniziare il tuo percorso autonomo scegli tra le opzioni seguenti e segui le istruzioni.**  
E non dimenticare che puoi comunicare con il consulente linguistico sia nel forum sia nella chat.

Buon lavoro!

 Self-Access online  
 Self-Access

**a) Chiedi un percorso personalizzato al tuo consulente linguistico**  
Posta nel Forum Self-Access online la tua richiesta di percorso. Il tuo consulente ti risponderà per elaborare insieme un percorso di autoapprendimento.

**b) Scegli un percorso prestabilito**  
Scegli il percorso più adatto al tuo attuale livello di competenza linguistica in italiano.  
Se hai dei dubbi sul tuo livello puoi svolgere il test di italiano online o autovalutarti con una griglia di autovalutazione.

 Percorsi di autoapprendimento italiano livello B2  
 Percorsi di autoapprendimento italiano livello C1

**c) Scegli da solo le risorse da utilizzare.**  
Crea il tuo percorso scegliendo tra i materiali disponibili online e nel Centro Self-Access.  
Consulta le guide per scegliere i materiali.

 Guida alle risorse self-access Italiano L2  
 Repertorio di siti Web per lo studio dell'italiano L2 online  
 Elenco film in lingua italiana con schede di lavoro  
 Elenco libri e corsi per lo studio della lingua italiana  
 Schede dei programmi e dei libri

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Fig. 2. The Self-Access online

Since language learning strategies are a key element promoting autonomy and meaningful learning (Oxford, 1990), in the virtual classroom there are some questionnaires designed to investigate how students use these

strategies and how they are useful in the process of learning a content through and with a foreign language (Figure 3).

6. Quali strategie hai impiegato durante le attività di questa unità?  
(Puoi scegliere anche più di una strategia per ogni tipologia)

	Strategie mnemoniche	Strategie cognitive	Strategie compensative	Strategie metacognitive
1				
2				
3				
4				
	Contestualizzare i nuovi vocaboli Usare le immagini Usare parole chiave	Ripetere Analisi delle espressioni Prendere appunti Tradurre	Passare alla lingua madre Usare la mimica o i gesti Usare perifrasi o sinonimi	Ripassare e collegarsi alle conoscenze precedenti Inquadrare lo scopo di un esercizio Autovalutarsi
	Strategie affettive	Strategie sociali	Altro (specificare)	
	Ridurre l'ansia Incoraggiare se stessi Misurare le proprie emozioni	Chiedere chiarimenti e verifiche Chiedere correzioni Cooperare con parlanti esperti nella L2 Sviluppare una comprensione culturale		

Fig. 3. Learning strategies questionnaire

Another main feature of this online environment is the interaction among the members of the virtual classroom. In order to avoid the typical constraints of online learning environment, such as lack of guidance, support and interactivity (White, 2003), synchronous and asynchronous communication tools (chat, forums, wiki, Skype) are used to create a learning community where students can interact both with peers and tutors. In this kind of environment tutors acted as facilitator not only providing students with activities designed to learn language and content but also giving advice, providing explanations, suggesting methods and techniques.

### 3. Focusing on Morphology: activities, tasks and teacher-students interaction

As stated previously, the module is organized in three phases: pre-task, task-cycle and language focus. The pre-task phase is composed by three brain storming activities designed firstly to stimulate students' expectations about the contents of the module and secondly to activate the basic notions of morphology acquired during the classroom lesson. In detail, this preliminary phase consists of two thematic forums, "Parole e Morfemi: discutiamone insieme" and "Classifichiamo i morfemi", and one matching exercise "Termini e Definizioni". Recalling the contents of the classroom lesson, in the first forum students are asked to explain and exemplify the differences between morphemes and words. In the second forum, instead, they have to describe the possible criteria for classifying Italian morphemes (according to their position in the word, type of affixes, whether they are free or bound).

The matching exercise was designed to make them work on meta-linguistic terms and their referents. In order to verify whether students had actually acquired the target notions, the definitions provided in the activity were the results of a rewriting of the definitions drawn from other linguistics textbooks and dictionaries and the online Treccani Vocabulary (Treccani.it). Every definition is also provided with examples which serve to facilitate the comprehension of the metalanguage.

The central phase, task-cycle, is centered on a video-lesson "La classificazione posizionale dei morfemi e dintorni" that focuses on the position of morphemes in the word. In the video, the native-speaker teacher, who is

expert in the target subject, presents the derivation process, and the kinds of affixes by whose means languages can enrich vocabulary. It is important to underline that since the lesson is addressed to non-native speakers of Italian, the kinds of morphemes provided are not only those used in Italian (prefixes, suffixes, infixes) but also the affixes that are peculiar to other languages such as circumfixes and transfixes. Before watching the video, students can read the True-False questions related to the reading comprehension quiz in order to help them focus their attention on specific contents during the vision of the video. After watching the video, the students do the True/False exercise designed to test the general comprehension of the video-lesson. The T/F test is followed by a Cloze with a pull-down menu. Unlike the matching activity “Termini & Definizioni” of the pre-task phase, in this case the students have to complete definitions, with the corresponding lemma, choosing between three alternatives.

The language focus-phase was the section of the unit where students can reflect upon language and vocabulary. It consisted of a set of five exercises and one thematic forum. In one of the activities, “Diamo ordine ai morfemi”, students are asked to order the given morphemes to create Italian words. This exercise enables them to practise the order of morphemes in Italian words (prefix, root, suffix, inflection) and the process to derive adjectives from noun and verbs and adverbs from adjectives.

The following three activities are part of sub-section entitled “I trabocchetti dell’italiano” specifically designed to have students reflect on some pitfalls of Italian. In the first exercise, “Caccia all’intruso” (Figure 4), students have to find the intruder in a list of four words ending with the same three letters. For example in the sequence “sdegnoso, miracoloso, lamentoso e riposo”, they have to choose “riposo” where its “-oso” was not a denominal adjective suffix. Since prefix and suffix in Italian can modify words to express a particular quality (large, small, pretty, ugly), a specific exercise was planned to help student recognize diminutive, augmentative, ameliorative and pejorative suffixes.

#### Trova l'intruso



#### Trova l'intruso sulle parole derivate

[Show all questions](#)

1 / 7 =>

Sdegnoso, miracoloso, lamentoso, riposo

A.  sdegnoso

B.  miracoloso

C.  lamentoso

D.  riposo

Fig. 4. “Caccia all’intruso” - Multiple choice exercise

The following two exercises “Occhio ai sinonimi” and “Occhio agli omomorfii” were based on the lack of 1:1 correspondence between the *signifiant* and the *signifié* of Italian morphemes.

In the first activity, “Occhio ai sinonimi”, students are required to match words, whose prefixes were in synonomical relation, though they were different in their superficial form, (vice-presidente/ex-marito). In the subsequent exercise the opposite condition is presented. Students were asked to determine whether the word pairs presented homomorphs or the same kind of morpheme (ex: a. “gatt-ino”/ b. “ragazz-ino”: the suffix -ino is a diminutive both in “a.” and “b.”; a. “cavall-uccio” / b. “avvocat-uccio”: the suffix “-uccio” is ameliorative in “a.”

but pejorative in “b.”). After the exercises students can study derivational morphology in depth visiting some web pages dealing with all the issues regarding word-formation and alteration in Italian.

The last activity consists of a thematic forum, where students are invited to use the knowledge acquired in the module to compare Italian to their L1 from a morphological point of view.

The effectiveness of this online collaborative classroom is based on the interaction between students and tutors. Tutors in particular have the role to foster the study of Linguistics and Italian engaging and motivating students in meaningful communicative practice and content exchange. The asynchronous exchanges were designed to have students recall the contents of the lesson in presence and to transpose in written form the acquired notions according to their level of communicative and academic skills. The forums also serve to favour high quality group interactions. Under the guidance of the tutor, or in collaboration with peers, less experienced students are shown how proceed before they engage in the learning task. They receive hints, cues and feedback to help them use the most suitable strategy for the tasks. However, since the course participants belong to *i*Generation, that is young adults, born in the 1990s or later characterized by their consistent and simultaneous use of technology (Mills, 2011) they are also encouraged to perform the task seeking and retrieving information from various online sources.

Once students start to post their comments in the forum, the tutor intervenes with revisions, feedback, answers to the questions posted. As regards corrective feedback (Long, 2006), in this course the tutor does not provide negative evidence in the form of error deletions and corrections. On the contrary, given the important role of errors in the acquisition process, the tutor answers in a new post with interventions always aimed at encouraging students to reflect on their language errors or content misunderstandings. Additionally, when the tutor, on the basis of the most common mistakes, realizes that a specific issue of the lesson in presence need further attention she posts further explanations of metalinguistic terms, gives other examples and suggests other online resources for self-study (Figure 5). Moreover, as regards Language focus phase, the tutor provides additional explanations and examples.

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**Parola e morfema**  
di Marilena De Santo

Qual è la differenza tra parola e morfema?

**Re: Parola e morfema**  
di Emre Aydin

Ciao a tutti 😊

Il morfema è il suono che ha un significato e la parola è fatta di un morfema o anche di tanti morfemi.

Emre

**Re: Parola e morfema**  
di Martin Levesque

Professoressa buongiorno! Confermo le parole di Emre sulla parola.

Per il morfema penso chi è la combinazione del suono e del significato.

M. Levesque

**Re: Parola e morfema**  
di Pina Vitale

Salve ragazzi!

Rispondo in questo post ai messaggi di Emre e di Martin.

La definizione di morfema che ha dato Martin è più completa. Infatti, il morfema è l'associazione minima di **significante** (termine più corretto di suono) e di significato.

Per la parola, è importante ricordare prima di tutto che è difficile dare un'unica definizione che si può applicare per tutte le lingue del mondo. In generale è la minima combinazione uno o più morfemi.

Esempio: gatto. La parola "gatto" è composta da due morfemi: gatt- con il significato di "animale felino" e -o con il significato di "maschile, singolare". Volevo ricordarvi che per controllare se le vostre risposte sono giuste potete ascoltare la spiegazione del docente e dopo scrivermi di nuovo le definizioni più complete.

In particolare, vi chiedo di ascoltare soprattutto la parte relativa ai criteri di definizione di parola.

Buon lavoro!

**Re: Parola e morfema**  
di Emre Aydin

Ho sentito la spiegazione della professoressa e ora ho capito bene le differenze tra le parole e i morfemi, grazie. Quando la professoressa parla dei criteri, ho capito bene che primo nella parola c'è un ordine fisso dei morfemi. Poi che la parola è separata da una pausa nel discorso o anche nella scrittura.

Emre

Fig. 5. Corrective feedback: an example of interaction

#### 4. Conclusions

In this CLIL environment, we integrated some of the most recent learning methodologies, techniques and resources with the aim of developing an online environment where meaningful learning of both content and language could occur. Collaborative and communicative activities were developed according to task-based learning and learner-centred approach. Autonomy and awareness were promoted offering students the faculty of choice, that is the opportunity to select the resources according to their needs and to self-assess their progresses. The materials used to develop resources and activities were mostly authentic, based on multimedia and Web 2.0 communication tools.

All the actions presented in this course sustain the learning process and give learners increasing accountability for the task itself and take place in what Vygotsky (1978) called Zone of Proximal Development. This concept refers to “the distance between the actual developmental level as determined by independent problem solving and the level of potential development as determined through problem solving under adult guidance, or in collaboration with more capable peers.” The blended course accomplishing scaffolding and working in the zone of proximal development leads learners to improve their actual level. Additionally, it enables students to reach beyond what they could have achieved alone, and gives them the opportunity to participate in new situations and deal with new tasks (Gibbons, 2002).

Moreover, in structuring such a virtual environment we had the possibility of responding to what McLoughlin and Lee (2008) define the “challenge for educators” that is to “enable self-direction, knowledge building, and learner control by providing options and choice while still supplying the necessary structure and scaffolding”.

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4<sup>th</sup> International Conference on New Horizons in Education

# Integrating mobile setting into modern classroom: a multi-user, platform-independent, mobile content management system

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## Abstract

Following the act of Turkish government for lending students tablet PCs during their elementary school education, emerged the importance and need of development of a mobile supported e-learning software platform. The main motivation of writing this paper is 1) to pinpoint key characteristics of a possible software to be developed to achieve the integration and 2) to discuss the effects of the created environment.

Mobile devices, such as tablet PCs and smartphones, when supported with software developed uniquely for e-learning purposes, introduce limitless advantages. An open-source example of such software, which will also be referred throughout the paper, is developed in Sabanci University under the supervision of Cemal Yilmaz, Ph.D., during Spring 2011-2012 and Fall 2012-2013 semesters. The main purpose of the development of this platform is to demonstrate the increased efficiency of integrating mobile environment into educational setting when supported with targeted software.

The paper also addresses specific uses of mobile devices for educational purposes that can be mainly divided into two: Distant learning and in-class usage. Distant learning usage features live video streaming of the classroom environment for absent students and homework / grade tracking topics whereas in-class usage represents the migration of quizzes, exams, etc. that are held in a classroom to a mobile integrated environment. In addition, more offerings of mobility, such as push notification feature of smartphones, identification, and communication are topics addressed in context of education throughout the paper.

Keywords: mobile; iphone; ipad; ios; android; tablet; cell; smartphone; platform; software; distant; e-learning

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## 1. Introduction

The Fatih Project, in its current status, is not making use of a software system that can potentially increase its benefits both to teachers and students. Certain technologies and devices, such as smart boards, electronic versions of textbooks on tablet/mobile devices, can be used in a class even without the existence of Fatih Project. As Fatih Project sets regulations on the usage of such services and moves e-learning towards a more centralized approach,

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we believe that a dedicated software can add meaning to the rapid advancement of infrastructure in schools and the technologic devices that are being introduced to the classrooms.

This article discusses the rationale behind and development of a software system that can be used together with the Fatih Project. The advantages and additions of the proposed system are explained with specific references and examples. The lack of content, in terms of unavailability of electronic teaching resources (currently) and a practical data management system, is addressed.

The paper starts by discussing the positive effects that the proposed content management system will have and how it can fill some of the existing gaps. It then describes the possible involvement of already-existing technologies (smart boards and mobile devices) with the Fatih Project. Design choices and decisions regarding the development of the client software are explained. In addition, implementation details are demonstrated for a better understanding and evaluation of the software. These are backed up by the database and software design patterns, which include conscious choices made by the developer to achieve some of the desired functionality.

## **2. Mobile Supported Content Management System**

### *2.1. Content is the key, the king*

According to the documents released on the Turkish National Assembly's official website (2012), Fatih Project received a budget of USD 766 million only for 2013 and expected budget in total is estimated at USD 4.4 billion while the infrastructure is still being rapidly established. On the contrary, there does not exist a complete and comprehensive integrated software that can be used for the system. In order to increase the efficiency and usability of the system in the long run, there should be a software that takes full advantage of the infrastructure built in schools.

To be more specific, let us consider a case where an instructor has just finished a course and wishes to share the smart board content with the students. We argue that the instructor's job should be just to enable this content for the viewing of a certain student group. This should be a completely automated process that can be achieved effortlessly.

It would be beneficial to relate the advantages and usefulness of such a software in the context of Fatih Project. The benefits of developing this system that would accompany the Fatih Project can be examined under three discrete categories, as follows:

- **Migration of in-class activities to an electronic setting:** These activities include sharing course-related material with students in an automated fashion. An instructor can create an item and determine its content. The content could be smart board notes, presentation files or any other course-related document. The instructor chooses when to release these items to the class, i.e. when the items will be visible to the students. Another usage of this type would be streaming the course online, for absent students, for instance.
- **Facilitation of in-class activities in an electronic environment:** Quizzes, questionnaires and exams. These can also be treated as content and can be made visible (enabled for interaction) to certain classes/groups. The students can then submit their answers through the software. Since the questions and answers are already in

an electronic environment, analysis of data is much easier. If applicable to the type of questions asked, grading can be done automatically. Results and feedback can be provided to both the students and teachers instantly. For example, after halfway through a topic, a teacher can ask a question to the class and depending on the percentage of correct answers, s/he can see whether the students have grasped the topic or not.

- Migration of out-of-class activities to an electronic setting. Instructors may decide to schedule events such as field trips or exams outside of regular class hours. The scheduling functionality in the software can greatly ease this process due to easier data collection. Also, homework can be given using the software as well.

All of the functionality explained above is achieved by using a “simple”, yet sophisticated software. The lack of such software will stop the project from reaching its true potential and using every advantage that the infrastructure can possibly bring. The software can of course be modified or enhanced to meet new requirements and demands of the Fatih Project, as time passes.

### *2.2. Previous technology integration: Smart boards*

Educational use of smart boards has been an existing trend, before and without the introduction of Fatih Project. Smart boards offer a dynamic learning environment, while enabling its users to take the full advantage of computers, appropriate software and the Internet.

However, most instructors and teachers have not undergone any training to use the designated devices at all. This means that they cannot be expected to create useful and unique content that capitalizes on the advantages of smart boards. Instead, they will be tempted to use templates and content that is already available online. There are already some websites (forums) in which smart board documents are being shared (e.g. SMART Exchange, SMART Board Revolution, Fatih Projesi Paylasim Platformu, etc.) Although this sharing is not necessarily a bad thing, the most important issue that should be addressed is the necessity of examination of the content found online. More importantly, we argue that the instructors who are intended to use such devices provided in the scope of Fatih Project should be trained accordingly. Because, the content reachable via the Internet is not unique and only the instructors can be capable of providing course-specific content.

With the current state of the Fatih Project, we fear that there is not enough content that can fully utilize smart boards. We also argue that an integrated software that will eventually enable the devices (smart boards and tablets) inter-communicate and share the content in between devices is lacking. For example, a smart board content created during the class can be made reachable via the tablet PCs that students take home to repeat in-class content. Or else,

### *2.3. Why native application?*

Throughout the paper, our focus will be on the mobile software side of the software to be developed in order to maintain a viable interactive learning environment. Therefore, we should mention the mobile application concept at this very point of the paper.

Mobile applications are software capable of providing certain intended functionality on mobile devices. Mobile application developers can choose between mainly three development approaches: native application approach, web application approach or a hybrid approach. In very basic terms, native applications are those applications that you download and run on your mobile device, such as the software you get from Apple’s App Store. Such applications run only on the platforms that they were developed for. On the other hand, web applications are the applications that run on the websites you visit, and in order to use these you only need a web

browser. With the emergence of HTML5 for web applications, there is an on-going debate regarding which development approach is better and will be more prominent in the long run. The client software that this paper is concerned with was developed using a native approach, due to the shortcomings of HTML5 in key areas.

Despite the presence and popularity of HTML5 for web-based applications, native applications are still advantageous in certain ways. Currently, most developers accept that in terms of performance, speed, internet connectivity, device specific features and monetization, native applications are far better than web applications (Mudge, 2012). Furthermore, native applications are known to be better in using device-specific hardware such as the camera, microphone etc. It is very much desired that the application supports multimedia input and output, in case that students are engaged in creative activities that might include audio or video recordings. Such activities may later be integrated into the system as parts of coursework or assignments.

#### *2.4. Platform independency*

Platform independence is a software development technique that implies that the developed software is independent of the technology used to implement it. The more specific occurrence of this methodology is the cross-platform applications that are highly preferred by developers who aim a larger audience. Usually hybrid development approach mentioned above is used to achieve this quality. However, we argue that this is not the proper way to establish an interconnected software platform.

Instead, we suggest that by developing native clients for each platform that we would like to provide our software's functionalities, we achieve:

- 1- Non-restricted user experience,
- 2- Faster and smoother user interface,
- 3- Efficient and reusable code for each project,
- 4- Platform improvements and updates are effective immediately.

### 3. Sample Software Design

#### 3.1. Purpose

Purpose of the sample software developed in Sabanci University by the author, Hasan Can Saral, B.Sc. under the supervision of Cemal Yilmaz, Ph.D., is to demonstrate the increased in class efficiency of the tablets distributed in the scope of Fatih Project. We also would like to encourage the development of such a system by professional developers under the supervision of governmental relevant authorities.

#### 3.2. Demonstrated functionalities

Demonstrated functionalities among the full scope described above include:

- Questionnaire
- Scheduler

applications.

A sample usage of questionnaire application is to collect in class data, which is to be evaluated later. Scheduler application is used to determine a mutual available time for an actual event among a group of users.

#### 3.3. Design concerns and project structure

The demonstrated part of the system can be divided into two:

- ASP.NET project
- XCode project

Again, the ASP.NET project is composed of 2 parts:

- Project core
- User interface project for web application

XCode project is a simple client for iOS environment.

Client – server interactions are handled using XML via web services.

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3.4. UML (Class diagrams) and classes

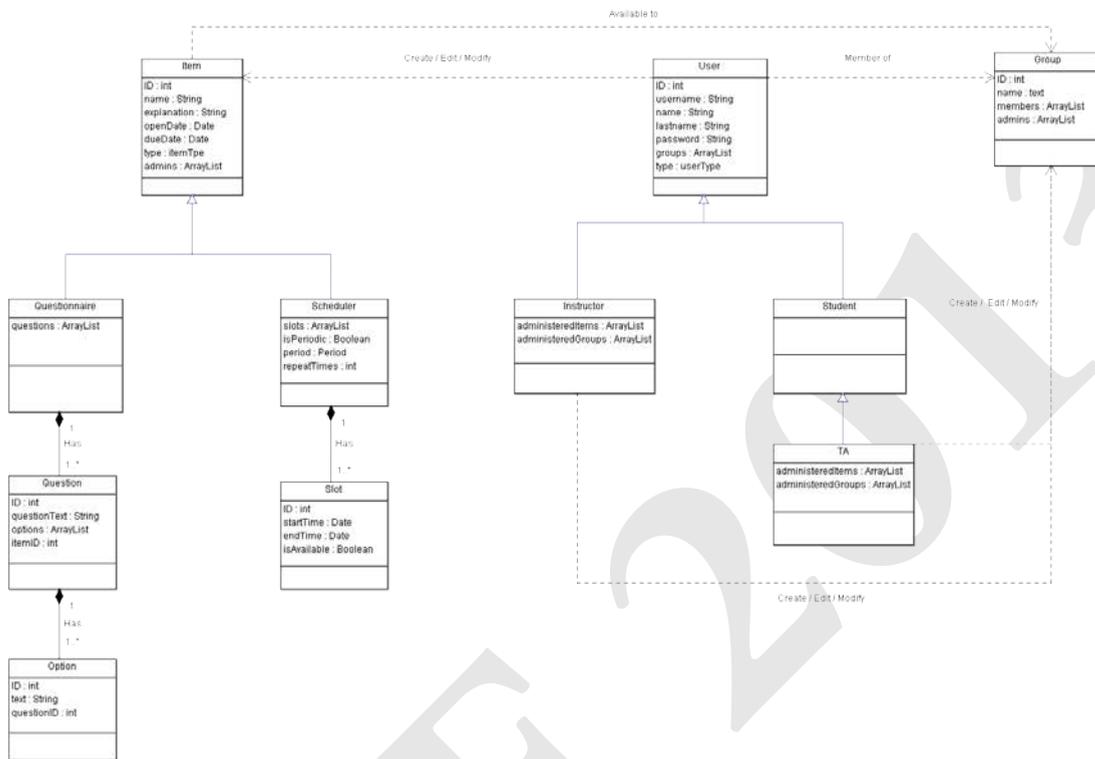


Fig. 1. class diagram

Following classes, which are represented in Fig. 1 are created in order to obtain a proper data representation:

- User
- Instructor
- Assistant
- Student
- Group
- Content
- Questionnaire
- Scheduler

3.5. Database diagram and tables

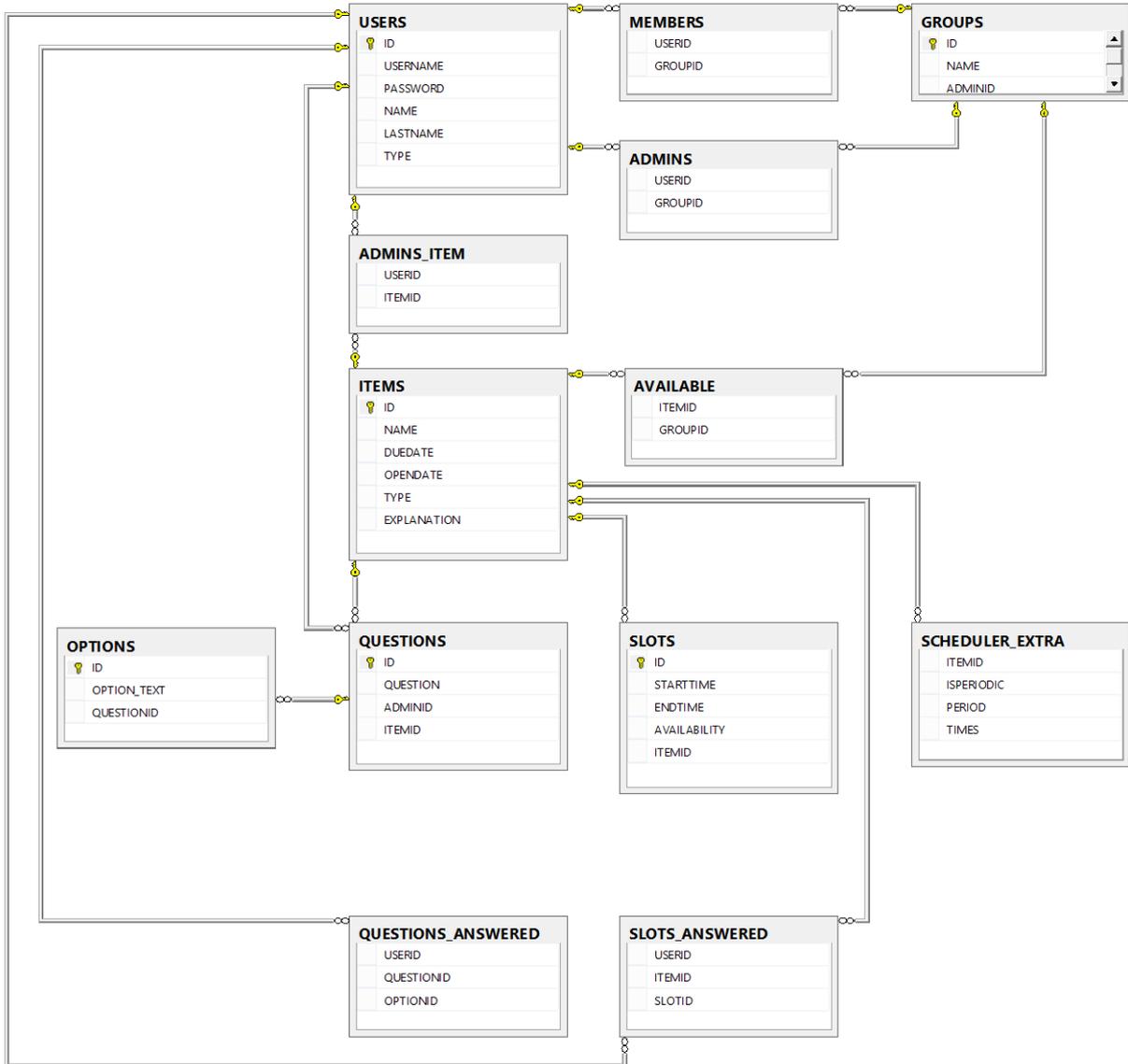


Fig. 2. database diagram

Following tables are created using Microsoft SQL Server 2008 R2:

- USERS
- GROUPS
- MEMBERS
- ADMINS
- CONTENT

- ENABLEDFOR
- QUESTIONS
- SLOTS\_ANSWERED
- QUESTIONS\_ANSWERED
- SLOTS\_ANSWERED

For every single table created in the database, primary keys and foreign keys are clearly defined. ID property is also assigned to ID columns, which increases automatically when an entry is added to the table. With the unique constraints and primary / foreign keys defined, “on delete” and “on update” cascades are introduced and established.

As a good software engineering practice and to establish a new layer of abstraction, a layer responsible for database connection is introduced to the project from the beginning. The inputs for the classes of the layer are the database connection string and using the functions of the class the programmer can retain information from the database.

### 3.6. Source code availability

The source code of two solutions, with a total of three projects is available under Github repositories:

- For the ASP.NET solution: <https://github.com/hasancansaral/B49AA7>
- For the Xcode solution: [https://github.com/hasancansaral/B49AA7\\_iOS](https://github.com/hasancansaral/B49AA7_iOS)

For any supporting material, please check:

- [https://www.github.com/hasancansaral/B49AA7\\_Support](https://www.github.com/hasancansaral/B49AA7_Support)

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## Appendix H. Fatih Project

“Fatih Project proposes that “Smart Class” project is put into practice in all schools around Turkey. With this project, 42.000 schools and 570.000 classes will be equipped with the latest information technologies and will be turned into computerized education classes.” (Fatih Projesi, n.d.).

### *A.1. Pilot phase of Fatih Project*

“Pilot phase of the project is delivering tablet PCs and smart boards to 52 pilot schools across Turkey.” (Fatih Projesi, n.d.).

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# Integrating sustainability in interior design studio

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## Abstract

Teaching methods on concept of sustainability are frequently searched in the interior architecture education. The purpose of this study is to propose a model for integrating sustainability in interior design studio. In this context, the first part of the research defines relationship between sustainability and interior architecture and determines sustainable interior design principles. In the second part, an interior design studio model is proposed and principles determined in the first part are used in this model as a design check list. The final part of the research analyzes a case study where this model is implemented and discusses the conclusions.

*Keywords:* Interior architecture; Sustainability; Design studio; Design education; Case study

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## 1. Introduction

Interior architects are responsible for the interiors of the constructed environment which consumes energy and resources and damages the biodiversity and produces wastes. Within the past 25 years the designers come to understand the complexities of their role and environmental consequences of their decisions. These decisions affect the health of current and future generations and the planet on which they live and work (Jones, 2008). In this context, the instructors of interior architecture started to study on how to educate the interior architects of the future that sustainability will not be an option but will be a standard practice. Many interior architecture schools have already included some theoretical sustainable design courses in their curriculum. However, theoretical courses alone are not enough to teach how to apply sustainable design in professional life. In this frame, this research aims to propose a model for integrating sustainability in interior design studio which is an initial-experience for real life situations and it is also the core of interior architecture education. In this context, the first part of the research defines relationship between sustainability and interior architecture and determines sustainable interior design principles entitled such as energy, material, water and health. In the second part, an interior design studio model is proposed and the principles determined in the first part and requiring features for sustainable interiors according to these principles are used in this model as a design check list. In the process of developing the model, environmental performance analysis models of BREEAM (Building Research Establishment Environmental Assessment Method) and LEED (Leadership in Energy and Environmental Design) have been examined as preliminary data. Implementation of the new model has been performed in an interior design studio case study and the outcomes are discussed in the final part of the study.

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## 2. Sustainable interior design principles

The sustainable interior design is defined as design and practices that significantly reduce or eliminate the negative impact of interiors on the environment. In other words, it is an approach that recognizes environmental impacts of the entire life cycle of interiors. In this research, 4 sustainable interior design principles are determined and design measures for sustainable interiors evaluated with the help of these principles are summarized below.

### 2.1. Energy

Energy conservation is the leading principle of sustainable interior design. Two main measures in energy conservation are “design and selection of energy-efficient equipment” and “use of renewable energy sources”. Energy conservation measures for reducing energy used for lighting are increase the natural lighting with sky-gardens, skylights or atriums; design interiors at optimum depth; use light shelves, energy-efficient lighting equipment and lighting control systems (Cole, 1996). Benefit from natural ventilation by using adjustable windows is the most important measure for reducing energy used for ventilation. Likewise, energy spent on cooling and heating can be saved by passive energy conservation measures like prevention of heat losses, using high insulation glass systems and solar shadings on facades and selecting systems with economizer cycles (free cooling, variable air flow systems, waste heat recovery system, etc.). Use of renewable energy sources (sun, wind, geothermal energy, etc.) which can be used partially instead of completely for facilitating all energy needs of buildings is very important in terms of practicing the sustainability concept (Morhayim, 2003).

### 2.2. Material

Material conservation principle concerns 3 main design measures: “flexible design”, “selecting eco-friendly materials/equipments” and “reducing waste”. The first step for material conservation is furniture and interior equipment design that have flexible, modular, demountable and expandable features. Modular walls, floorings and ceilings systems and using movable dividers and furniture systems are elements that earn interiors a sense of flexibility (Lehman-Smith, 2002). Similarly, important amounts of material can be saved by selecting materials such as long-lasting, durable, requiring low-maintenance, obtained from local resources. Measures which significantly reduce waste amount include manufacturing indoor elements at standard sizes, selecting recyclable material like wood, natural stones, steel, and aluminium or re-utilizing windows, door frames and steel beams from demolition sites plays a big part in reducing the amount of waste (Elias-Özkan, 2003).

### 2.3. Water

Water conservation measures in interiors are reuse of rainwater or gray water and selection of water-saving plumbing equipments. For example, sensed plumbing elements can be selected instead of manual plumbing or a reservoir that consumes water amount of 6 l. can be selected instead of standard reservoirs which consume 13.5 l. to save important amounts of water (Cole, 1996).

### 2.4 Health

Health conservation principle concerns 3 main design measures: “improving indoor air quality”, “providing thermal, visual and acoustic comfort” and “selection of non-harmful materials”. The steps to improve indoor air quality are avoiding the use of materials that emit pollutants like formaldehyde and radon into environment and designing adjustable windows for providing the necessary clean air to indoors. To provide thermal comfort it is suggested to use heat and humidity sensors which can sustain an environment of 21 °C and 50% of relative

humidity. For visual comfort, the use of solar shading elements and natural lighting with reduced glare effect should be provided and a visual connection with the exterior environment should be established. Measures for acoustical comfort include taking sound insulation measures for the exterior, floors and between spaces. Finally to avoid using materials emitting VOC's and which contain pollutant-emitting asbestos fiber in indoor environments are measures to take for protecting human health. In addition to these measures, it is recommended to use natural materials which protect the ion balance like wood and natural fabrics instead of synthetic material like polyester to provide the electroclimactic quality (Ersoy, 1994).

### **3. A model proposal for integrating sustainability in interior design studio**

Traditionally, the practice of interior design is learned through a project-based "studio" approach in departments of interior architecture. Whereas, in studio, students themselves generate and evaluate alternatives, make decisions and learn how to design. Therefore, for educating future interior architect generations with a high level of environmental awareness it is very important to integrate concept of sustainability in interior design studio. In this context, primarily the educational approach of interior design studio is generally defined then a model proposal for integrating sustainability in interior design studio is put forward.

#### *3.1. The educational approach of interior design studio*

The most common environment for teaching are classes where education practicers teach students by lecturing and assigning homework. Differently from this approach, in design studios, students are expected to offer solutions to design problems assigned by the instructor and they learn by working on projects (Oh et al., 2012). Interior design studio adopts a learned-centered, collaborative and experiential problem based educational approach. Each studio instructor is responsible from 10 or 12 students. These students develop their projects in parallel to instructor or jury's critiques. Roles of instructor and student can differentiate in these critiques. As Ciravoğlu (2003) indicates, in some studios, instructor is the "master" and student is the "apprentice". Another role undertaken by instructor and student is the "user-designer" role (Dutton, 1991). In this design studio, the instructor (user) critics student's (designer) project according to user demands. In the initial stage of the project, the instructors may establish the goals, general procedure and assessment criteria they will adopt. During the semester, instructors meet students either individually or in groups (desk or group critiques) for developing projects by comments. At the end of the project a final review or jury is commonly executed (Kurt, 2009).

#### *3.2. Sustainable interior design studio model*

The sustainable interior design studio model has a goal of experiencing an environmentally conscious interior design process. In this framework, the instructor undertakes the role of a user, demanding a sustainable interior from the designer (student). The group critiques are realized in order to share all documentation about the sustainability in addition to instructor's and students' comments. At the beginning of the studio, all students collect written and visual documents about sustainable interior design. In this stage, they prepare a presentation on sustainable interiors and make their presentation in a group critique session. After the research phase, the instructor submits a sustainable design check list which will guide students for creating sustainable interiors. The students develop their projects in the light of sustainable design check list and instructor's comments.

Table 1. Sustainable design check list performed in interior design studio model

<b>Energy</b>
Reducing the energy used for lighting
<i>At least 80% of spaces benefits from natural lighting and large surfaces are covered with light colour material.</i>
<i>Elements such as sky-gardens, skylights, atriums, light shelves are used to increase natural lighting.</i>
<i>Energy-efficient lighting equipment and lighting control systems are selected.</i>
Reducing the energy used for ventilation
<i>All spaces benefit from adjustable windows, air-holes or natural ventilation opportunities facilitated by channels.</i>
Reducing energy used for heating and cooling
<i>Passive recovery measures for reducing heating and cooling loads (thermal mass, etc.) are taken into consideration.</i>
<i>In order to reduce heating loads, measures are taken such as high insulation glass systems (low-e glass), double-wall applications.</i>
<i>In order to reduce cooling loads, measures are taken such as sunshades, movable blinds between glass layers, etc.</i>
Use of renewable energy sources
<i>Low emission but non-renewed energy sources or renewable energy sources like sun and wind are used in the building.</i>
<b>Material</b>
Flexible design
<i>Interior equipment elements are demountable, modular and expandable. Movable dividers are preferred instead of fixed walls.</i>
Selection of eco-friendly material/equipment
<i>Local materials are favored in construction instead of imported equipment with high energy of production and transport.</i>
<i>On large surfaces durable materials that do not require maintenance or replacement are selected.</i>
Reducing waste
<i>An existing structure is re-functionalized and redesigned.</i>
<i>Furniture used in interior is manufactured at standard sizes.</i>
<i>The doors, windows, insulation, and siding panels are mechanically inserted rather than cementing.</i>
<i>Recycled or re-utilized materials (glass, ceramics and steel recovered from demolition sites, wood etc.) are favoured in interior equipment.</i>
<b>Water</b>
Recollection and reuse of water
<i>Grey water and rain water is stored in the building, filtered and re-used in reservoirs or garden irrigation systems.</i>
Selection of water-efficient equipment components
<i>Local plants that require little water and water-saving irrigation systems are selected in interior and exterior landscapes.</i>
<i>Water-saving sanitary system equipments such as pressure reservoirs, waterless urinals, and low-flow photocell faucets are selected.</i>
<b>Health</b>
Improving indoor air quality
<i>Fresh air intake can be naturally facilitated via user-controlled adjustable windows.</i>
<i>Interiors are naturally ventilated; there is no need for an additional ventilation system as plan depth is not higher than 15 m.</i>
Providing thermal, visual, and acoustic comfort
<i>Interiors have the feature to manually control air movements and air temperature.</i>
<i>Depth of spaces are designed at max. 7m to benefit more from natural lighting.</i>
<i>The glare effect is diminished with measures taken on façade and at indoors (solar shading, glare-reducing glass, etc.).</i>
<i>Sound insulation measures are applied in order to reduce noise transmitted between floors and through installation systems.</i>
Selection of non-harmful material
<i>Materials like zinc, lead, wood preservatives containing formaldehyde or synthetic dyes which damage indoor air quality are not used.</i>
<i>Carcinogenic insulation materials like glass fibers, mineral fibers or asbestos fibers are not used in indoor.</i>
<i>In order to increase electroclimactic quality, natural material like wood and natural fabric are used..</i>

The design check list is primarily determined with the help of principles of sustainable interior architecture entitled such as energy, material, water and health and also required features for sustainable interiors according to these principles (Table 1). In the process of developing this design check list, environmental performance analysis models of BREEAM (Building Research Establishment Environmental Assessment Method) and LEED (Leadership in Energy and Environmental Design) have been examined as preliminary data. The implementation of the new model has been performed in an interior design studio case study.

#### **4. Implementation of the model on an interior architectural design studio case study**

##### *4.1. Method*

The sustainable interior design studio model is implemented in the third year of the Interior Architecture Department of Doğuş University. The studio includes the interior organization and design with environmental consciousness of an interior according to user identities, and requirements separately specified for each student. The purpose for the students is to experience the process of interior designing with the help of sustainable design measures. The design studio includes group (16 students and the instructor) critiques during the term and adopts a “user-designer” studio concept; the instructor (user) passes project critiques to the student (designer) through user needs and demands and the instructor undertakes the role of a user demanding a sustainable interior from the designer (student). During the first stage, the research-program phase, which is to be experienced by the students in the design studio, sustainable interiors were studied and examined; individual-measure-behavior researches and sample interior solutions were examined and a program was established. The second stage was the phase of design. In this phase, interior architecture students were asked to design their projects with the help of sustainable design check list submitted by the instructor. The students developed their projects in parallel of this design check list and instructor’s comments. At the end of the term, they submitted their sustainable interior design projects by two and three dimensional drawings, models and filled design check list forms (see Fig. 1.).



Fig. 1. Examples of submitted projects

4.2. Results

Submitted projects and design check list forms have been evaluated and analyzed for specifying students' sustainable interior design performance. As a result of this analyze it is determined that only 1 student has a performance lower than 50%, 3 students has a performance in the range of 50%-85%, however 12 students has a performance higher than 85%. The percentages are indicated in figure 2.

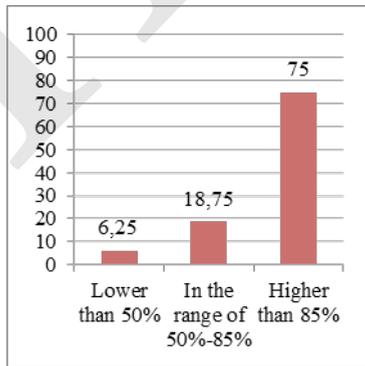


Fig. 2. The rates of the students' sustainable interior design performance

However, following the project submission, a survey is administered to the students in order to determine if the sustainable interior design studio model achieves one's goal or not. The survey includes 3 questions. The questions and students' responses to these questions are indicated below and the percentages of the responses are demonstrated in fig. 3 (a), (b) and (c).

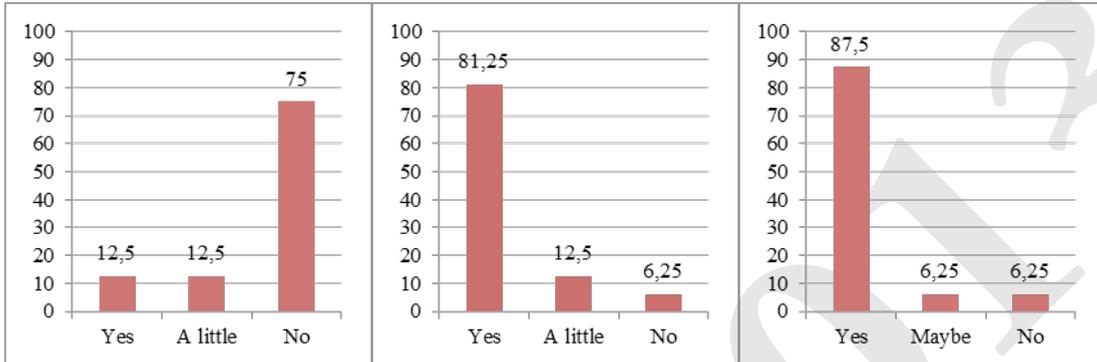


Fig. 3. (a) Percentages of responses of question 1; (b) Percentages of responses of question 2; (c) Percentages of responses of question 3.

- *Question 1: Did you have information about the sustainable design before this interior design studio?*

12 students had no information about the sustainable design, 2 students had a little of knowledge and 2 students said they were informed about the sustainable design before this interior design studio.

- *Question 2: After this interior design studio do you know about how to design a sustainable interior?*

13 students said “they know about how to design a sustainable interior”, 2 students said “they know but there are some unclear points” and only 1 student said “he doesn't know how to design a sustainable interior”.

- *Question 3: Will you practice sustainable design methods during your future professional life?*

14 students said “they will practice sustainable design methods during their professional life”, 1 student indicated “he will maybe practice” and similarly 1 student said “he won't practice sustainable design methods during his professional life”.

## 5. Conclusion

The start point of this study was the question “how to educate the interior architects of the future that sustainability will not be an option but a standard practice?”. In this framework study was performed to propose a model for integrating sustainability in interior design studio. As a result of applying sustainable interior design studio model, 75% of the students who had no information about the sustainable design before their experience in this studio, have performed projects according to sustainable design measures with a rate of higher than 85%. Similarly 81,25% of the students declared “they know about how to design a sustainable interior after this interior design studio experience”. The most important result of the survey is that 87,5% of the students indicated “they will practice sustainable design methods during their professional life”. This result significantly indicates that this

studio experience has developed an important awareness of sustainability and influenced the recognition of environmentally responsible design as an imperative in education.

## Acknowledgements

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# Interdisciplinary collaboration between interior architecture and industrial product design programs in Turkey

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## Abstract

Interdisciplinary collaboration is defined as a knowledge view and curriculum approach that consciously applies methodology and language from more than one discipline to examine a central theme, issue, problem, topic or experience.

In this study, curriculums of Interior Architecture and Industrial Product Design Bachelor's Degree Programs in Turkey are examined and the courses that can be considered from the perspective of interdisciplinary collaboration are determined. Final results of the study are based on numeric data and analyzed the current situation and the situation envisioned as a result of interdisciplinary collaboration between Interior Architecture and Industrial Product Design Bachelor's Degree Programs in Turkey.

Keywords: interdisciplinary collaboration, education, industrial product design, interior architecture

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## 1. Introduction

In the education field, interdisciplinary collaboration is a natural consequence of varying and developing knowledge areas and aims to provide students with multi-perspective way of thinking. This approach encourages students to improve their abilities, self-confidences and provides effective communication between the different disciplines (Masters, Baker and Jodon, 2012).

Interdisciplinary collaboration in the education field not only purposes the comprehensive and cooperative study of students from different disciplines for a common purpose (Dillon, Noble and Kaplan, 2009), but also aims to protect the disciplinary integrity of the participating disciplines (Lindeke and Block, 1998).

Although interdisciplinary collaboration in the education field is not a new approach, it is becoming an important approach in recent years. (Yıldırım, 1996). This approach provides proactive environment and wide information infrastructure for interaction, creativity and innovation. (Costa ve Scoble, 2006). "To make a difference", which is ensued from interdisciplinary collaboration is regarded as one of the most important components of the creative thinking process (Okada, Yokochi, Ishibashi and Ueda, 2009).

"Interior Architecture" is defined as a professional field that deals with interior spaces in terms of practical, aesthetic and symbolic functions and develops projects in accordance with people's physical and mental characteristics and actions (TMMOB Chamber of Interior Architects, 2011). "Industrial Product Design" is defined as a creative industrial discipline and profession that aims both fictionalizing the visual, physical,

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cognitive and functional interface of product-human relationship and interpreting the limitations of today's technology on product or system basis (İTÜ, 2013). Both of these disciplines live on creativity and work on different scales in order to develop innovative projects. In the view of these factors, it is envisioned that interdisciplinary collaboration between interior architecture and industrial product design disciplines will provide procreative environment and wide information infrastructure for interaction, creativity and innovation.

## 2. Interior Architecture and Industrial Product Design Bachelor's Degree Programs in Turkey

It is determined that the number of universities offering Interior Architecture Bachelor's degree program in Turkey is 46 and the total quota of these programs is 3054. On the other hand, the number of universities offering Industrial Product Design Bachelor's degree program in Turkey is 23 and the total quota of these programs is 980.

In Turkey, The Council of Higher Education-YÖK, established in 1981, is responsible for the planning, coordination, governance and supervision of higher education. The higher education institutions have no autonomous structure. Table 1 shows the diversities of Interior Architecture and Industrial Product Design Bachelor's degree programs in Turkey in terms of "Program Names", "Student Selection Method" and "Type of University".

Table 1. Number of Interior Architecture and Industrial Product Design Bachelor's degree programs in Turkey according to the program names, student selection method and type of university

		Number of Interior Architecture Bachelor's degree programs in Turkey	Number of Industrial Product Design Bachelor's degree programs in Turkey
<b>Program Names</b>	Interior Architecture	28	-
	Interior Architecture and Environmental Design	18	-
	Industrial Product Design	-	17
	Industrial Design	-	6
<b>Student Selection Method</b>	LYS Exam	21	14
	Aptitude Exams	25	9
<b>Type of University</b>	State University	10	7
	Private Foundation University	36	16

### 2.1. Curriculum Analyses

When it comes to interdisciplinary collaboration between Interior Architecture and Industrial Product Design programs, it is necessary to examine the curriculum of these programs.

The courses that can be considered from the perspective of interdisciplinary collaboration can be determined as a result of curriculum analyses.

Bahçeşehir University, Doğuş University, İstanbul Technical University and Mimar Sinan Fine Arts

University are taken as a reference for the curriculum analyses. The diversities in student selection methods and university types are considered during the determination of these universities.

Table 2. Analyses of selected universities in terms of student selection method and university type

	<b>Bahçeşehir University</b>		<b>Doğuş University</b>		<b>İstanbul University</b>	<b>Technical</b>	<b>Mimar Sinan Fine Arts University</b>
<b>Student Selection Method</b>	LYS Exam		Aptitude Exams		LYS Exam		Aptitude Exams
<b>University Type</b>	Private University	Foundation	Private University	Foundation	State University		State University

Compulsory courses are considered and these courses categorized as five main groups during the curriculum analyses.

- Off-discipline Courses
- Professional General Knowledge Courses
- Presentation Techniques Courses
- Interdisciplinary Collaboration Courses: The courses that can be considered from the perspective of interdisciplinary collaboration
- Other Professional Courses

Table 3 shows the cumulative course lists according to these five categories.

Table 3. Cumulative course lists of Interior Architecture and Industrial Product Design Bachelor's degree programs in Turkey according to course categories

	<b>INTERIOR CUMULATIVE COURSE LIST</b>	<b>ARCHITECTURE</b>	<b>INDUSTRIAL CUMULATIVE COURSE LIST</b>	<b>PRODUCT</b>	<b>DESIGN</b>
<b>OFF-DISCIPLINE COURSES</b>	Foreign Languages 1 + 2 + 3 + 4		Foreign Languages 1 + 2 + 3 + 4		
	Turkish Language 1 + 2		Turkish Language 1 + 2		
	Principles of Atatürk and History of the Revolution 1 + 2		Principles of Atatürk and History of the Revolution 1 + 2		
	Introduction to Computer and Information Systems		Introduction to Computer and Information Systems		
	<b>Introduction to University Life</b>		<b>Introduction to University Life</b>		
	History of the Civilization 1 + 2		History of the Civilization 1 + 2		
	<b>Sources of Contemporary Europe and Modern Ethics</b>		<b>Sources of Contemporary Europe and Modern Ethics</b>		
	<b>Civic Involvement Projects 1 + 2</b>		<b>Civic Involvement Projects 1 + 2</b>		

	Economics	Economics
	Mathematics	Mathematics
	Common Law	Physics 1
		Physics 1 Lab
<b>PROFESSIONAL GENERAL KNOWLEDGE COURSES</b>	History of Architecture 1 + 2 + 3	History of Art 1 + 2
	History of Art 1 + 2	History of Design 1 + 2
	History of Design 1 + 2	History of Style and Trends 1 + 2
	History of Interior Architecture	<b>Art and Design Education 1 + 2</b>
	<b>Art and Design Education 1 + 2</b>	Comparative Design History
	Architecture in Istanbul	Turkish Design Heritage
	Introduction to Architecture	History of Turkish Industry
<b>PRESENTATION TECHNIQUES COURSES</b>	Drawing 1 + 2	Presentation Techniques 1 + 2 + 3 + 4
	Technical Drawing 1 + 2	Technical Drawing 1 + 2
	<b>Descriptive Geometry</b>	Descriptive Geometry 1 + 2
	Perspective	Perspective 1 + 2
	<b>Cad Design 1 + 2</b>	Computer Aided Technical Drawing 1 + 2
	Architectural Project 1 and Presentation Techniques	Computer Aided 3D Modeling 1 + 2
	Architectural Project 2 and Presentation Techniques	Computer Aided Production Drawing 1 + 2
	Graphic Communication 1 + 2	Nurbs Modeling Techniques 1 + 2
	Advanced Presentation Techniques	Image Processing Techniques 1 + 2
Production Drawing		
<b>INTERDISCIPLIN ARY COLLABORATION COURSES</b>	Interior Design Studio 1 + 2 + 3 + 4 + 5	Product Design Studio 1 + 2 + 3 + 4 + 5
	Introduction to Design 1 + 2	General Principles of Design 1 + 2
	Basic Design	Modeling 1 + 2
	Design Theories	Structure
	Furniture Design	New Product Development
	Introduction to Furniture Design	Product Design Researches

	Structures of Furniture	Design Theories and Methods
	Furniture Identity	
	Experimental Furniture	
	Furniture Practice Studio 1 + 2	
	Constructional Elements 1 + 2	Material Production Techniques 1 + 2
	Construction Equipment 1 + 2 + 3	Metal Forming Techniques
	Physical Environment Control 1 + 2	Metal Product Design Principles
	Principles of Interior Architecture 1 + 2	Statics and Strength
	Construction Material 1 + 2	Mechanics and Thermodynamics
	Building Survey 1 + 2	Electricity and Optic
	Statics	Mechanical Elements
	Strength	Electro Mechanic Application in Industrial Design
	General Lighting	Ergonomics 1 + 2
	Conservation and Restoration	Culture and Communication in Product Design
	Principles of Structural Systems	Product Semantics
	Constructional Elements Design	Package Design
	Natural Elements in Interior Design	Brand Identity in Package Design
	Interior Architecture Practice Studio	Marketing 1 + 2
	Space Organization	Design Management
	Space Organization in Houses	Product Development Management
	Graduation Project Research	Trend Management
	Construction Management and Economics	Industry Psychology
	Professional Practice and Ethics	Smart Industrial Products
	Professional Law Knowledge	Product Interfaces and Graphics 1 + 2
	Architectural Design Theories	<b>Intellectual Property Rights</b>
	Graduation Project	Professional Life 1 + 2
		Professional Experience and Portfolio Design

**OTHER  
PROFESSION  
COURSES**

## 2.2. The Analyses of Courses that can be Considered from the Perspective of Interdisciplinary Collaboration

The courses that can be considered from the perspective of interdisciplinary collaboration are determined in Table 3. It is envisioned that these courses can be classified as shown in Table 4.

Table 4. Classification of courses that can be considered from the perspective of interdisciplinary collaboration

	<b>Interior Architecture</b>	<b>Industrial Product Design</b>
<b>Category 1</b>	Interior Design Studio 1 + 2 + 3 + 4 + 5	Product Design Studio 1 + 2 + 3 + 4 + 5
<b>Category 2</b>	Introduction to Design 1 + 2 Basic Design Design Theories	General Principles of Design 1 + 2 Design Theories and Methods
<b>Category 3</b>	Furniture Design Introduction to Furniture Design Structures of Furniture Furniture Identity Experimental Furniture Furniture Practice Studio 1 + 2	New Product Development Product Design Researches Structure Modeling 1 + 2 Structure

Design and selection of the products, which take part in interior space are a particular concern to interior architects during the interior design process. On the other hand, during the industrial product design process, the product should be paired with the space that the product will take part in. In the view of these factors, interdisciplinary collaboration between design studio courses in category 1 will give opportunity to sharing knowledge and skills during design processes.

The courses in category 2 deals with the design process, theory and methods. It is envisioned that interdisciplinary collaboration between courses in category 2 will provide students multi-perspective way of thinking.

The courses in category 3 deals with new product design methods, furniture design, structure and modeling. Interdisciplinary collaboration between courses in category 3 is intended for encouraging the students to work together for a common goal.

## 2.3. The Analyses of Recent Situation and Situation as a Result of Interdisciplinary Collaboration

The result of the cumulative course analyses points out that there are 29 courses that can be considered from the perspective of interdisciplinary collaboration. Figure 1 shows, the recent scatter chart of courses in Interior Architecture and Industrial Product Design Bachelor's Degree Programs in Turkey. Figure 2 points out the envisioned scatter chart as a result of interdisciplinary collaboration between these two programs.

### Interior Architecture

### Industrial Product Design

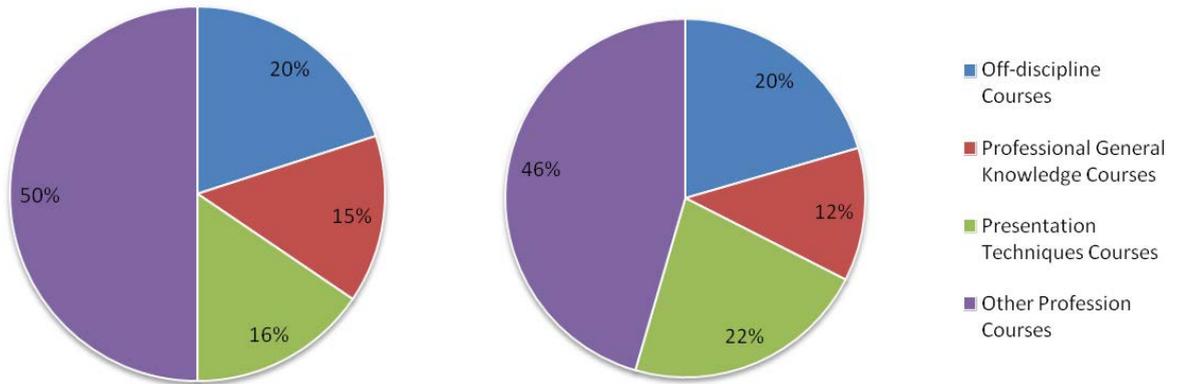


Fig. 1. Recent Scatter Chart of Courses

### Interior Architecture

### Industrial Product Design

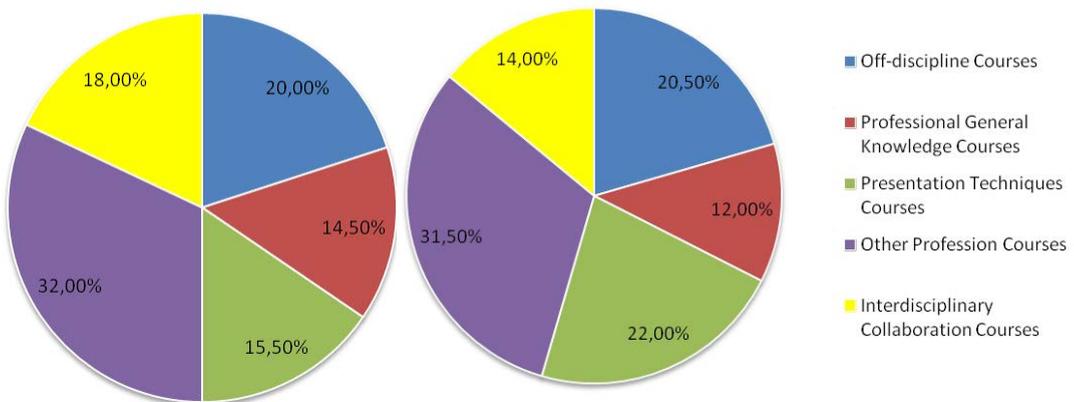


Fig. 2. Envisioned Scatter Chart of Courses as a Result of Interdisciplinary Collaboration

### 3. Conclusion

This study was performed to propose a new approach for the Interior Architecture and Industrial Product Design Bachelor's Degree Programs in Turkey from the perspective of interdisciplinary collaboration. Figure 1 shows that %50 of the courses in Interior Architecture programs and %45.5 of the courses in Industrial Product

Design Programs are “Profession Courses”. Figure 2 points out that the courses that can be considered from the perspective of interdisciplinary collaboration corresponds to %18 in Interior Architecture programs and %14 in Industrial Product Design Programs.

Despite the fact that these disciplines work on different scales, interdisciplinary collaboration on issues such as design studios, basic design, new product design, furniture design, structure and modeling are envisioned to be beneficial.

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4<sup>th</sup> International Conference on New Horizons in Education

# Intergenerational programs implemented in the Czech Republic

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## Abstract

It will be necessary to cope with actual social changes, all parties involved - between generations will need to build new forms of solidarity based on mutual support and the transfer of skills and experiences. Intergenerational programs could be an instrument of mutual exchange and bridging of generational gap. This paper will provide information about the status of intergenerational programs in the Czech Republic. Crucial intergenerational programs will be those involving multiple generation but include at least two nonadjacent (as a rule interaction between the very young and very old) and non-familial generations.

*Keywords:* intergenerational programs, young, older, elderly

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## 1. Introduction

In recent years, there has been increasing interest in developing initiatives that seek to bring the older and younger generations together. This interest arises from changes in society. The population in the Czech Republic is getting older. According to the population forecast of EUROSTAT, the Czech Republic will rank among the oldest populations worldwide. In 2009, there were 18% of people above the age of 65 and the trend of the aging population is going to continue. The latest population forecast of the Czech Statistical Office estimates that 32% of the population will be elderly (65+) in 2065. That is a serious number calling an attention. In the European Union, 2012 has been designated as the European Year of Active Ageing and Intergenerational Solidarity with the overall aim of achieving a Europe friendly to all ages by 2020.

Strom and Strom (in London, 2011) indicate that it will be necessary to ensure that all age groups can recognize and respond to the needs of a cohort other than their own. They point out that many nations are experiencing social transformation, acknowledges the need to develop a broader vision of education for social evolution and also to modify some traditions so that they can be maintained in respect of a modern lifestyle and current values. Kaplan (2001) calls for increased intergenerational involvement coming from many directions, he calls for publishing evidence and suggests that such efforts directed at increasing the quality of people's lives, strengthens communities and contributes to the necessary level of social change.

Cultures where filial relationship was characterized by great respect to elders (eg China, Japan, Palestine) used for a long time terms such as intergenerational learning, intergenerational exchange or intergenerational communication interchangeably (Hatton-Yeo and Ohsako, 2000). While in foreign countries attention has been paid to intergenerational interaction for several decades, in the Czech Republic this area is quite neglected. In the Czech Republic, Rabusicova with her colleagues (Rabusicova, Kamanova and Pevna, 2011) from the Masaryk University in Brno focuses on the intergenerational learning. This is the first research published in the Czech

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Republic. The main attention is focused on intergenerational learning within families (among children, parents and grandparents) and intergenerational courses are conceived as a meeting place of different generations of family members (it corresponds to our concept of multigenerational courses). Radvakova (2010) summarizes that in the Czech Republic there are three major problems in all parts of lifelong learning: ambiguity of competence, non-existent or ineffective motivation, and the absence of mechanisms for the systematic development of this type of education.

Although the context of considering intergenerational learning is mainly about the family, this concept can be used in other social groupings (from schools within various levels of the educational system, through work, to civic (community) organizations). Despite the growing interest in shared learning experiences, to date no attempt has been made to draw enough information about the nature of intergenerational exchange outside the family. And here is the space and the need to implement intergenerational practice (incl. programs).

## 2. Definition of Intergenerational programs

In general an intergenerational practice can be best understood as any activity which aids to bring people together in purposeful, mutually beneficial activities which promote greater understanding and respect between generations and contribute to building more cohesive communities (Finn, Scharf, 2012). In the literature on intergenerational interventions, the concept of intergenerational transmission has been defined in a number of different ways (one such a definition targets specific programs, namely intergenerational programs, and another definition is derived from explorations of all intended intergenerational transmissions) (Bostrom, 2003). Some authors (or institutions) do not specify intergenerational practice. For the purpose of this paper it is essential to differentiate the concept of "intergenerational" as an interaction between younger generations (children and youth) and older people, and the term "multigenerational" including several generations (not just young and older). This differentiation corresponds to the concept in the international field examining the issue of intergenerational interaction. This paper is approaching the concept in research reports eg. UNESCO (Hatton-Yeo, Ohsako, eds.: *Intergenerational Programs: Public Policy and Research Implications an International Perspective*, 2000, Kaplan, ed.: *School-based intergenerational programs*, 2001), EU (Fischer, ed.: *Intergenerational learning in Europe: Policies, Programs & Practical Guidance*, 2008), international project European Network for Intergenerational Learning (periodic *Intergenerational learning*), international network The European Map of Intergenerational Learning (EMIL), Centre for Intergenerational Practice (Hatton-Yeo, ed.: *Intergenerational Programs: An Introduction and Examples of Practice*, 2006) etc.

The broad definition of intergenerational programs encompasses the different developmental status and cultural context of each country.

The program is then more than scheduled activities for the population served, it is planning of activities and the interaction that takes place among individuals when they participate in it (Newman, Brummel, 1989). According Newmann (1997) intergenerational programs have been emerging as a new form of human service that provides for systematic a deliberate interaction between persons at the opposite end of the human age continuum. Newmann (1997) aids that intergenerational programs are designed to engage nonbiologically linked older and younger persons in interactions that encourage cross-generational bonding, promote cultural exchange, and provide positive support systems that help to maintain the wellbeing and security of the younger and older generations.

Intergenerational program involves ongoing, organized, activity between members of younger and older age-groups for the benefit of all participants (Kuehne, 1999).

In a nutshell, it is about "intergenerational engagement" – the full range of ways in which young people and older adults interact, support, and provide care for one another (Kaplan, 2001).

Sanchez (2007) see and define three aspects, however, are found as the common denominators of intergenerational programs: a) people from different generations participate in all intergenerational programs b) participation in an intergenerational programs involves activities aimed at goals which are beneficial for all those people (and hence to the community in which they live) c) thanks to intergenerational programs, participants maintain relations based on sharing.

The conceptual definition (most important and widely used) it is general accepted since 2000: *Intergenerational programs are vehicles for the purposeful and ongoing exchange of resources and learning among older and younger generations for individual and social benefits* (Hatton-Yeo and Ohsako, 2000). For example Sanchez (2009) adopted this definition of intergenerational program by the International Consortium. This definition have evolved over time, without been severely renewed (Pinto, 2011).

Nevertheless countries are not following identical courses of intergenerational programs development (Hatton-Yeo, Ohsako, eds. 2000). Otherwise, intergenerational programs vary widely: the organizers, content, form, time, participants, etc.

### 3. Methodology

Therefore, the aim of this research is to determine what intergenerational programs in the Czech Republic have been implemented. The research method used in this paper is a descriptive analysis. To analyse the programs implemented in the Czech Republic, we checked information posted on the website. Exploiting the data stored in search logs of Web search engines and Web sites can provide important information about intergenerational programs implemented in the Czech Republic. The Internet (World Wide Web) provides access to a wealth of information across a multitude of subjects. Programs can be very different. So intergenerational programs may be categorized according to type of intergenerational interaction (simplified: young for older, older for young or young and older together). Programs may include educational activities, mentoring, volunteering, etc. Therefore it is important to set sampling criteria. Sampling criteria are the list of characteristics of the elements that we have determined beforehand and that are essential for eligibility to form part of the sample.

We determine what these criteria (or essential characteristics) are as a result of the research problem – or the purpose of the research. A program is not something that appears in front of us but rather it is something that we must look for and pursue (Sanchez, 2007).

Sampling criteria:

- Program is deliberated, managed activity (with organisation and goals).
- Participants from several generations – it must include at least two nonadjacent and non familial generations. It represents „intergenerational" as an interaction between younger generations (children and youth) and older people.
- Ongoing exchange: All intergenerational programs pursue certain goals that are beneficial to the participants as well as other people in their surroundings (whether personal, family, community, etc.).
- Realization in the Czech Republic.

#### 4. Situation in the Czech Republic

In gathering information about on-going intergenerational programs, we are aware of the limitations of our approach to collecting details of relevant programs.

The first result of the analyse shows that the interest in intergenerational programs in the Czech Republic depends on multigenerational approach (often with family bonds) or on the one generation exclusivity than on the connection of younger and older generations.

According Hatton-Yeo and Ohsako (2001) some countries acknowledge that they have not yet developed recognised “models” of IP but are able to identify programs from other areas that have intergenerational dimensions. This is true for the Czech Republic. The formal concept of intergenerational programs, as such, is not used.

We found programs implemented in the Czech Republic that are designed just for elderly. These programs provide a variety of services to older adult. These are services such as care (home, health and social care), protection (safety home, self-defence) and development, including education (eg. U3A, civic and recreational programs, so many programs aim to develop computer skills). In recent years, the programs are also abounding in the e-environment (website about and for seniors, blogs, special e-shops, discount servers). Special categories are programs that focus on reminiscences (books and creations of memories), thus transmission of the culture and of the cultural heritage. These are primarily the programs of the European Grundtvig project (eg. ME(U)MORIES, TOYS OF MY GRANDPARENTS, VIRTUAL EUROPEAN CULTURAL CENTER). But the above activities explicitly do not express focus on multiple generations. Another category are programs to support families (under the auspices of the NGO's family centres and foundations – for example project PARENTING FROM A TO Z with five special programs, program WEEKENDS MOTHER-DAUGHTER-GRANDMOTHER, program DOX gallery organizes regular art exhibitions for all family members, program Every Czech Reads to Kids, and many others).

Programs for the young generation with an emphasis on intergenerational relationships are particularly part of the implementation of educational policy (as a part of educational goals, and implemented in a school environment). So these programs do not meet the specified conditions. Typically, these programs cover only one generation (peers), these programs are not deliberated and are not managed activity (with organization and goals). It should be mentioned also programs that fall under the family policy and the protection of children.

Following are some descriptive results obtained from a sample of 33 identified intergenerational programs:

Generally there are four fundamental types of intergenerational programs: (1) older adults serving children and youth; (2) children and youth serving older adults; (3) the old and the young together serving the community; (4) older persons, youngsters and children provide a mutual service in informal activities which, among others, can involve learning, entertainment, leisure or sport. Although this classification is still valid, it has been questioned because it is difficult to clearly distinguish between who provides the service and to whom (Sanchez, 2007). Nevertheless, we try similarly to classify the programs in the Czech Republic. In the Czech Republic most intergenerational programs are based on the first model: older adult serving children and youth.

Most frequently seen model involving older adults serving the young in childcare in which older adults work (as volunteers) with young children in hospital, residential care or older adults create a product for facilities for children. These are programs: SENIORS SEW DOLLS FOR CHILDREN; SENIORS MANUFACTURE TOYS FOR CHILDREN FOR FUN; BABIES IN THE BEDROLL; SENIORS MANUFACTURE TOYS. Specific is program GRANDMOTHER READ TO CHILDREN (old pedagogical workers read books to hospitalized children – one day, one grandmother). Little different is the program SECOND LIFE OF CHILDREN'S BOOK – seniors gather old children's books. Seniors distribute these books in vulnerable children or in family centres. We could say there are special types of volunteering (or donation). But we identified directly to specific volunteering programs. The most widespread intergenerational volunteering program is 3G PROGRAM. This program is implemented by organization Hestia, but other organizations have taken it (ADRA, ELIM, TOTEM).

The 3G Program is similar to the Big Brother in the US, this social prevention program promotes the exchange of experience between young and older people by voluntary work: One adult establishes a mentoring relationship with a child (between 6 and 15 years) that comes from a problematic environment and spends the free time once a week with the child. Similar is program THE SHAMROCK – older adults are as foster grandmother in vulnerable family. A third group of programs has been based on the creativity to use the experiences and knowledge of older people in settings such as exhibition, libraries and museums and other cultural settings. For example program: INTERGENERATIONAL DIALOGUES (project audiovisual workshop). In this program young people recorded interviews with seniors and while seniors advising young people with the use of audiovisual and film equipment. Two programs have organized an art contest for children (LIVE WITH SENIOR; HAPPY AGE THROUGH THE EYES OF CHILDREN). Another program is WORKSHOPS OF SENIORS FOR CHILDREN in which seniors prepare four different workshops: photo exhibition, a chronicle of travelling etc. And in the capital works program, in which seniors help maintain safe pedestrian crossing in front of schools (SAY STOP TO AGGRESSIVE DRIVERS).

The second intergenerational program model that is evident throughout the Czech Republic involves youth serving older adults. Most of the meetings between participants from different generations took place in spaces designed for older people (residential homes or day-care settings). Young people visiting older people in residential homes to provide communication support and to share activities, i.e. music and crafts. Most of these intergenerational programs are based on volunteering (GABRIEL; ADRA VOLUNTEERING IN HEALTH AND SOCIAL CARE FACILITIES; CHILDREN OF ERKO GO TO HOSPITALS FOR REWARD eventually CHILDREN READ TO SENIORS). In one program school children drew and then they organized an exhibition for seniors (SENIORS IN OUR HEARTS). School environment supports the following programs: when children teach PC skills INTERGENERATIONAL ITC SKILLS and INTERNET CONNECTS GENERATIONS. Both are international and supported by EU. We like program in high school of gastronomy INTERGENERATIONAL CLUB OF GASTRONOMY HIGH SCHOOL: students provide services as café, senior travel agency and senior academy exclusively for older adults.

And finally the third intergenerational program model where older adult and young share activities. One of the most interesting is program SENIORS FOR JUNIORS, JUNIORS FOR SENIORS. First, seniors taught children of traditional dances. Then the children taught of Roma dances. Also, another program was artistically oriented. In the program THINK BING young and older adults have painted the wall as a symbol of connection and solidarity. The National Library has organized a program TOGETHER – TOGETHER WITH SENIORS AND CHILDREN IN THE LIBRARY. The conference was output of this program. The organisation Chaloupky o.p.s. realises just two projects under one program NATURE BRIDGE BETWEEN GENERATIONS. Within the same project, the organization held a conference on the establishment of gardens and intergenerational learning, sense of stimulation of seniors. Chaloupky o.p.s organizes two-days or one-week trips for school children. These are the ecological and scientific topics (seniors are there as teachers) trips. For a long time was prepared implementation of programs GRANDMA, GRANDPA, TELL. Initially children sent pictures related to aging. One day took place an event where children and seniors met together. Seniors teach children traditional arts and children show seniors contemporary art. Program INTERGENERATION RECIPE BOOK – RECIPE FOR A LIFE. School children visit seniors and they tell them different stories. The result of this program is a recipe, which includes these stories. The Czech Republic has involved into program LITERARY AWARD CHRONOS. Seniors are visited by children in their homes. These seniors read specially selected books about lifelong journey. The art gallery GASK is very creative in organization of intergenerational program. For example one exhibition was implemented directly in a residential home for seniors (showed pictures were painted in senior's birth years). Children went to see this exhibition.

Very special is a program called INTERGENEACTION, which is international. Professionals learned about intergenerational practice especially in the educational area. Questionable is the inclusion of the program

implemented of CEZ company. Yet mention it because it helps intergenerational practice. The program called WE FULFILL A DESIRE, WE THINK OF OTHERS.

It should be noted that the above classification may be misleading. Both generations are always influenced by intergenerational program.

Intergenerational program is described as being implemented in a wide variety of settings schools, universities, the community, youth organisations and industries are just some examples (Hatton-Yeo, Ohsako, 2000). Programs in the Czech Republic are separate from one another with limited opportunity for collaboration. Most of the programs are locally organised with support by one of the existing local organisation. In relation to the types of organisation organising these intergenerational programs, 7 are public and 24 are private. The 1 program uses of public private partnership. One program has not been identified. Government partnership, cooperation or benefits is very minimal.

Another characteristic about which information is available is level of implementation. Most programs are local/community's (24). Programs that are national (5) and transnational / international (4) is almost identically.

In terms of time scale and duration, most of the intergenerational programs were (are) one-off endeavours. Programs are occurring on an annual basis. Only few programs are continuously on-going (especially voluntary programs). It is questionable if this programs lead to other development in the terms of intergenerational activity.

Intergenerational Programs in the Czech Republic are not evaluated. Therefore it is not possible to assess their effectiveness and accessibility at this current time.

## 5. Conclusion

This paper offers an overview of intergenerational programmes implemented in the Czech Republic, but makes no claim about being comprehensive. This research is as an initial attempt to assess intergenerational programmes in the Czech Republic. In time, as awareness of intergenerational practice in the Czech Republic spread, it might be possible to provide a more comprehensive overview.

An interesting fact is that the identified intergenerational programmes in the Czech Republic are inextricably bound up with the European policy. Programs that are marked as intergenerational and satisfy the definitional criteria were set up at the time of the European Year of Volunteering 2011 and the European Year of Active Ageing and Solidarity between Generations 2012. At this time Czech government is becoming interested in its implications for policy. Politicians have been starting to discuss possibilities that reflect this developing interest. There will be necessary to establish a common understanding of intergenerational programs and intergenerational dialogue as so.

We hope that this paper will contribute to rising of interest about this topic. We expect that this contribution will complement the existing overview and knowledge of intergenerational programs.

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4<sup>th</sup> International Conference on New Horizons in Education

# Internationalization and Quality Control of Education in TEI of Athens. Evaluation of the Erasmus Programme.

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## Abstract

*The international student appeared the last decades in the educational vocabulary in order to reveal a new aspect of Higher Education, that of internationalization. Towards this direction, mobility programmes such as Erasmus have a significant impact and revealed the desire of European students and the intention of HE Institutions to become international, as far as curriculum and studies are concerned. TEI of Athens has also endorsed this new profile and adapted in its academic life. The results of a self assessment process are witnessing this initiative and support the existence of the student “universalis”.*

Keywords: Internationalization of HE, Quality, Self Assessment

## 1. INTRODUCTION

Higher Education has become increasingly international during the last decades as more and more students choose to spend a period of their studies abroad or to enrol in foreign educational programmes and institutions in their home country. Traditional study programmes has been partly replaced by these alternatives, which substituted them for an important period of time. The notion of the international student has appeared in the educational field in order to define the embryonic shape of the new species of global citizens.

This phenomenon of cross-border education is the result of several driving forces from different perspectives. Amongst them, a strong desire to promote mutual educational, cultural and linguistic understanding, the move of skilled workers in the current globalised financial environment, the need of HE Institutions to generate additional revenues by setting up annexes in foreign countries and the importance to build a more educated work force that will reinforce national economies have been significant factors.

Apart from some social-cultural perspectives and economic reasons that are directly linked with the promotion of internationalisation of Higher Education, the development of European Higher Education Area and the Bologna process have an important impact towards this direction. They created the demand for degrees to be internationally recognised, they promoted the interchange of skills, the training and educational experience through the interconnection of education and market, the student preparedness and the internationalization of the student's curriculum. The Institutions themselves have turned towards this trend and gave high importance at

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their international character, aiming at enhancing their international profile, strengthening the research and knowledge production and diversifying their faculties and staff.

Over the years the internationalization of education has been transformed from reactive into proactive and its content has evolved dramatically. The increased competition amongst Higher Education Institutions has challenged the existing forms of educational cooperation and has become an indicator for quality in higher education.

## 2. RESEARCH METHODOLOGY AND RESULTS

Quality is not just for manufacturers. The internationalization of higher education seems closely related to improving educational quality. It is unquestionable that quality is an elusive and complex concept, difficult to measure but mostly noticed by its absence. Although the Maastricht Treaty provided the basis for action in the European educational field, the notion of quality in the education has mostly gain significance in the Bologna process. "In the decade up to 2020 European higher education has a vital contribution to make in realising a Europe of knowledge that is highly creative and innovative ... Europe can only succeed in this endeavour if it maximises the talents and capacities of all its citizens and fully engages in lifelong learning as well as in widening participation in higher education." (Ministers responsible for Higher Education in the countries participating in the Bologna Process, Leuven/Louvain-la-Neuve Communiqué, April 2009). In the Higher Education sector, the word of quality exceeds the traditional idea of excellence or outstanding performance. The most commonly now accepted is "fitness for purpose". This interpretation allows Institutions to define their purpose in their mission and objectives and leads to educational differentiation. Their policies, attitudes, actions and procedures necessary to ensure the quality set are predefined and constantly checked. The quality attributes in each Institution should be defined and closely stated.

According the comprehensive approach derived from West, Noden and Gosling (2000)'s viewpoint of quality in higher education, the framework called "the Input-Process-Output (IPO) framework" (in which 'Input' refers to the entry requirements, 'Process' refers to the teaching and learning process, and 'Output' refers to the employability and academic standings) may be used in accordance with the institution's operation system of converting the inputs (e.g. Selection of Students, Entry requirements) into outputs (e.g. Placement, Academic performance, international curriculum) via the process (e.g. teaching and learning, exchange of students, bilateral agreements, European knowledgeability, learning mobility). In this way, the quality improvements could be associated with the operating system of any organization, including those from the education sector. This framework may also be used for assessing the international quality strategy of the Institution in a simple basis.

If a critical and reflexive analysis is applied to evaluate the international dimension of an Institution, this should be made mostly through benchmarking (comparison made with other institutions abroad or at home) and secondly through a self-assessment process guided by the Institution itself. Of course, the latter is a useful tool of evaluation, which may reveal the weaknesses and the strengths of the strategy followed, but it requires time, commitment and the right preparation steps to be taken in advance.

The notion of internationalization in the educational sector focuses mainly on Europe, as this continent has been a magnet for students' educational mobility. In national and institutional approach, mobility - either as part of the home degree or for a full degree abroad - has been dominant. The European countries are topping the list in this regard, via Erasmus programme (under Lifelong Learning Programme), which "fosters internationalization at Europe" since its launch in 1987. In the Communiqué of the Conference of European Ministers Responsible for Higher Education, Leuven (28-29 April 2009, point 18) on the Bologna Process, there

is an ongoing strong emphasis on the importance of mobility: “in 2020, at least 20% of those graduating in the European Higher Education Area should have had a study or training abroad”. Nowadays around 90% of European Universities in 31 countries are taking part in it, helping students to go abroad for studies and company placements. Learning mobility is the primary goal of the programme, ensuring that young people in Europe develop the skills and competences they need for today’s rapidly evolving market. The Erasmus Programme proved to be a significant tool for a student in order to gain vital assets (new skills, wider perspectives, European experience) through studying or training in Europe whose future will depend on them as future working force. It caters not only for students, but also for professors interested in teaching in another country, as well as university staff who appreciate the benefits of being trained abroad. Exchanges have beneficial effects, both for the beneficiaries and for the home and host institutions. Through the years mobility via Erasmus became the most useful element of internationalisation, aiming at preparing the students (being national or foreign) for their future career and life in a constantly changing social and financial environment. Thus, mobility is no longer an objective in itself but one of the intermediates to attain the future individual and professional preparation. The international is linked with the multicultural flexibility and efficiency. Mobility is a prerequisite so as to get an international and intercultural experience, a new characteristic that will differentiate the individual, an added value to his/her curriculum putting emphasis in quality.

TEI of Athens joined the Erasmus programme in 1987. During this period, internationalization, and especially actions related to the Erasmus programme, are and will remain an important part of its strategy. Its mission in the field of international student exchange is summarised in allowing its students to compete on the international market, respond to the requirements of globalization and facilitate the creation of a platform of ideas and experiences exchange. Moreover, priority is given to the development of modern educational studies in accordance with European market requirements. As TEI of Athens is placed in the first rank amongst Greek Technological Institutes as far as student and human power are concerned, high importance is attributed to educational cooperation through the establishment of bilateral agreements, which allow mobility and ensure the intereducational dialogue. The existence of more than 300 agreements and the every year increased number of placements in European companies are sufficient evidence for the Institute’s desire to enhance internationalization.

Being Institute of Technological direction, TEI of Athens has a special international focus which is depicted in its mission adopted and is defined according the challenges of the international market. It has been realised that the need to understand how other young people live and work beyond the limited borders of the Institute and to coexist and compete with them requires the existence of an international dimension in a student’s academic experience. Internationalizing each student remains the primal key, the educational goal that may be accomplished only through internationalised curricula and faculty, through study abroad programmes and student exchanges. That goal was attained via Erasmus Programme. The Institute has undertaken a comprehensive strategic process for its international education, which is included in its overall strategic thinking. All decisions are made in that context. The current strategy includes increased participations in recognised exhibitions and for a, increased level of communication, direct contacts and promotion of relationship with similar Institutions, “word of mouth”, encouraging Institute’s exchange programmes with other institutions, arrange agreements with foreign HE Institutions, encouraging the idea of studying abroad, updating publications and web page information to make information easily accessible world-wide.

However, Erasmus in TEI of Athens has been revealed not only beneficial. Linguistic obstacles, the barrier of understanding and been understood in a foreign country, the recognition of the study/training period, the learning outcomes are some of the common difficulties that should be faced. Through the years, some of them have been discussed and partly resolved. As the Programme evolves, the appearance of problems is evident, due to the significant demand that has been noticed.

A self assessment process of internationalisation with respect to students has been especially revealing for the Erasmus impact in TEI of Athens. The evaluation of anonymous questionnaires structured in adequate way to be suitable for statistical elaboration and answered by students of the Institute who participated in Erasmus Programme from 2004-2009 (Panagiaris G. et al., 2009) has shown that the results verify the general findings of the evaluation of the students' mobility under the LLP /Erasmus programme in European level (M.S.Otero and A. McCoshan -2006) and support them at a great extent. More specifically, the proportion between male and female students who participated in the Programme during the aforementioned period was 3:1. In addition, the proportion of the students who participated in the mobility programme for studies against those who moved under the framework of work placement was again 3:1.

In the question: "Were you satisfied with the support/information/advice offered by the sending institution during your stay abroad?" there has been a graduation of answers from 1 to 5, where 1 stands for "very satisfied" and 5 for "completely dissatisfied". The difference in scale of students' satisfaction, regarding the support offered by TEI of Athens was focused on the following areas:

- Academic matters concerning their stay abroad
- Administrative matters concerning their stay abroad
- Information about the host institution and the country
- Accommodation matters
- Language preparation

Based on this statistical elaboration regarding the aforementioned question, the language preparation proved to be the main problem of the support we offer to our students (38% of completely dissatisfied students), while there is an important number of students who feel that they have not received the expected help in matters of accommodation. Regarding the aforementioned question, if we group the very satisfied students with the less satisfied ones, as well as the very dissatisfied students with the less dissatisfied ones, and we create three answering groups, the findings mentioned become more obvious:

- 51% of the students feel dissatisfied with the language preparation that we have offered them against a 34% of students who feel satisfied, and
- in matters of accommodation, 45% of the students feel dissatisfied with the support they have received by our Institution against a 42% who feel satisfied.

In the question: "Concerning the following areas, did you face any problems during your stay abroad?" in a scale of 1 to 5, 1 stands for "at a great extent" and 5 for "not at all".

The problems our students had to face were as follows:

- Credit Transfer and Accumulation (ECTS)
- Attending lectures in the foreign language
- Differences in the teaching methodology used
- Teaching staff availability
- Communication difficulties
- Administrative matters

From the statistical elaboration of the responders' answers it is obvious that our students do not face significant problems during their stay abroad, despite a certain deficiency in language preparation!

In the question: "Was the European Credit Transfer and Accumulation System applied to the study programme of the host Institution?" with the following preselected answers given:

- Yes, partially
- Yes, totally
- No

The most significant result is that an increased percentage (22,5%) of students does not answer at all.

Instead, from the answers given, the overwhelming majority (99%) answers that the ECTS was applied totally or partially at the host Institution. (Table 1)

<b>Table 1</b>			
ECTS in host Institution	Sample size	%	%
<b>Yes, partially</b>	55	28,21%	36,42%
<b>Yes, totally</b>	94	48,21%	62,25%
<b>No</b>	2	1,03%	1,32%
N/A	44	22,56%	
<b>Total</b>	195	100,00%	100,00%

Relating to the previous question, the preselected answers given to the following question "Were lessons, which you attended with a successful result, acknowledged by your Institution?" are:

- Yes
- No
- Partially

The percentage of the responders, who do not answer at all, is even more significant (36%), and this shows that the previous findings are not random. (Table 2)

<b>Table 2</b>			
Acknowledged lessons	Sample size	%	%
<b>Yes</b>	82	42,05%	65,60%
<b>No</b>	25	12,82%	20,00%
<b>Partially</b>	18	9,23%	14,40%
N/A	70	35,90%	
<b>Total</b>	195	100,00%	100,00%

It seems that a great number of students is not familiarized with and/or informed about the ECTS system.

Maybe of course, the most astounding finding of all, results from the students' replies in the question: "Has your stay abroad prolonged the total duration of your studies?", at which 1 out of 2 students answered that their stay abroad did indeed result in the prolongation of their studies! This factor in particular seems to be statistically independent from all the rest factors.

The results of the evaluation could be summarised in the following:

- The percentage of female students of TEI of Athens participating in the mobility programme is one of the highest in Europe (75%). The average ratio in Europe is 60% for female students against 40% for male students.

- The high percentage of students of TEI of Athens, who feel disappointed regarding the language preparation offered, reflects the programme's high demands for competences in foreign languages.

Based on the aforementioned report it is ascertained that "ERASMUS students are highly competent in foreign languages. As would be expected, the vast majority of them speak at least two languages (97%), three quarters (75%) had some competence in at least three languages and around a third (31%) in four languages."

- A great number of the students of TEI of Athens who participated in the LLP/Erasmus mobility programme would like to have received more information on accommodation matters. This is logical since it is true that "ERASMUS students have to make an important investment in terms of accommodation", according to the aforementioned report.

- The vast majority of the students who participated in the programme finally attended classes at the host institutions without problems.

- A high percentage of students of TEI of Athens have not understood/been informed of the use of the ECTS system at the home institution as well as at the host institution abroad.

- "Just over a quarter of ERASMUS students who replied to the survey, in European level, reported that their degree would take longer to complete, given their ERASMUS period abroad, due to time being added to their degree, problems adapting to the new system, problems of recognition or other factors". The relevant percentage amongst students of TEI of Athens is over 50%.

Based on this Executive Summary, TEI of Athens should prioritize support and materialization of the following categories of recommendations:

#### 1. Recommendations and innovations on the level of national authorities and agencies

##### 1.1. Support a uniform implementation of ECTS and the Diploma Supplement in higher education institutions.

##### 1.2. Stimulate language education in secondary education.

#### 2. Recommendations and innovations on the institutional level – Central management:

##### 2.1. Be active in creating a good service infrastructure for student mobility (such as public relations, international offices, professional internationalization staff) and in providing student accommodation (e.g. use of online booking systems through which mobile students can arrange their accommodation in advance) and other services.

##### 2.2. Provide more language training opportunities for mobile students and staff.

E-Cultural and Linguistic Guides that have been produced by our Institute, is one of our initiatives under this concept.

### 3. Recommendations and innovations on the institutional level – Academic departments

3.1. Give positive and objective information about student mobility and promote it as a part of the study programmes at an early stage.

3.2. Use mobile student's feedback (e.g. use Erasmus Ambassadors) to inspire potential new mobile students, e.g. through seminars and information fairs.

3.3. Increase the awareness of centralized actions amongst Erasmus coordinators.

3.4. Try to remove mobility barriers in areas such as recognition, language training and differences in the academic calendars.

3.5. Reduce the internal bureaucracy around student mobility and do not add unnecessary complementary information request to EU forms.

Furthermore, we should take into consideration on a central European level that:

1. the existence of a risk of setting mobility barriers to students who originate from countries of less spoken languages is eminent, and therefore initiatives should be taken for combating this risk,

2. it is important to investigate and to encounter the reasons for which Erasmus students tend to elongate their studies,

3. it is obvious that the solution to the aforementioned demands of an increased investment to human capital on behalf of the Institutions, as well as of a general increase to the programme's functional expenses.

Unfortunately, it has been evident for more than 10 years now that the ERASMUS programme is sub-financed (An. Barbian and Ul. Teichler, 1998). Delegating the responsibility for finding a solution to the problem mainly to the National Authorities and Agencies and secondly to the Higher Education Institutions with the recommendation to look for supplementary sources of financing (The Impact of ERASMUS on European Higher Education: Quality, Openness and Internationalization, Dec. 2008) is uncertain to bring the desired result.

Apart from the student part, the self assessment of TEI of Athens has shown that its International Office, although possess limited human and financial resources, has a high level of service. A steady improvement has been seen, and although there is still room for growth, the office is clearly moving in the right direction. Some points are of particular concern from the point of view of services to international students, such as the orientation procedures which allow international and domestic students to get to know one another before the start of classes (this is made with the aid of ESN of TEI of Athens), the academic advising before classes begin, the Greek Language courses, the Library subscription and the Food service. It is recommended that further recognition should be given to student participation and study abroad scholarship opportunities should be developed.

If we may use a SWOT Analysis in order to identify the success factors for a quality development of students mobility for placement in TEI of Athens and thus internationalization, the results are revealing (Sflomos K., et al. (2009) :

#### A. Strengths

- Strong European Environment
- Development of a reliable Network (home-abroad)
- Academic recognition of the practical training/period of study
- Extra support (residence, food etc.) from host enterprises
- Implementation of quality management philosophy and systems

#### B. Weaknesses

- Different structures established in each country (different bureaucracy in enterprises not only in the same country)
- Lack of sufficient financial support (avoid expensive cities)
- Coordinators not willing to provide continuous support to the students, in some Institutions (Departments)
- Deficiencies on surveillance on SMEs
- Insufficient language communication in very small Enterprises, in some EU countries

#### C. Opportunities

- European dimension / added value on studies. Knowledge of the European Labor Market
- Cross-country collaboration between Industry and University (research projects, technology transfer )
- “fermentation” of new projects (transfer of technology and expertise *via* beneficiaries)
- Improvement of language and cultural competencies
- Job opportunities in EU countries (potential employees)

#### D. Threats

- Economic barriers in living in expensive cities/countries
- Lack of interest of the training subject
- Poor communication outside the Company
- “Home – sickness”, sensitive students
- Not a very friendly environment in the host Enterprise
- Insufficient knowledge of the foreign language and the culture of the country (for a qualitative “reception-acceptance” of the trainee)

## E. Critical Success Factors

- Human resources (academics, administrators) committed to support students and inspired with the LdV philosophy
- Win-win situation for all three: students – Institutions – companies
- Clear understanding of mission
- Flexible administration at four levels (National Agency, Coordinating Institution, Sending Institution, Host Enterprises)
- Flexible and adaptable structures (office, telephone, internet, fax, PC and relevant facilities)
- Exciting subject of practical training
- Close supervision and on-going evaluation
- Development of a reliable NETWORK

## 3. CONCLUSIONS

TEI of Athens has established a comprehensive strategy for internationalisation and stated a clear mission to internationalise its students. While major development has been made during this time, significant challenges remain. These include the integration of the “international” students more into the TEI’s community, the improvement and better promotion of the international curriculum so that students will possess the appropriate knowledge for successful business careers in the 21st century and the introduction of new initiatives in the area of educational exchange. Further steps should be taken in European level, such as coordination and networking in mobility issues, harmonization of award criteria of ECTS, reinforcement of the countries with less spoken languages. National strategies are proved insufficient to deal with these points. Only if they are centrally dealt, internationalization could be better attained. Only then the notion of student “universalis” could be established.

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# International accreditation as a transformational change: Case study of business school in Kazakhstan

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## Abstract

The new 21st century with its global trends opened the arena for International Accreditation for business schools in the countries of CIS. The impetus for change in business education of CIS is coming from Kazakhstan that represents a benchmark for the business education in Central Asian region. The paper explores a transformation, experience and institutional change as a result of various international accreditations. It begins by examining the perception about the international accreditation of 12 B-schools of Kazakhstan where 6 schools already made their first steps towards applying for various types of external international accreditation. The second part of this paper is a case study of a leading B-school in Central Asia with its ambitious role to become a world class university and its strategy in approaching the world leading accreditations coming from AACSB, EFMD and AMBA. The scope and purpose of the change process, transformation of all business schools with its specifics in Kazakhstan, the strategy and a unique experience of a leading school on its path towards accreditation are shown based on the interviews with top-managers, questionnaire and reports for the period of 2011-2013.

*Keywords:* International accreditation; Institutional Change; Business schools; AACSB; EQUIS; CIS; Kazakhstan

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## Introduction

The new emerging practices in various international accreditation schemes are growing globally. Academia is not immune to the phenomena underlying globalisation, and international business requires effective management across boundaries, within and between groups with different cultural norms and worldviews (Belevander, 2012). Accreditation is one of the recent phenomena that widely spread among the business schools (B-schools) over the last decade globally because of the association with "Quality label". However, in practice, the results based on 117 universities with international EQUIS and AACSB accreditations do not have a correlation with the implementation of a quality management system (Nigsch & Schenker-Wicki, 2013).

During the last four years, we can observe two trends according to Bisoux (2013, March-April): growth of global accreditation where number of B-schools with AACSB accreditation increased by nearly 17%; with EQUIS accreditation - by more than 15 %; and with AMBA - by 25%, and the number of schools with multiple accreditation between 2009-2012 increased by 34% (Bisoux, 2013, March-April). There are now a total of 173 B-schools worldwide with multiple accreditations, and of these, 57 are now holders of the so-called "Triple Crown," having gained accreditation from AACSB, EQUIS, and AMBA, and there are 4 schools with "Triple Crown" that hold additional seal of approval, or the quadruple-accredited schools (Nelson, 2012). This trend can

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be perceived as a transformational change in business education. Definition of transformational change offered by Eckel, Hill & Green (1998) differentiates it from other types of institutional change, and it focuses on changes in institutional culture, its intentional nature, and its development over time.

Literature review presents a very broad area of practices for B-schools with accreditation in the US and Western countries, however, there are no evident research on the practices of accreditation from the transitional countries of CEE and CIS, and because this phenomena has also just started to emerge. Following the advice of Hazelkorn (2013, May), the need to assess Higher Education (HE) in terms of its quality and cross-national comparisons are inevitable by-product of globalisation that will be intensified in the future, where a certain balance should be made between new and emerging practices vs. existing strengths. It will be shown based on the case-study of one leading B-school in Kazakhstan. This paper addresses the following research questions: 1. How the decisions are made by B-schools about the international accreditation? 2. Why these particular accreditations have been chosen? 3 What are the main changes that occur as a result of accreditation?

In order to see how a change is occurring in terms of emerging practices of accreditation, we make a survey of business schools in 2011 from CIS region. First, the survey was implemented examining the practice of 15 business schools in accreditation and their perception about the international accreditation. The final sample of 12 B-schools of Kazakhstan shows that 6 schools (50% of our sample) already made their first steps towards applying for the various types of external international accreditation. The second part of this paper is a case study of the leading B-school in Kazakhstan that was chosen from our sample group. The motivation to select this school was based on the following reasons: 1. The B-school is an excellent example of successful schools in CA. 2. It was set up under the umbrella of University that launched its first western MBA programmes from 1992. 3. During the last 2 years it has already undertaken various international accreditation practices within the last 2 years and gained international accreditation. 4. It has an ambitious goal to be among the top-50 leading B-schools. 5. The analysis of its ambitious role to become a world class university based on its strengths and its strategy in approaching the world leading accreditations coming from AACSB, EFMD and AMBA represents a unique example for other B-schools not only in CIS, but also in other markets.

## **1. Transformation and change as a result of international accreditation**

According to the literature (Elliott, 2010; Heriot, Austin & Franklin, 2009; Kondakci & Van den Broeck, 2009; Lejeune & Vas, 2009; Onzoño & Carmona, 2012; Pomey et al., 2010; Romero, 2008; Zammuto, 2008, Nelson, 2011) the main changes affected by accreditation process are the following: review of the B-school's mission and strategy; increased focus on research and quality; gained reputation and leverage for change; creation of leadership for quality improvement initiatives; internationalisation of faculty members; attraction of international students to schools in destination countries; comparisons of learning outcomes and performance measures; an introduction of systematic process in curriculum management; improvement of the connections with business community and stakeholders; an introduction of continuous quality improvement programs; the acquisition of more resources; a better image and an increase in community interactions; legitimacy and improvement of the survival prospects; the changed structure and processes of B-schools, the ability to benchmark and network with their peers, marketing advantages. Do all these changes represent a transformation for the B-schools where the practices of international accreditations are less expected? We will look at the experience of one of the CIS countries where the practices of accreditation has recently emerged.

### *1.1. Business schools from CIS including Central Asia (CA): overview*

The system of higher education (HE) in Russia and many other CIS countries went through the process of considerable change over the last ten years. The higher education in the region has been going through a period of transition rather than of transformation (Scott, 2007).

Basically, there were the following observed changes in HE in terms of structure, content, autonomy, funding (according to <http://www.hse.ru/en/rus-ed.html>). First, compared to the previously centralised system, its structure was decentralised. Second, planning goals were reoriented towards the needs of the market, society, individuals. Third, autonomy of HE institutions was introduced with a private education. Fourth, diversification of financial sources took place instead of the only state funding. Fifth, content changed with the increased humanitarian component in the curriculum. Sixth, internationalisation of HE became a great challenge for CIS universities. Finally, different accreditation schemes started arising in CIS as a result of global trends.

### *1.2. Participation of B-schools from Kazakhstan in accreditation and comparisons with other CIS countries*

According to the official source, there are 9 B-schools in Kazakhstan that are located in the ex-capital of RK, Almaty (<http://www.bizlife.kz/article/show/id/104>). However, four more regions were included in this survey to expand its scope to 15 B-schools, and finally, 12 B-schools from 3 regions were selected with private, public and mixed types of ownership. The availability of Faculty of Economics or Management in Universities have been considered here as a B-school. One of the peculiarities is that there is no official definition of B-school, and it is used only in few cases (of B-schools like BCB, UIB, IAB) despite various business and MBA programmes launched in 1992. There are some more peculiarities in the business education of Kazakhstan listed below:

- Private business education is generally perceived as the best one in the private schools
- Majorities of B-schools are private, and they are mainly located in the ex-capital of Almaty
- Government still play the leading role for the HEIs including B-schools in regulating their environment
- There is a specific feature connected with the “Special status” of University which plays the key role under applying for the world top international accreditation (coming from AACSB and EQUIS)
- Internationalisation factor in business education is the weakest one in the CIS compared to CEE countries
- About 50% of private business schools started participating in different external accreditation schemes
- Kazakhstan is the only country in CA that is the member of the Bologna system (from 2010), and Russia is the first country that entered the Bologna process in 2003
- Kazakhstan is a second leading country after Russia in business education and represents a benchmark for CA
- There are some B-schools in Kazakhstan that have already been awarded with institutional accreditation (in 2010), as well as with the various international programmes’ accreditation

From the Table 1, we can observe that Russia is a leader in CIS in terms of different institutions that offer business degrees, and its membership in all leading top accrediting bodies: AACSB, EFMD and AMBA. The impetus for change in business education of CIS is coming from Kazakhstan that represents a benchmark for the business education in Central Asian region with various business degrees and a membership in both AACSB and EFMD. The other CA countries are far behind this process.

Table 1. Kazakhstan B-schools in comparison with Russia and other CA countries (by February, 2013).

CIS selected countries including Central Asia	Educational institutions offering B-degrees, 2013	AACSB member by country, 2013	EFMD member by country, 2013	Schools accredited by AMBA, 2013
Russia	586	5	15	9
Kazakhstan	92	3	2	0
Kyrgyzstan	27	0	0	0
Uzbekistan	26	0	0	0
Tajikistan	13	0	0	0
Turkmenistan	5	0	0	0

Sources: Business School Data Trend. AACSB Report (2013), official web-sites of EFMD and AMBA (2013)

[http://www.aacsb.edu/publications/databeports/\(2&3 columns\);](http://www.aacsb.edu/publications/databeports/(2&3%20columns);)

[https://www.efmd.org/index.php/what-is-efmd/list-of-members\(4\);](https://www.efmd.org/index.php/what-is-efmd/list-of-members(4);)

[http://www.ambaguide.com/find-an-accredited-programme/schools/eastern-europe-and-russia/?pp=1000\(5\)](http://www.ambaguide.com/find-an-accredited-programme/schools/eastern-europe-and-russia/?pp=1000(5))

The interviews for this project were conducted at 15 B-schools from 5 regions of RK, but 12 B-schools from 3 regions are included in this sample. Data collection occurred during August-September, 2011.

### 1.3. Perception of B-schools about the top-accreditation coming from AACSB, EQUIS and AMBA

Three other schools were excluded out of 15 B-schools invited to participate in this survey from 5 regions of Kazakhstan. Accreditation manager from Nazarbayev University (Astana region) mentioned that since the University and its B-school were founded in 2010, it can apply for the external international accreditation in 3 years only. The Economics department's representative from Karaganda University (Karaganda region) answered questions, but officially couldn't represent the top-management's opinion. The Dean of KBTU B-school (private one, from Almaty region) has been replaced with the new person. The new comer explained that KBTU is only at the beginning stage of considering criteria for different accreditations, and it would be difficult to assess advantages and shortcomings. Thus, in the Summary table of Table 2 there are 12 B-schools of different types and categories, but all B-schools are predominantly the private ones (column 3). Column 4 shows which accreditation each B-school applies for.

Table 2. Summary Table: Transformation of B-schools due to the external accreditations and their perception

N	Name of Business Schools in Kazakhstan	Type	in 2011	Advantage of IA			Shortcomings of IA			Reasons
1	2	3	4	5			6			7
1	BCB, Bang College of Business KIMEP	mixed*	AFBE	C1_7	C1_1	C1_5	D1_1	D1_2	D1_4	
2	UIB, University of International Business	private	AQA	C1_1	C1_3	C1_4	0	0	0	
3	IAB (accredited with IQA from CEEMAN in 2010)	private	AMBA	C1_7	C1_6	C1_5	D1_1	D1_2	D1_3	
4	IBS KazEU Ryskulov	private	ACBSP	C1_7	C1_5	C1_6	D1_1	D1_6	0	
5	Kainar University	private								E1_1
6	Turan Dep.of MBA_DBA	private								E1_1
7	Academy of RFCA	public								E1_7
8	Higher School of E&B, KazNU	private								E1_7
9	Bizmaker	private								E1_1
10	Pavlodar State University Toraigyrov	public	ASIIN	C1_7	C1_5	C1_2	D1_2	D1_3	D1_1	
11	Jetysuiskiy State University Jansugurova	public	0	C1_7	C1_4	C1_5	D1_1	D1_3	D1_6	E1_7
12	Faculty of Econ&Bus, Almaty Technological University	private	ASIIN	C1_7	C1_1	C1_2	0	0	0	

In 2011 B-schools put in their strategic plans to seek accreditation coming from business accreditation bodies like AFBE, AMBA, ACBSP accrediting bodies that previously appeared in our graph 1. Accreditations like ASIIN

(the German accreditation agency) and AQA (Austrian Agency for Quality Assurance) were mainly promoted by the Ministry of Education and Science of RK for HEIs for quality assurance purposes. The answers for Advantages (5 column) and Shortcomings (6 column) are decoded in the Table 3.

Table 3. Perception about advantages/disadvantages of International Accreditation (AACSB, EQUIS, AMBA)

Sign	Stands for: Advantages of Int. Accreditation	Sign	Stands for Shortcomings of Int. Accreditation
C1_1	Improved reputation of the school on the domestic markets	D1_1	The process of pursuing IA is very time consuming
C1_2	Improved reputation of school on the international markets	D1_2	The process requires considerable HR to be involved
C1_3	Increased value of our assets and brand	D1_3	The process requires a considerable investment
C1_4	The competition on the markets on which we offer programmes is strong and IA will distinguish our school from competitors	D1_4	Accreditation requires very high standards of IA academic research which exceed the expectations of the school's stakeholders (students, business, government)
C1_5	Having an IA is a signaling strategy for the students that the school is of high quality, thereby attracting students	D1_5	The preparation stage of IA slows down the pursuit of other goals of the school
C1_6	Having an IA is a signaling strategy for the Faculty members that the school is of high quality, attracting qualified staff	D1_6	The process requires additional investments connected to technological process and changes in organizational structure
C1_7	Pursuing an IA is a way to introduce a quality improving strategy to the school, making it a better business school	D1_7	The process is long, but the outcome is uncertain

Majority of B-schools with the beginning experience on international external accreditation, already aware of "top-three" accreditation from AACSB, EQUIS and AMBA, and perceive them in terms of advantages, first, either as "improved reputation of the school on the domestic markets" or "a quality improving strategy to school", and second, as "a signaling strategy for the students that the school is of higher quality". Reasons that B-schools do not apply for any international accreditation are placed in the column 7. Disadvantages are listed in the order of as "a very time consuming" followed by that "the process requires considerable human resources to be involved", and "a considerable investment". The reasons (column 7) why B-schools do not apply for accreditation are divided between two groups: who "are not aware of benefits of those accreditations" and who "should first get the national accreditation, then pursue international accreditation".

## 2. Case study of B-school in Kazakhsan

It is an exploratory case study of the B-school in Kazakhstan which is moving toward the top-accreditation from AACSB and EQUIS. Semi-structured interviews, Questionnaire and official reports have been used to build an emerging picture of institutional change, and its transformation from being the best B-school in Kazakhstan and in the CA region, towards direction in becoming the top-50 global schools and the unique experience with various accreditation processes to gain the leading international accreditation either from AACSB or EQUIS.

### 2.1. Internal environment

**Profile.** B-school was founded in 2003 under the umbrella of the University with the first "western type" of MBA programme in English language that was launched in 1992 and it has grown steadily since its inception. College has more than 2000 undergraduate students, 350 graduate students and 20 doctoral students. The number of graduates is 3190 at undergraduate level and over 1700 at MBA level (over 60% of the University total since 1992). This B-school is the ideal candidate to become the first education institution in the CIS to receive the first AACSB International Accreditation because (1) it is the leader in CA business education; (2) the region's rapid emergence in the global stage; (3) this partnership will promote additional educational reform by providing benchmarks for CA B-schools; (4) from the very beginning of MBA programme it was run by the faculty members coming from abroad, and internationalisation factor for Faculty members was already in place prior to

the Bologna process. B-school became a member of AACSB in 2004, and in October 2010, membership was reinstated. The 61 faculty members are a well mix of professors who are either academically qualified (AQ) on the basis of terminal degrees and research output, or professionally qualified (PQ) on the basis of professional experience, activities and certification. Becoming a world Class University was announced as the primary goal in its strategy. The SWOT analysis of B-school (Table 4) and assessment of its programmes (Table 5) in terms of quality have been prepared in order to make a progress with accreditation.

Table 4. SWOT Analysis B-school

Strength		Opportunities	
A core of committed faculty; A core of quality students	Adequate library and technology resources; Modern facilities	Classify faculty in terms of AQ/PQ or other; Reclassify those faculty members in the other category	Develop a network of PQ adjuncts; Restructure college administration; Revise curricula to increase relevance and marketability
Weaknesses		Threats	
High academic attrition rate; Many faculty degree holders who are not active scholars; Many faculty without terminal degrees who are not professionally qualified	English deficiencies for some students; Lengthy MBA program with more course work than local competitors	Changing Ministry curriculum standards; Changing standards for nostrification of foreign faculty	Competition from local and foreign institutions; Adverse economic changes, unanticipated market changes

Table 5. Quality of the programs: Pros and Cons

Pros	Cons
Design, content, deliver, assessment, evaluation	Lack of institutional autonomy from government
Policy documents	Lack of research
Internship, Leadership development programmes	Academic staff profile and concern for quality
Student services	Sub-standard criteria for entry into fast-track MBA
Internationalisation of faculty	Inappropriate structure
Financial position	Inconsistent mission and core values
	Inadequate corporate connections and little service to the community

The Peer-Review Team (PRT) of the Asian Forum on Business Education (AFBE) visited B-school at the end of August, 2011. This audit was viewed as serving three purposes for B-school: an external benchmarking exercise measured against world best practice; an insight into the criteria leading to the potential for future AACSB, EQUIS, AMBA; a practice session of the process for future leading accreditations.

## 2.2. How the decision was made about accreditations

World Ranking methodologies take into account 6 indicators to form an international ranking of universities:

Table 6. World ranking methodology and its indicators

1	Indicators	Source	%	Importance
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1	Academic reputation	Global survey	40%	1
2	Citations per faculty	Sciverse Scopus	20%	2
3	Faculty/Student ratio		20%	2
4	Employer reputation	Global survey	10%	3
5	Proportion of international students		5%	4
6	Proportion of international faculty		5%	4

Source: table is compiled based on <http://www.iu.qs.com/university-rankings/world-university-rankings/>

The AFBE Dynamic model borrows from EQUIS, AACSB and AMBA. It is envisaged that AFBE may act as an intermediate step for those institutions which may seek full international accreditation from the internationally recognised bodies such as EQUIS, AACSB and AMBA. The objective of AFBE accreditation is to accredit business-degree programmes delivered by Operational Unit (OU) within an institution. There are 10 domains based on the close interaction between OU, and the program, students, and academic staff (priority domains). The next priority is personal development, and the third one – internationalisation, research and physical resources (weighted equally). It could be easily comparable with the world ranking in Table 6.

### 2.3. Experience with International External Accreditation and Change

Interviews took place during 14th to 30th January, 2013 at BCB KIMEP with the following representatives:

- A Dean of B-school (College)
- B Associate Dean (Academic Affairs and Accreditation)
- C General Director of Executive Education Center
- D Director of Accreditation
- E Accreditation manager

The key research questions are: (1) How decisions are made by business schools about the international accreditation? 2. Why this or that accreditation was chosen in its strategy towards the top class business schools? 3 What are the main changes that occur as a result of accreditation?

- A. Openly, it is not about accreditation, it is about “world class-stands” to eventually being ranked among the top 50 business schools we have to have either AACSB or EQUIS to be considered that high. But also to get so high you have to make the improvements that satisfy the conditions. Even we at the moment cannot pursue either AACSB or EQUIS because of the special status, we are still driven to make the improvements necessary that would qualify us, because it still can improve our ranking which is our real goal. More than other 250 B-schools with AACSB accreditation - obviously it does not get you in the top-50. Accreditation is not yet a means to automatically get you there. Even if we get accredited, we will still be working on making improvements. The value of AFBE is that it is moving us towards the main directions to pursue AACSB.*
- B. It was discussed at the business school’s level. For this level we gave our input. We started our accreditation two years ago with AFBE (Asian Forum for Business Education) and FIBAA (Foundation*

for International Business Administration Accreditation). *Why the decision has been made exactly about these two Accreditation...I can say only about AFBE, why FIBAA was chosen, it is better to ask the representatives of Executive Education Center. Now we start with AQAAA (Agency for Quality Assurance and Accreditation Austria). We also have in mind AACSB, but we have some technical issues – like independence from the government having the special status, and it was rejected on this ground, but it is our ultimate goal. ...Internally we went to our validation, but externally we got the competition.*

- C.** *We set up the goal to become a world-class university. It was decided by the President of KIMEP to improve the quality of KIMEP programme (Executive Education) to apply for FIBAA and AFBE. Since 2007, it is 5 years for EMBA programme. We decided to see what needs to be done to become the world-class. AFBE was first and FIBAA became the next that is why we were well prepared for both. What need to become the world class accreditation is to revise our programmes in order to tailor the programmes to become the world class. It took us one year to gain both accreditations. We realized that it is possible. Our faculty became dedicated for this task, and our students, our alumni, industry experts whom we usually to communicate to. Now we understand that we are committed. Both accreditation agencies are about how to improve our programme, and the next step is to implement these recommendation and revision that have to be done within 5 years.*
- D.** *I am the Director of Accreditation from the spring semester of the last year. I have to prepare all documents for accreditation by different agencies, including the national accreditation. I also have to go for ongoing process. Now we are on the 3rd stage of accreditation – we expect the PRT (Peer Review Team) in May. We have to be sure that all recommendations are met. The decision about AFBE was made at the top management. For AQA we were preparing our self-study report. AQA then had been restructured, and because our work have been preliminary done, we are trying to work with AQAAA. Initially – I think it is a competition, improvement of our business itself up to the international standards, quality assurance processes, and improving the image in the eyes of the Ministry.*

The second research question: Why this accreditation was chosen and how it is compiled with the main strategy towards the top class business schools? Advantages and disadvantages of the chosen accreditation?

- A.** *Advantages of AFBE – it really forces the school to rethink what it does, to be honest where we are weak and how to make an improvements. Disadvantages – it does create some disharmony that people do not want change. It is definitely a time consuming process: preparing documents... but it is an investment to improve our reputation. We are one of the best school in the region with AFBE accreditation. It gives you a signal on legitimacy, but it forces you to improve the quality. ...It was just our internal environment decision, to be the best B-school in Kazakhstan, then in Central Asia, and then – go globally. Business accreditation is just considered as a standard behavior, and then we will be in the world ranking. ...We have to put more emphasis on critical thinking, - there is no book that tells you step by step how to make a step by step process, to be able to look at this. One thing is that employers like about the graduates that they can do unplanned events better than other students. What we have to do is to comply with the Ministry's requirements. We are trying to explain it to the accreditation agencies. You should not write thesis for MBA in the US. Why you have MBA students to write the thesis? But we have a Ministry that say that they should write.*
- B.** *AFBE was chosen as “a stepping storm” towards greater accreditation – which would be AACSB or EQUIS. Obviously, we are in Asia, and first, we should get we have to get recognition at the level being legitimate at this level, and then to go for international level. Also AFBE has an explicit or implicit agreement with us – it is their norm that they prepare you for EQUIS or AACSB. AQAAA That was the natural thing for us – we go for smt. Intermediate, and then we have a preparation. AFBE was listed by the Ministry of Education. AQA was chosen because it was listed in the Ministry of Education, since we*

*live in RK, we should manage to comply with this requirement. In terms of advantages, obviously, the pros are that you formalize your quality, your reputation increase. Cons: it may limit innovation and diversity of thinking; to standardise, to rigid processes, it may be homogeneous.*

- C. *The President was recommended to start with these accreditations to prepare us for institutional accreditation, and that is why we decided to start from both accreditations in order to later get the institutional one. AFBE – because it is Asian and we are the part of Asia. We were very well prepared for FIBAA, because it was very clear. The reason for FIBAA, because it is a European accreditation, and we want to achieve mobility of our students in Europe. FIBAA is a high-level agency which is recognised by the European Universities Association. FIBAA's intention is to enter Kazakhstan. The goal for us was not only to gain and receive accreditation, but also understand accreditation process, and understand our deficiencies. We apply for consultancies, and we were able to revise. They applied for the Ministry for recognition, and we hope that it will be recognised by our Ministry. Through the consultancy process we also understood that we can do it. The other reason is that we have to be consistent with the Government policy. Whether we were eligible, and yes, we see that it is possible. Before we were not sure how well our programme is recognised in Europe. One of the reasons is to be consistent in our reasons' policy. FIBAA's requirements would be a bit more comprehensive; - while FIBAA would recognize EMBA to be different from other programme, AFBE would be probably more looking for more unified philosophy. In terms of disadvantages, you need to dedicate a lot of time, it is a time consuming, and a lot of paper work, while they call for flexibility, - we have to satisfy our executives' requirements. It looks sometimes as an obstacle – the recommendation to have a higher requirements, - both of them require entrance exams and strong criteria. I do not how it will influence. We did have an entrance criteria, but not exams for EMBA. The Executives that come to our programme do not want to be examined. ...It depends how you measure quality, because it is multidimensional model: future of employment, government, - when they all come up with the quality of programme, but customer – EMBA will notice a visible change. Some part of the programme will not be so practical...Customer would expect entertainment class, and more practical issues, while it is not always so. Thesis requirements became more rigorous, but it improves quality. Now EMBA students have to write thesis, and requirements are becoming more rigorous. As for legitimacy, yes, with accreditation we got it. With FIBAA, it is also a Diploma Supplement along with a degree, which has to be registered with the Ministry of Education. I know that the Ministry has not come up with the solution yet. We will see what will happen.*

The last research question is: What are the main changes that occur as a result of accreditation?

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- A. *I would say that going to AQ/PQ process and increase our research input will be quite a dramatic change over the next two years. ...the strategic plan was written to confirm changes, but we didn't deviate from our plans. When you pursue international accreditation and your work on quality, some people are disrupted...Unfortunately, some people were complaining about it. ...Changes are applied for better organizational efficiency. Change in the organizational structure was a management's decision, not as a result of accreditation. Instead of having Departments, we decided to have Programmes, but then after a couple of years later, we realized - we need to find the best partners. The efficiency on academic side, and the departments' chairs make curriculum decision. If we improve the quality of programme, it then will be a curricular programme's improvements...*
- B. *There were 60 recommendations made for our school. Have been any resistance? Absolutely, nothing is automatic. We have disagreements with some of the recommendations – and we came to the reasonable compromises. We have not just accepted that we have to do it We did not just accept their recommendations. For example, they recommended 3-4 assessment by course. We said – each course is different. The course of the Math requires every day work, whereas Management – does not. We cannot achieve one scheme's course. We required some flexibilities, and AFBE was opened for that. Ministry – if you are operating in Kazakhstan, you should first have a license from the Ministry. Also there were contradictions, and each recommendations was put, and some were modified.*  
*...There are **four major** changes. If we start from quality assurance, which is the most important - going through the accreditation helped us more to be concentrated on quality. **First**, we identified our set up learning goals and objectives more explicit. We started from programme level, and then we developed it at the course level. In one sentence, the quality assurance process became more formalized, better record keeping in terms of the structure of the syllabuses in the right way which is done by the completion of the programme. I think it has been a big improvement in quality assurance. **Second**, qualification for Faculty members becoming academically and professionally qualified. AQ/PQ now is a big emphasis to maintain this status. We have to meet this goal within the next 2 years. A Faculty Development Form AQ/PQ –is how many publications they want to have, how many conferences they should participate. We have to see how much target has been achieved. Faculty Development became more focus on research or maintaining their academic status. We have formally defined what kind of research they want to have to increase our research output. Within one year our input increased substantially. As we put more emphasis on AQ/PQ, it has helped us to point us that it is becoming more and more difficult to produce more research. We hope that we can get some assistance to reduce our teaching load. Our Faculty members have to produce research, and their work load has to be reduced or to be reasonable. **Third**, when it comes to accreditation it is becoming very important to have on records of documents, being more tedious about having accreditation. We always realize that it is important to have a liaison or getting input from the industry what quality they want from our graduates. There are different constituencies – future employers, international experts, students; ...When we go through accreditation process – we see more and more importance, we are changing ourselves and we are trying to activate, we are listening more our constituencies. **Finally**, the last thing is Internationalisation – from AQAAA that focus very much on exchange programmes, dual degrees...we are going to formalize and make more emphasis on dual degree programmes, faculty exchange... We are taking initiatives more and more.*
- C. *We switched to the ECTS credits. We also put in design of the course how many hours we should dedicate, and Faculty members are required to submit the curricular beforehand. We are the administrators in EMBA Oversight Committee for academic quality. Entrance criteria – our weak criteria; and we immediately receive the thesis criteria, and we improved the quality of thesis.*

### 3. Conclusion

B-schools from Kazakhstan represent the new phenomenon in regards to the recently emerging accreditation practices. From our sample group 50% B-schools already have some experience with various international accreditations, and as a rule, they are private institutions. The accreditation managers or Deans of the 50% of B-schools's sample are aware of some advantages and shortcomings of the leading AACSB, EQUIS and AMBA accreditations, and they already have some strategies or priorities in various accreditations (not necessarily coming from those top groups). Taking into account some factors and peculiarities described and their strengths and weaknesses, B-schools are trying to achieve the stage of being accredited with various external bodies after gaining the national accreditation. Basically, we can say that this accreditation is not only the new phenomena, but it is becoming the transformational change on the regional market of business education. The leading B-school is one of the examples of the transformational change, which was selected from the survey conducted in 2011. It has a unique experience with various accreditations, and its strategy is to pursue the top ones to become the top B-schools internationally. The case study of this leading B-school demonstrates the experience with 3 international programme accreditations on its path towards the leading accreditations from AACSB and EQUIS. B-school is well placed under the umbrella of University, and it is the leading western-style academic and the first and the most successful independent institution based in Central Asia with quite remarkable history. As the regional leader in transitional economy it remains entirely unique not only within CA, but also in CIS. The decision about accreditation is made by the top-management of B-school. First of all, AFBE accreditation was selected because it is an Asian accreditation, and B-school is located in CA, the Asian region. Another serious motivation for this accreditation was that it may acts as an intermediate step or "a stepping storm" towards greater accreditations. The reason for another accreditation of FIBAA was made, because it is a European accreditation, recognised by the European Universities Association, it accredits EMBA programmes and facilitates the mobility scheme. The choice then was made for AQAAA, because it is focused on international exchange programmes and dual degree programmes. It should be noted that the government still plays its role in quality assurance processes which accreditation bodies would be preferable. Thus, in order to gain the world's leading accreditations from AACSB/EQUIS, B-school has to apply for one Asian accreditation that provide it with valuable recommendations how to achieve it, then to increase mobility and meet the Bologna's requirements– it applied for two various European accreditations, where one of them was recommended by the Ministry. Besides, there are some major changes identified as a result of accreditation, first of all in quality assurance processes, internationalisation, Faculty qualifications AQ/PQ, the connections with different constituencies and record-keeping processes, introduction of ECTS, including the level of EMBA programmes. B-school envisages much more changes regarding AQ/PQ and the research input in the nearest 2 years. There are gaps in the literature related to B-schools with international accreditations located in the regions of CEE and CIS, how the decisions made about international accreditation and what are alternative strategies in achieving top accreditation, the issues on which grounds AACSB or EQUIS decline B-schools' application forms. In the region of CIS it is connected with availability of "Special status" which is granted by the Ministries of Education. The case study demonstrates one of the first interesting examples of B-school in CIS which is moving ahead towards the leading institutional accreditations from AACSB/EQUIS and its ambition role to be in the world ranking list with the strategy that was selected for achieving these goals through applying for various international accreditation programme schemes.

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4<sup>th</sup> International Conference on New Horizons in Education

# Introducing basic programming concepts to elementary school children.

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## Abstract

This paper discusses an approach to teaching programming that would allow elementary school children to adopt basic problem solving concepts. Adopting those concepts should help them in their further education, not only in programming but also in other areas that require logical thinking and problem solving.

Elementary school children are too young for traditional approach to teaching programming so in this paper we describe an approach appropriate for their age designed to avoid problems associated with young children such as short attention span.

Preliminary experiment with 30 elementary school children was conducted and details and results are presented in this paper.

Keywords: Education, primary school, programming, robot, simulation, basic concepts...

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## 1. INTRODUCTION

In the recent years, computers have become a standard part of majority of households (Seybert, 2012). This has resulted with new generation of children that are already familiar with computers at the beginning of their primary school education (Palfrey & Gasser, 2008). They possess elementary knowledge of computers and are already familiar with basic concepts. This fact allows for a different method of teaching those children, one that was not applicable to the past generations. Proper usage of computers as addition to the standard teaching methods can help enhance the learning experience for children by presenting them certain problems in a way that is appropriate for their age. Basic idea is to incorporate learning into something that children perceive as fun (Meluso, Zheng, Spires & Lester, 2012). By doing that, problems with lack of interest or misunderstanding of a problem could be easily avoided. There are many different approaches for achieving that goal (Kirriemuir & McFarlane, 2004). This paper will present a brief review of some existing applications developed mainly for this purpose, and describe one approach that was designed specifically for primary school children. Purpose of that approach is to introduce basic concepts of programming and computer science to primary school children. There are two main reasons for selecting this kind of approach. First one is because recent studies have shown that children are able to learn while playing games (Prensky, 2008), both knowingly and unknowingly. The other reason is because children at this age, according to Piaget's theory of cognitive development (Wadsworth & Gray, 2004), are entering the concrete operational state of cognitive development. Concrete operational state is the third of four stages and it is characterized by development of logical thinking and problem solving skills which

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corresponds with skills and abilities we are trying to develop with described approach. To test this approach in real life conditions, preliminary experimental study was conducted in one primary school. Details and observations from that study are presented in this paper, as well as possibility for further experiments and improvement of that approach.

## 2. PROBLEM STATEMENT

Learning programming is considered hard. Programming courses in universities usually have highest dropout rates and are often regarded as most difficult (Yadin, 2011). This coincides with results available at our Faculty. There is still no clear understanding why some students learn to program easily and quickly while others have certain difficulties adopting this kind of knowledge (Wiedenbeck, LaBelle & Kain, 2004). In order to counter this, we propose that learning programming would be easier if students would already be familiar with basic programming concepts and it would be best if those basic concepts were taught in early age thus allowing students enough time to develop problem solving skills and logical thinking. As mentioned before, according to Piaget's theory of cognitive development primary school children are entering the phase in which they are beginning to develop logical thinking and problem solving skills. One of the difficulties regarding that development is that children at that age haven't yet developed abstract, hypothetical thinking. Because of that, they can only solve problems associated with the real world or something they can relate to. Programming implicitly requires high level of abstraction and thus is hard to introduce to primary school children. To counter that problem, it is necessary to develop an approach to teaching that would make programming more accessible to the primary school children and would encourage the development of their logical thinking and problem solving, but at the same time would still be appropriate for their age.

## 3. STATE OF THE ART

There are already some applications available that are intended for teaching elementary programming (Robins, Rountree, & Rountree, 2003). In this chapter, short overview of some of those applications and their advantages and shortcomings will be given and they will be compared to approach proposed in this paper.

### 3.1. *RoboMind*

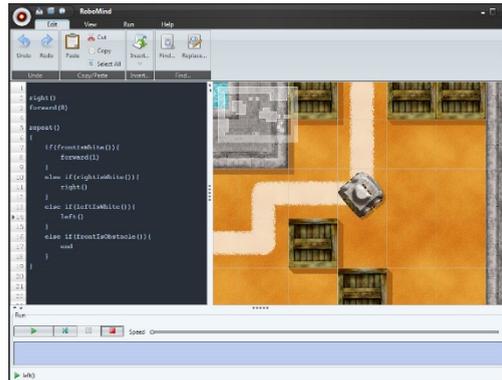
*RoboMind* is very simple educational programming language used for getting users familiar with the basics of computer science. It introduces popular programming techniques, and helps gain an insight into areas such as robotics and artificial intelligence. These skills are gained by creating programs for a robot.

The robot is capable of performing several actions. It can drive, look around, move items and paint. This can all be done in different environments that are made up of blocks.

*RoboMind* uses an imperative/procedural programming language. The language consist of a number of basic instructions to control the robot, repetition loops, conditional if-then statements, and it is also possible to define custom instructions by creating procedures. Procedures are allowed to be defined recursively.

*RoboMind* is meant to serve as a first introduction to automation and programming without prerequisites. Difficulty level can vary, depending on the intended audience. In primary education pupils can get acquainted to

Fig. 1. Example of Robomind program



writing commands to navigate the robot through its environment, on high school programming structures get more attention and universities focus on the theoretical aspects of automation theory like Turing machines.

### 3.2. NXT-G

NXT-G is a graphical programming environment that comes with the LEGO NXT Mindstorms robot, which is also used in one of our teaching phases. Programs in NXT-G are created with careful construction of blocks and wires, and can be used for real-world programming (Kelly, 2010). Each block corresponds to some sort of command regarding movement, sensors, logical operation etc. Most of those blocks have some additional parameters that can also be adjusted like the power of the motor or sensor sensitivity. NXT-G also supports complex functions like parallel threads and remote control. The language supports virtual instruments for a variety of sensors/components. Main advantage of this software is that is used in pair with an actual robot, so the users can almost instantly see their program in action.

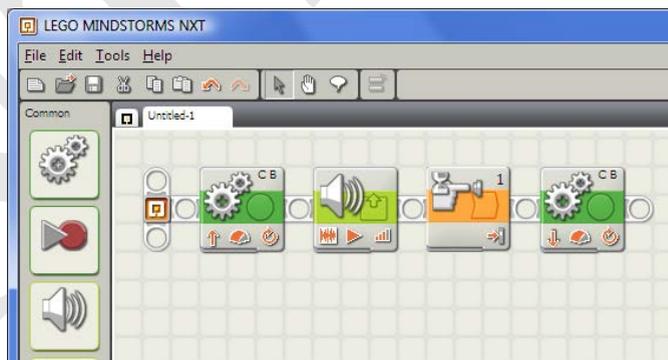


Fig. 2. Simple NXT-G program



## 4. SOLUTION

To counter problems with teaching programming described before, we are proposing an approach to that should help elementary school children in acquiring basic programming concepts. This approach consist of four different phases. Each individual phase is described in detail in following paragraphs.

As already mentioned, best results are expected if the learning process is hidden from children and instead they are presented with something that resembles some kind of a game. In our case, we decided to use the LEGO Mindstorms robot and NetLogo simulated environment to present the children with a simple problem of navigating a robot through a maze in order to find a hidden prize. This way children would be interested in a robot and simulation (presented as computer game), but they simultaneously adopt some specific knowledge and concepts.

### 4.1. First phase

First phase of our teaching process is done by conducting a verbal interview with the children. This phase corresponds with the lowest level of learning and its intended goal should be for children to familiarize themselves with some basic concepts - What is a robot? How is he controlled? Can you change his behavior and how? For best results this phase should be conducted with smaller groups of children (5-6) so that teacher can talk to each of them individually if necessary if they are not familiar with those above concepts. At the end of this phase they should be aware that they have the ability to control the robot and they are the ones that should provide him with the instructions required to solve a given problem.

### 4.2. Second phase

In second learning phase, children should be introduced with the rules of the system, what commands are made available to them and what is the goal of the game. They should comprehend that this specific problem has a set of rules and limitations, and in order to find a solution they should comply with these rules. If successful, they will transfer this knowledge to the other problems and learn that whenever presented with some problem they should first define the goal of the problem and examine all the options available for solving that specific problem.

In this phase, we decided to use “unplugged” programming (Bell, Alexander, Freeman & Grimley, 2009). We

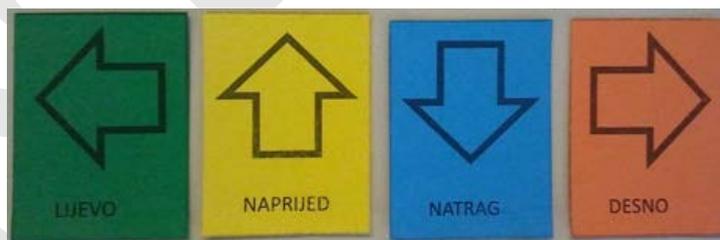


Fig. 4. Colour coded cards used in second phase.

have prepared a set of marked and color coded cards, each one representing a single command available to the robot for execution. Cards are shown in Fig.4. They are 4 basic commands available to children (up, down, left and right), each one corresponding to the movement of a robot in discrete space of a maze. Children are presented

with the multiple cards of each type and their task is, using those cards, to define a sequence of commands which, in their opinion, would lead the robot to the goal of the maze. By doing this, we are preventing them of abusing the "trial and error" method and instead encouraging them to visualize the problem and use their imagination in deriving the acceptable solution (Edwards, 2004).

This approach should demonstrate them that programming (and problem solving generally) consists of series of simpler steps that are combined into one greater program. It could also help them to notice that some steps (or a series of steps) can be repeated thus learning the definition and usage of "loops". Unlike previous phase, this phase is practical, not only theoretical as children themselves must try and produce a solution to the given problem. This is necessary because in order to learn some concepts it is not just enough to present the children with those concepts. Programming is not learned simply by knowing all the syntax and semantic rules, but it requires an active knowledge of different concepts which is achieved only by applying those concepts in specific, real world problems.

As this approach is focused on primary school children, they are not burdened with specify programming language and syntax learning. Instead, they are introduced to few simple concepts corresponding to the robot movement. These concepts should be fairly easy for them to comprehend as these are real world concepts that they already know, only applied to the robot instead of humans.

#### 4.3. Third phase

Third phase consists of displaying the robot in simulated environment using NetLogo, a multi-agent programmable modeling environment (Sklar, 2007). Robot is displayed as single agent. Simulated environment is depicted as a maze through which the robot must navigate in order to reach its goal (presented as the cake within the simulation). In addition to displaying the world, simulation includes controls for moving the agent that are corresponding to the cards used in previous phase. During this phase, children should make a logical connection between the physical (real life) robot and the agent presented in the simulated environment. This is very important as that introduces them to the basic level of abstraction.

Children should show their cards and each command should be entered into the simulation. Simulation is designed so that the each command is immediately executed but it also keeps a record of all given commands so

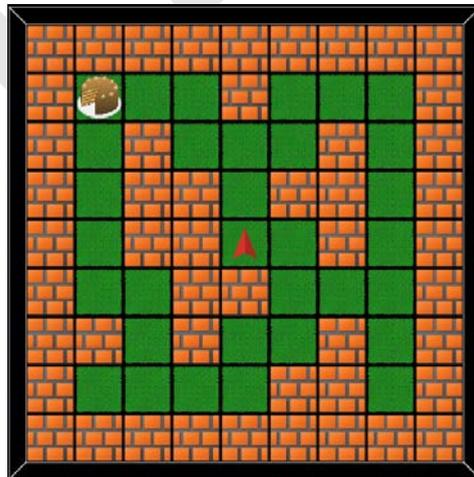


Fig. 5. Simulated world depicted within NetLogo simulated environment.

that they can later be reviewed. This enables children to see the results of each action, and also the completed set of commands i.e. their first computer program. During the input of commands into the simulation they should be allowed to make corrections to commands that haven't yet been executed if they think that is necessary. This should demonstrate them that there are often multiple ways of solving one problem and encourage them to make simple modifications to their programs as well as trying to find the best possible solution.

It should also familiarize them with concept of debugging i.e. testing the solution in controlled environment before marking it as final.

#### 4.4. Fourth phase

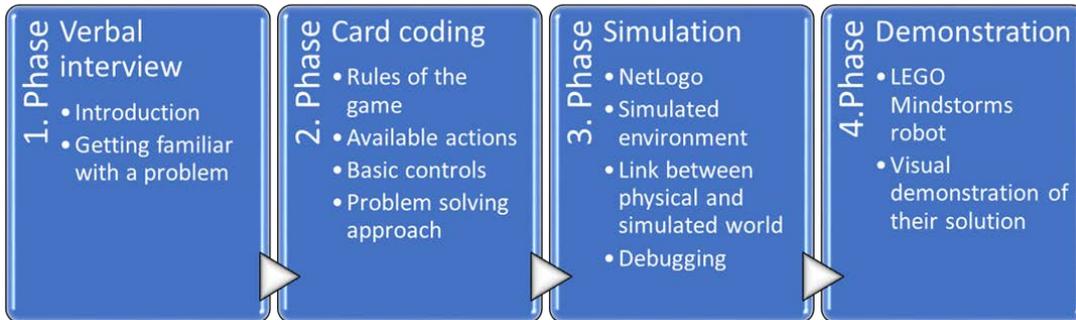
Final phase consists of executing the program developed in previous phase. NetLogo simulation keeps records of all entered commands and at the beginning of this phase those commands are sent to the physical robot for execution. As mentioned, a LEGO NXT Mindstorms robot is used and set in a maze that corresponds to the maze depicted in the NetLogo simulation. Communication between NetLogo and Mindstorms robot is done via Bluetooth, but that is not important for the teaching process alone. Goal of this phase is to further establish the link between real and simulated world, this time demonstrating to children that the actions they previously made have an impact in the real world and that their programs are put in use. This should hopefully cause immersion during programming i.e. children would be more likely to inadvertently put themselves into the role of a robot they are programming. By doing that, they would have greater insight about the capabilities and limitations of their program and that should result with better written programs.

## 5. EXPERIMENTAL STUDY

Preliminary experiment was conducted in elementary school with children from first grade. Children were divided in 6 separate groups, each group consisting of 5 children. There was no further division based on certain attributes like gender or previous knowledge. This was done because certain children were in need of individual attention and putting them in larger groups would prevent that. This also made communication with children easier.

During the experiment, children went through all 4 phases described in this paper, from verbal introduction to physical world demonstration of their program. Completion of those phases took approximately 40 minutes for each group which fits the time of one period in elementary school.

Fig. 6. Short overview of four different phases of teaching process.



Most of the children had very similar knowledge of computers. They were already familiar with basic computer concepts and have acknowledged using computers for both recreational and educational purposes. One thing we noticed is that gender does not affect their computer skills, both boys and girls were equally proficient with basic computer use. Their descriptions of the concept "robot" were very similar and fairly accurate, regarding their age.

They all described robot as metallic manlike thing that can move autonomously. All the children had clear understanding that some kind of electric power (batteries) is needed for robots normal operation. Most of them have recognized LEGO bricks as building elements of presented autonomous vehicle. They have also asked if our vehicle can transform into another shape, but they have also pointed out that we have to perform the transformation. This behavior is showing that there is a clear distinction made between cartoons and physical environment but it also shows that the expectations are big influenced by virtual worlds constructed in cartoon designer studio.

Most of them guessed that robot is controlled remotely by some sort of hand-held remote controller but they quickly grasped the concept of giving the robot a set of instructions that will be executed as soon as robot is turned on.

## 6. CONCLUSION AND FUTURE WORK

Children reacted positively to the whole teaching process and they expressed their pleasure with the whole procedure. After reviewing all the programs that children created for navigating the robot through the maze, it was noted that only one solution was incorrect. It was also very interesting to see that most of the correct solutions were also optimal solution for that particular maze, meaning that proposed solution was quickest way from start to goal (minimal number of actions). This is interesting because children were not presented with a concept of "shortest path" or "optimal solution" but they nevertheless displayed that kind of knowledge. Taking in account their age, it is more likely that they innately possess this type of knowledge, then they somehow previously learned it from their parents or surrounding. This is something that should be tested more thoroughly in future research.

As this was only preliminary research, obtained results were encouraging but for more concrete results it will be necessary to expand the research by using much larger number of children and programming concepts. That should produce more data necessary for testing the effectiveness of this approach.

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4<sup>th</sup> International Conference on New Horizons in Education

# Investigation of Prep School Students' and Instructors' Preferences for Error Correction

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## Abstract

This study investigated university prep school students' and instructors' opinions about error correction. One hundred and sixty prep school students and 18 instructors participated in the study. The results revealed that both instructors and students find error correction useful, but surprisingly students are more willing to receive error correction than instructors think. There are also big differences between students and instructors' opinions about frequency, method, timing and type of errors to be corrected.

Keywords: error, correction,

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## 1. INTRODUCTION

To date, the role of corrective feedback in language acquisition has been a highly controversial issue. Some researchers believe that exposure to naturally occurring samples of a target language is all that learners need to develop their second language (L2), and error treatment is harmful rather than helpful. According to Krashen (1982), the teaching of grammar should be abandoned because it interferes with the natural course of L2 learning. Krashen's comprehensible input hypothesis proposes that language acquisition occurs when learners receive comprehensible input slightly more advanced ( $i+1$ ) than their current level of interlanguage development.

Although a great deal of L2 learning takes place through exposure to comprehensible input (e.g., Krashen, 1998), learners may need feedback on errors when they are not able to discover the differences between their interlanguage and the target language. In other words, form-focused instruction induces learners to pay conscious attention to forms in the input and thus aids interlanguage development.

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Allwright and Bailey (1991) point out that only the learner can do the learning necessary to improve performance, regardless of how much error treatment is provided. Inevitably, most teachers have experienced the frustrations of correcting the same mistakes over and over instead of listening to a student's flawless English speaking. Teachers, however, need to be careful when providing corrective feedback because error corrections have both negative and positive effects. The positive effects of error correction can make language learning more effective since it helps L2 learners notice the gap between their utterances and the target forms, which elicits uptake or repair. This can promote changes in their interlanguage systems and lead them to the next linguistic developmental stage. Moreover, when learners understand that making mistakes is a part of the learning process, and that their teachers try to help them learn target forms, they are likely to take risks and build up confidence through practice.

This study examines teachers' and students' preferences for error correction and compares the differences between them, suggesting more effective ways of treating students' spoken errors in ESL settings.

## **2. METHODOLOGY**

### **2.1 Participants**

The participants in this study were 160 students who were taking oral skills classes in School of Foreign Languages at a State university in Turkey, and 18 EFL instructors who were teaching the oral skills classes at the same university. The student participants' proficiency levels varied from A2 to B1 according to CEF. Their English proficiency was assessed by the placement tests, which included reading, writing, grammar, and oral interview components. All student participants were adult Turkish EFL learners. 67 male and 93 female students participated in the survey and the ages of the students ranged from 17 to 20. They have been studying English more than six years on average, and most of their English education was received in their native countries, in EFL settings.

### **2.2 Instrument**

Two different questionnaires were used in this study: one is a questionnaire for students, and the other is a questionnaire for teachers. Each questionnaire has two sections. The first section includes twenty-two questions investigating teachers' and students' perceptions of the necessity of error correction and frequency of error correction, preferences for timing of error correction, types of errors that need to be corrected, types of corrective feedback, and delivering agents of error correction. The second section is designed to collect participants' demographic information, including their genders, native languages, the length of English teaching/learning, and students' proficiency levels. Therefore, the demographic section consists of four question items for students and three items for teachers.

### **2.3 Data Analysis**

The collected data were analyzed in order to answer the following question: Are there any differences between teachers' and students' perceptions of effective error correction practices?

In order to answer this question, two questionnaires were implemented, a questionnaire for teachers and a questionnaire for students. The students and teachers were asked to rate each item on a 5-point scale, from "strongly agree" to "strongly disagree." "Strongly agree" was worth 5 points, and "strongly disagree" was worth 1 point. The items were divided into six categories: necessity of error correction, frequency of error correction, timing of error correction, types of errors, methods of corrective feedback, and delivering agents of corrective feedback. The six categories marked by the participants were tallied. In scoring the questionnaire on preferences for error correction, the data were simplified by collapsing the 5-point scale used to elicit responses (strongly agree, agree, neutral, disagree, strongly disagree) into a 3-point scale (strongly agree/ agree, neutral, disagree/ strongly disagree). A t-test was performed to determine if there were statistically significant differences between students (Ss) and teachers (Ts)

## **3. RESULTS AND DISCUSSION**

### **3.1 Necessity of Error Correction**

In Question 1, the students were asked to respond to the statement, "I want to receive corrective feedback."

Teachers were asked to respond to the statement, “Students’ spoken errors should be treated.” Findings indicate that the students wanted to receive more error treatment than their teachers provided.

Ninety-four percent of the student participants and 88% of the teacher participants responded “strongly agree” or “agree” on Question 1. Interestingly, 54% of the students strongly agreed that they wanted their errors to be corrected by their teachers, whereas only 11% of the teachers strongly agreed with the statement. None of the students and teachers disagreed with the statement. The findings indicate that both the students and teachers think students’ spoken errors should be corrected, but the students believe in the necessity of corrective feedback to a much greater extent. As previous studies have shown, the students wanted their errors to be treated more than the teachers thought.

### **3.2 Frequency of Error Correction**

Question 2 asked students, “How often do you want your teacher to give corrective feedback on your spoken errors?” and teachers, “How often do you give corrective feedback on students’ spoken errors?” Responses to the question were also on a 5-point scale with “Always, Usually, Sometimes, Occasionally, or Never.” “Always” was worth 5 points, and “never” was worth 1 point. A significant discrepancy between the students and teachers was found. According to results, thirty-eight percent of the students thought that their spoken errors should be “always” corrected, whereas none of the teachers always corrected their students’ errors. Almost the same percentage of the students and teachers agreed that students’ spoken errors should be “usually” corrected, 41% and 44% respectively. There was 1% of the students who thought that their errors should “never” be corrected while no teachers thought so.

### **3.3 Timing of Error Correction**

Questions 3 to 6 are related to the appropriate time to correct students’ spoken errors. The category consists of four questions for students: (3) As soon as errors are made even if it interrupts my conversation, (4) After I finish speaking, (5) After the activities, and (6) At the end of class. For teachers, the category consists of four items: (3) As soon as errors are made even if it interrupts the student’s speaking, (4) After the student finishes speaking, (5) After the activities, and (6) At the end of class. The students and teachers were asked to rate each question with “Always, Usually, Sometimes, Occasionally, or Never.” “Always” was worth 5 points, and “never”

was worth 1 point.

Of the four choices, “after the student finishes speaking” received the highest mean from the students and teachers, 3.84 and 4.0 respectively. “As soon as errors are made” received the lowest mean from the teachers ( $M = 2.33$ ), whereas “at the end of class” received the lowest mean from the students ( $M = 2.98$ ).

Results indicate that over half of the students strongly agreed or agreed that their spoken errors should be corrected as soon as they are made even though it hinders the flow of conversation. On the contrary, only 11% of the teachers regarded correcting their students’ errors right after they made them as the appropriate time. This finding suggests that interrupting their students’ speaking in order to treat errors was not a good option for teachers. Unlike the students who were focused more on accuracy in their spoken English, the teachers regarded fluency as well as accuracy as a crucial factor for their students’ development of speaking skills. It is also obvious that there was a significant difference between the students and teachers about providing corrective feedback as soon as the students made.. The teachers considered “after the student finishes speaking” to be the most appropriate time to treat errors to a larger extent than the students. For Question 5, almost the same percentage of the students and teachers regarded “after the activities” as the appropriate time to treat students’ spoken errors. Both the teachers and students believe that correcting spoken errors after students complete the communicative activities can enhance both accuracy and fluency since this allows the students to engage in communication without interruption caused by error treatment. There were discrepancies among the students in regard to correcting errors at the end of class. Thirty-six percent of the students strongly agreed or agreed that student errors should be corrected at the end of class, whereas 41% of the students disagreed or strongly disagreed. Likewise, a discrepancy among the teachers was also found in regard to correcting students’ errors at the end of class. Thirty-eight percent of the teachers agreed that correcting student errors at the end of class was good, while almost the same percentage of the teachers (39%) disagreed.

### 3.4 Types of Errors that Need to Be Treated

The questions in the fourth category asked which types of errors should be corrected by the teachers. The category consists of five types of errors: serious spoken errors, less

serious errors, frequent errors, infrequent errors, and individual errors. The students and teachers were asked to rate each question with “Always,” “Usually,” “Sometimes,” “Occasionally,” or “Never.” “Always” was worth 5 points, and “never” was worth 1 point.

Results show that question 7, “Serious spoken errors that may cause problems in a listener’s understanding” received the highest mean from both the students and teachers. Comparing the students and teachers, the mean of the student responses in every question, except the one regarding serious errors, was higher than that of the teachers. Overall, the findings indicate that the students wanted more error correction regardless of the types of errors than teachers did.

All of the teachers responded that students’ serious spoken errors should be always or usually treated, whereas 71% of the students wanted their serious spoken errors to be treated always or usually, and 22% of the students wanted their serious spoken errors to be treated sometimes. In general, the teachers treated their students’ errors less frequently than the students expected; however, the teachers showed a strong preference for correcting serious spoken errors that may cause problems in a listener’s understanding. It is not possible for a teacher to correct all the errors made by students in a classroom setting. Taking this into consideration, it is natural for teachers to focus on the most important errors that can cause misunderstanding between the speaker and listener. This finding shows that the teachers consider that being understood by the listener is the most important factor for ESL learners to convey their thoughts and keep conversation going. By treating serious errors, the teachers can help their students decrease misunderstanding between the speaker and listener and increase the students’ awareness of using target-like forms in their speaking. Unlike the teachers, the students did not seem to take their serious errors gravely. While both the teachers and students had a similar opinion

about frequent errors, they showed a discrepancy in treating infrequent errors. Forty-two percent of the students wanted corrective feedback always or usually on their infrequent errors, but only 6% of the teachers usually provide their students with corrective feedback on the infrequent errors. Another significant difference was also found between the two groups in Question 11, which asked about correcting students' individual errors. Thirty-four percent of the students always wanted their individual errors to be treated, but none of the teachers always corrected individual errors made by only one student. Sixty-two percent of the students always or usually wanted their individual errors to be treated by their teacher, whereas only 11% of the teachers usually treated this type of error. Given the findings, teachers focus more on serious spoken errors than individual errors. It is not realistic to expect that teachers provide their students with corrective feedback on individual errors in a classroom setting. These findings indicate that teachers focus more on serious and frequent errors made by their students rather than correcting infrequent and less serious errors. By focusing on serious and frequent spoken errors, teachers can help their students enhance both accuracy and fluency.

### **3.5 Method of Corrective Feedback**

The fifth category asked the students and teachers about their preferences for types of corrective feedback. The category consists of eight methods of corrective feedback, including clarification request, repetition, implicit feedback, explicit feedback, elicitation, metalinguistic feedback, recasts, and no corrective feedback. The students and teachers were asked to rate each item on a 5-point scale, from "Very effective" to "Very ineffective." "Very effective" was worth 5 points, and "very ineffective" was worth 1 point.

According to the results, elicitation ( $M = 3.74$ ) and explicit feedback ( $M = 3.7$ ) had the highest mean among the students, whereas explicit feedback ( $M = 3.78$ ) and repetition ( $M = 3.67$ ) had the highest mean among the teachers. No corrective feedback had the lowest mean among both the teachers and students. These findings show that both the students and teachers value corrective feedback on spoken errors. Explicit feedback and elicitation were the most favored methods of corrective feedback among the students, and an almost equal percentage of the students rated the methods as very effective or effective, 64% and 66% respectively. The findings indicate that the students wanted their teachers' explicit corrective feedback on their non-target-like

utterances, but on the contrary, they also wanted to have an opportunity to come up with the target-like language forms by themselves rather than entirely depending on their teachers' help. Explicit feedback helps the students learn what the target-like form is by directly pointing out the error, whereas elicitation can help them develop self-editorial skills by providing the students with time to think about the target form. The findings suggest that the students might expect their teachers to know and use various types of corrective feedback in a flexible way that suits their current proficiency level regarding the target item. For instance, if the students make errors that they can correct by themselves, they prefer their teachers to simply guide them to notice the ill-formed utterances so that they can restate the utterances with the target-like forms by themselves. In that case, the teachers' explicit comments on the error can keep their students from consolidating their relevant knowledge on their own and moving on to the next level of automatization

There were discrepancies between students' and teachers' preferences for the methods of error correction. Unlike the students, repetition was the most favored method and explicit feedback was the second most favored type of corrective feedback among the teachers. The results show that a higher percentage of the teachers rated explicit feedback as a more effective method than elicitation, which suggests that the teachers believe that directly pointing out their students' errors and providing the correct forms are more effective than encouraging them to find the target-like forms by elicitation. The teachers might want to guide their students to recognize non-target-like utterances without confusion. Seventy-seven percent of the teachers regarded repetition as effective corrective feedback, whereas only 53% of the students rated the method as effective. The finding indicates that the teachers believed that repetition can allow their students to think about their utterances once more, so that they can notice an error they made in their speaking. The students did not regard repetition as an effective feedback type to help them find the target-like forms to the same degree as teachers. From a student's perspectives, repetition can be confusing because it might not always be clear whether the teacher is repeating the student's utterance to indicate the problem or to acknowledge the content.

The highest discrepancy between the students' and teachers' responses was on metalinguistic feedback. Thirty-eight percent of the students responded that metalinguistic feedback was effective, whereas no teachers regarded it as effective. The finding suggests that some students believe that they can benefit from

their teachers' explanations on their errors because it can help them notice what makes their utterances ungrammatical. On the other hand, teachers may not consider this as an ideal type of corrective feedback in a classroom setting. There were discrepancies between the students and teachers regarding no corrective feedback. Interestingly, 78% of the teachers rated no corrective feedback as ineffective, and no teachers regarded it as effective, whereas 60% of the students rated it as ineffective, and 15% of the students rated it as effective. Given that 94% of the students agreed with the statement "I want to receive corrective feedback when I make mistakes," the findings indicate the students' inconsistent opinions about error correction. The same percentage of the students (53%) rated repetition and recasts as effective methods of error correction. Conversely, a high discrepancy was found among the teachers regarding the effectiveness of repetition and recasts on their students' spoken errors. Specifically, 77% of the teachers regarded repetition as effective, whereas only 33% of them considered recasts as effective feedback. Also, regarding the effectiveness of explicit feedback and elicitation, almost an equal percentage of the students rated the two methods as effective, whereas more teachers rated explicit feedback (72%) as an effective method over elicitation (67%). Although there were no statistically significant differences between the two groups in opinions about explicit feedback, the findings show the teachers' and students' different opinions on corrective feedback.

### **3.6 Delivering Agents of Error Correction**

The last group of questions asked the students who should correct their errors. The statement in the question was "The following person should treat students' errors." There were three choices: classmates, teachers, and students themselves. The three questions attempted to elicit opinions regarding the value of peer-correction, teacher-correction, and self-correction. The students and teachers were asked to rate each question with "Strongly agree," "Agree," "Neutral," "Disagree," "Strongly disagree." "Strongly agree" was worth 5 points, and "strongly disagree" was worth 1 point.

Results reveal that teachers received the highest mean from both the students ( $M = 4.47$ ) and teachers ( $M = 4.34$ ). Both the teachers and students regarded teachers as the most appropriate people to correct student

errors, 94% and 91% respectively; therefore, there was no significant difference between the two groups. Also, there was no discrepancy in opinions of peer-correction between the teachers and students. The finding indicates that the mean of peer-correction was the lowest among the three choices; that is, both the teachers and students did not strongly believe in the effectiveness of error correction delivered by classmates. For self-correction, 71% of the students and 89% of the teachers strongly agreed or agreed that students should correct their own errors by themselves. Even though a statistically significant difference was not found between the two groups, the teachers valued self-correction more than the students did. The findings indicate that the teachers and students preferred self-correction to peer-correction.

#### **4. CONCLUSION**

The findings show that both the teachers and students agreed that student errors should be treated, but students wanted more correction than their teachers thought. A discrepancy was found between the teachers and students regarding the timing of error correction. Unlike the teachers, the students regarded immediate error correction that can interrupt the flow of conversation as effective. Both the teachers and students believed that serious and frequent errors should be treated, but the students wanted to receive more error treatment. The students wanted error treatment even on infrequent and individual errors. Repetition, explicit feedback, and elicitation were the three most favored types of feedback among the teachers, whereas elicitation, explicit feedback, and implicit feedback were the most favored types of corrective feedback among the students. Teachers were the most popular source of feedback among both the teachers and students. The findings show that the teachers and students had significantly different opinions about timing, method, and delivering agents of error correction, as well as types of errors that need to be corrected.

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4<sup>th</sup> International Conference on New Horizons in Education

# Investigation Of Pre-service Teachers' Mathematics Teaching Efficacy Beliefs In Terms Of Their Reflective Thinking Tendencies

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## Abstract

Teaching efficacy and reflective thinking are both important for teacher education and they may influence teachers' behaviors during instruction. In the light of existing literature it is suggested that there is a relation between teaching efficacy belief and reflective thinking. The purpose of this study is to investigate whether reflective thinking tendency of pre-service mathematics teachers predict their mathematics teaching efficacy beliefs. The study was conducted in a public university with 125 secondary mathematics education students. The data were collected by Mathematics Teaching Efficacy Belief Instrument and Reflective Thinking Tendency Scale. Regression analysis was used for analyzing the data. It is concluded that reflective thinking tendency of pre-service mathematics teachers predict significantly their mathematics teaching efficacy beliefs.

*Keywords:* self-efficacy, reflective thinking, pre-service mathematics teacher

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## 1. Introduction

The most important objective of today's educational systems is to equipping students to be life-long learners and to be able to use different thinking skills. There are various types of thinking such as critical thinking, creative thinking, analytical thinking and reflective thinking. These thinking skills are very important for both teachers and students. Especially reflective thinking which has its origins in Dewey's (1933) learning by doing and living approach (cited in Kızılkaya & Aşkar, 2009) is essential for teachers. Reflective thinking teachers continuously learn from their own teaching practice and gradually improve it over time (Jansen & Spitzer, 2009). In the reflection process teachers confront the complexity of students and their learning, of themselves and their teaching (Rodgers, 2002) and at the end of reflection they develop skills that may assist them to become more critical and to develop expertise in their instruction (Phan, 2007). Reflection is a systematic, rigorous, disciplined way of thinking and it gives a learner deeper understanding of relationships and connections between experiences (Rodgers, 2002). Reflective thinking can be effective when it is used in problematic classroom situations. Teachers deal with problems and try to develop their teaching practice by means of reflection when they have problems in their instruction. Reflective thinking teachers take into account student feedbacks, monitor themselves and evaluate their instruction. These teachers are more critical and open minded and have the responsibility of teaching, so it is clear that they will put forth an effort to increase their students' success and facilitate their learning.

Self-efficacy belief is an important affective factor related to social cognitive theory and it concerns beliefs of individuals about their own ability in performing a task or an action. Teachers' efficacy belief is a construct derived from Bandura's (1997) self-efficacy concept and it is the belief in one's his or her ability to teach effectively. Tschannen-Moran and Woolfolk Hoy (2001) defined teacher efficacy as teacher's judgment of his or her own capabilities to bring desired outcomes of student engagement and learning. Degrees of efficacy are related to teachers' performance in their classroom and the teaching strategies they use. Teachers with high teaching efficacy are more likely to use student-centered methods and they are more open minded and critical about their teaching. Teacher efficacy is a subject-specific construct (Bandura, 1986) and it is also multidimensional and can be affected by different variables. Phan (2007) indicated in his study that self-efficacy directly predicted the stages of reflective thinking. Reflective thinking and teaching self-efficacy belief are both factors that have effect on teachers' teaching performance.

In the light of existing literature and according to the definitions of reflective thinking and self-efficacy belief, it is hypothesized that reflective thinking and mathematics teaching efficacy beliefs are related. This study determines the mathematics teaching efficacy of pre-service teachers, their reflective thinking tendencies and the role of reflective thinking in mathematics teaching efficacy degree. The purpose of this study is to investigate whether reflective thinking tendencies of pre-service mathematics teachers predict their mathematics teaching efficacy beliefs.

## 2. Method

This study is a descriptive research designed to investigate how much the mathematics teaching efficacy beliefs of pre-service teachers is explained by their reflective thinking tendencies. Survey model is used with the purpose of determining the mathematics teaching efficacy beliefs and reflective thinking tendencies of pre-service teachers.

### 2.1. Participants

Participants of the study are 125 pre-service secondary mathematics teachers studying at Secondary Mathematics Education Department of a public university in Ankara. Pre-service teachers consist of 98 females

and 27 males. 27 of the students are first grade, 18 are second grade, 25 third grade, 30 fourth grade and 25 fifth grade.

## 2.2. Instruments

In this study “Reflective Thinking Tendency Scale (RTTS)” and “Mathematics Teaching Efficacy Beliefs Instrument (MTEBI)” are used to collect data.

### *Reflective Thinking Tendency Scale*

This scale is developed by Semerci (2007) and consists of 20 positive 15 negative totally 35 items. There are seven sub-dimensions of the scale and these are continuous and intentional thinking (items 1-7), open minded (items 8-13), interrogative and effective teaching (items 14-18), teaching responsibility and science (items 19-23), researcher (items 24-29), foresighted and sincere (items 30-33), looking professional (items 34-35). This scale is 5 point Likert scale and possible scores on RTTS range from 35 to 175. Low scores indicates low reflective thinking tendency and high scores indicates high reflective thinking tendency. The reliability cronbach alpha coefficient of the original RTTS is 0,91. In this study the reliability was found as 0,90.

### *Mathematics Teaching Efficacy Beliefs Instrument*

Mathematics Teaching Efficacy Beliefs Instrument (MTEBI) was developed by Enochs, Smith and Huinker (2000) and it is adopted in Turkish by Sari et al. (2007). The scale has two subscales of Personal Mathematics Teaching Efficacy (PMTE) with 13 items and Mathematics Teaching Outcome Expectancy (MTOE) with 8 items. This scale is 5 point Likert scale and possible scores on PMTE subscale range from 13 to 65 and MTOE scores may range from 8 to 40. High scores indicates high self-efficacy beliefs and the lower ones are low self-efficacy belief. The Cronbach’s alpha for PMTE subscale is 0,80 and 0,81 for MTOE subscale.

## 2.3. Data Analysis

Data were analyzed in SPSS 17.0 statistical package and descriptive statistics and linear regression analysis was used.

### 3. Findings

The descriptive statistics of the data collected by RTTS from 125 pre-service mathematics teachers are given in the Table 1.

	Continuous and intentional thinking	Open minded	Interrogative and effective teaching	Teaching responsibility and science	Researcher	Foresighted and sincere	Looking professional	Reflective thinking tendency
N	125	125	125	125	125	125	125	125
Mean	28,81	26,76	22,36	20,97	24,45	16,82	8,38	148,54
Std. Deviation	3,207	3,234	2,775	3,245	3,845	2,464	1,506	14,628
Minimum	14	12	12	10	12	4	2	78
Maximum	35	30	31	25	30	20	10	174

Table 1. Descriptive statistics of reflective thinking tendency of pre-service mathematics teachers

As it seems from Table 1 the mean of reflective thinking tendency scores is 148,54 and this score shows that pre-service teachers have high reflective thinking tendencies. The highest scores of pre-service teachers are in continuous and intentional thinking sub-dimension and the lowest ones are in looking professional sub-dimension.

The scores for subscales of Mathematics Teaching Efficacy Beliefs Instrument can be seen from Table 2.

Table 2. Descriptive statistics for PMTE and MTOE

		PMTE	MTOE
N	Valid	124	124
	Missing	1	1
Mean		52,27	29,01
Std. Deviation		6,438	4,746
Minimum		26	8
Maximum		65	40

The mean for scores of Personal Mathematics Teaching Efficacy subscale is 52,27 and 29,01 for Mathematics Teaching Outcome Expectancy subscale.

Linear regression analysis was used to determine whether reflective thinking tendencies of pre-service teachers predict their mathematics teaching self-efficacy beliefs. Before regression analysis, one sample

Kolmogorov-Smirnov test applied to data to test the normality of the variables and scatter diagrams are analyzed to determine the type of the relation between variables.

Table 3. One-Sample Kolmogorov-Smirnov Test

		MTOE	PMTE	RTT
N		124	124	125
Normal Parameters <sup>a,b</sup>	Mean	29,01	52,27	148,54
	Std. Deviation	4,746	6,438	14,628
Most Extreme Differences	Absolute	,098	,059	,121
	Positive	,063	,051	,060
	Negative	-,098	-,059	-,121
Kolmogorov-Smirnov Z		1,093	,659	1,349
Asymp. Sig. (2-tailed)		,184	,779	,053

Table 3 shows that the significance for variables mathematics teaching outcome expectancy, personal mathematics teaching efficacy and reflective thinking tendency are all  $>0.05$ . This means that the data have normal distribution for these three variables.

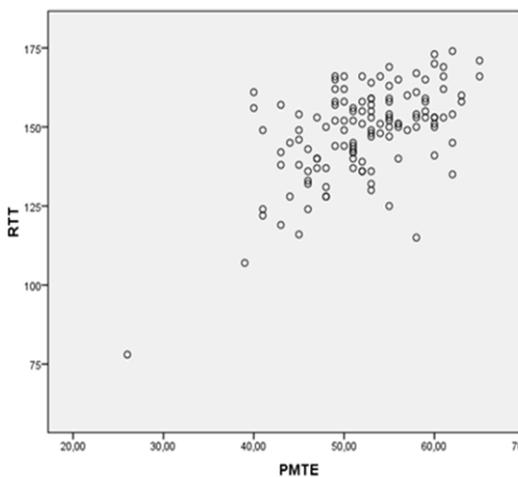


Figure 23. Scatter diagram for personal mathematics teaching efficacy and reflective thinking tendency

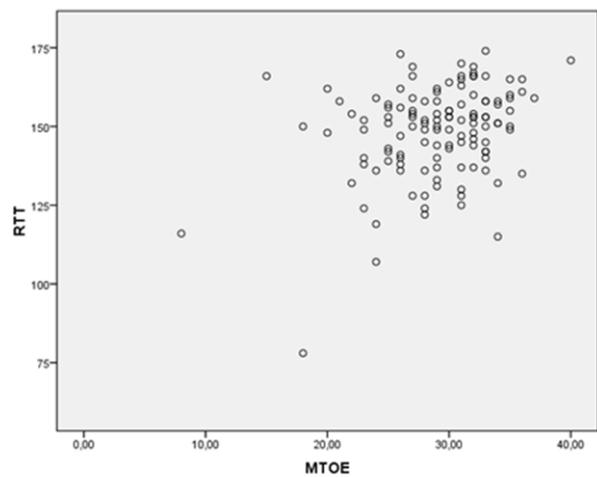


Figure 22. Scatter diagram for mathematics teaching outcome expectancy and reflective thinking tendency

In Figure 1 scatter diagram shows that there is a linear relationship between personal mathematics teaching efficacy and reflective thinking tendency variables. Figure 2 shows the relationship between mathematics teaching outcome expectancy and reflective thinking tendency variables is also linear. The results of normality test and scatter diagrams show that data fulfill the assumptions for linear regression.

Regression analysis was applied on personal mathematics teaching efficacy and reflective thinking tendency variables.

Table 4. Anova table for PMTE and RTT

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1635.124	1	1635.124	57.603	,000 <sup>a</sup>
	Residual	3463.093	122	28.386		
	Total	5098.218	123			

Table 4 shows that the constructed model is significant (sig.<.05)

Table 5. PMTE and RTT Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,566 <sup>a</sup>	,321	,315	5,328

As it seems in the model summary table (Table 5)  $R^2$  value is 0.315. This means that the 32 % of total variance in the dependent variable of personal mathematics teaching efficacy is explained by the independent variable of reflective thinking tendency.

Table 6. Parameter Estimates for PMTE and RTT

Model		Unstandardized Coefficients		Standardized Coefficients		Collinearity Statistics		
		B	Std. Error	Beta	t	Sig.	Tolerance	VIF
1	(Constant)	15.396	4.881		3.154	,002		
	RTT	,248	,033	,566	7,590	,000	1,000	1,000

From parameter estimates table (Table 6) the constructed model can be expressed as

$$Y = 15.396 + 0.248X \quad (1)$$

In this equation (1) Y represents the personal mathematics teaching efficacy variable and X represents the reflective thinking tendency variable.

Table 7. Anova table for MTOE and RTT

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	265.166	1	265.166	12.190	,000 <sup>a</sup>
	Residual	2505.826	122	20.540		
	Total	2770.992	123			

Table 7 shows that the constructed model is significant (sig.<.05)

Table 8. MTOE and RTT Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,309 <sup>a</sup>	,096	,088	4,532

As it seems in the model summary table (Table 8)  $R^2$  value is 0.096. This means that the 10 % of total variance in the dependent variable of mathematics teaching outcome expectancy is explained by the independent variable of reflective thinking tendency.

Table 9. Parameter Estimates for MTOE and RTT

Model		Unstandardized Coefficients		Standardized	t	Sig.	Collinearity Statistics	
		B	Std. Error	Coefficients			Tolerance	VIF
1	(Constant)	14.160	4.152		3.410	,001		
	RTT	,100	,028	,309	3.593	,000	1,000	1,000

From parameter estimates table (Table 9) the constructed model can be expressed as

$$Y = 14.190 + 0.1X \quad (2)$$

In this equation (1) Y represents the mathematics teaching outcome expectancy variable and X represents the reflective thinking tendency variable.

#### 4. Conclusion and Discussion

This study shows that the reflective thinking tendencies of pre-service mathematics teachers significantly predict their personal mathematics teaching efficacy and mathematics teaching outcome expectancy which are the sub-dimensions of mathematics teaching self-efficacy belief.

According to the results of linear regression analysis 32% of the total variance of personal mathematics teaching efficacy is explained by reflective thinking tendency. And 10% of total variance of mathematics teaching outcome expectancy is explained by reflective thinking tendency. It can be concluded that the mathematics teaching self-efficacy beliefs of pre-service teachers is explained by their reflective thinking tendencies and it is expected that the increase in their reflective thinking tendencies will increase their self-efficacy beliefs.

The findings suggest that teachers' reflective thinking skills should be developed for increasing their self-efficacy belief which is an important factor in their teaching performance. Teacher education programs should include activities that engage teachers in reflection on their instructional practice. Studies show that reflective thinking activities have a positive influence on performances of pre-service teachers and their attitudes toward teaching profession (Tok, 2008). Phan (2007) indicated that self-efficacy directly predict the stages of reflective thinking and self-efficacy is a determinant of reflective thinking and academic performance.

This study contributes to the literature concerning the variables that explain self-efficacy belief of pre-service teachers. The determination of the constructs that explain self-efficacy and to expose the relationships between them will give clues about how to increase self-efficacy beliefs.

It is recommended to investigate other factors that may influence self-efficacy. Especially the thinking types of critical thinking and creative thinking which are close to reflective thinking can be investigated in constructing models that explain self-efficacy.

Reflective thinking skill can be developed and it is important to plan activities that develop pre-service teachers' reflective thinking. It should be remembered that the students of reflective thinking teachers can have the same thinking skill and this may have a positive effect on students' academic performance. It is also suggested that teachers who think reflective and have high self-efficacy will be more open minded and critical, have responsibility of teaching, deal with increasing students' success and facilitating their learning. Also these teachers will prefer student centered approaches in their instruction and continuously monitor and evaluate themselves during the teaching and learning process.

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# Investigation of required qualifications of instructors by means of pair-wise comparison method

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## Abstract

This study investigates the qualifications instructors should have by using the pair-wise comparison method. The data collection tool included 8 (eight) qualifications regarding students' demographic data for pair-wise comparison method. Study data were collected from 1241 students from several faculties and departments in 9 Turkish universities. According to the students' views, motivating to learn is the leading qualification required of instructors. The first qualification on the list was found to differ by gender. Accordingly, female students rated motivating to learn the most, while male students rated being inquisitive. By grade level, first-year students prefer having content knowledge by instructors, whereas second, third and fourth-year students opt for motivating to learn on instructors' side. As for distribution by faculties; the students from Education Faculty want instructors to motivate to learn, students from Faculty of Science and Letters require being inquisitive, Faculty of Pharmacy motivating to learn, Faculty of Law prefer democratic instructors, Economic and Administrative Sciences require having world knowledge, Faculty of Aquaculture motivating to learn, and Faculty of Engineering prefer inquisitive instructors. Distribution of the study results by field shows that motivating to learn is the most wanted qualification by students in applied and social sciences, while having good content knowledge by health students. Lastly, a difference was found between newly founded universities and others. The students studying in newly established students mainly require having good content knowledge, whereas others opt for being inquisitive as required qualifications of instructors.

**Keywords:** Scaling, pair-wise comparison, instructors

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## 1. INTRODUCTION

Efforts towards accessing to information are becoming more important in Turkey and rest of the world. Societies can develop, improve and lead others by education. Ertürk (1994) defines education as the process whereby an individual makes changes in her/his behaviours by means of experiencing and purposefully. Such changes take place in educational institutions in a well-planned manner. Educational institutions include elementary schools, high schools and higher education institutions. Higher institution firstly recalls universities. In the Higher Education Law Numbered 2547, university is defined as "a higher education institution having scientific autonomy and public entity engaged in carrying out higher education-instruction, scientific research, publication and counselling; and that is comprised of faculties, institutes, high schools and so on". The aim of universities is to carry out scientific studies and research and contribute to social development in this way and to bring up highly qualified labour force. At the same time, those studying at university are expected to bear certain qualities such as adopting to the changing world, being able to inquire and think critically, being creative and critical, generating information, and expressing themselves, etc. Thus, instructors teaching at universities are supposed to have these qualifications at first. It is thought that individuals can acquire qualifications largely in parallel with what qualifications university teachers have. In this context, instructors need to bear certain qualifications. There are lots of Turkish and international studies and recommendations about this matter. One of the studies on characteristics of instructors (university teachers) lists the most frequently rated features and items as confiding in students and expecting only their potential, establishing personal communication with and caring students, having high sensitivity, and having sufficient content knowledge ([www.soyouwanttoteach.com](http://www.soyouwanttoteach.com)). Another study provides a definition for a good teacher (instructor): "the person who is willing to teach, can take risk, develops a positive attitude, gives students confidence, acts consistently, motivates and listens to students." (Morgan, 2003). In Akgöl (1994), the qualities an ideal teacher should have are researched four subgroups: personal, professional, assessment and evaluation and human affairs. Kavak (1986) summarizes qualifications of

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instructors as content knowledge, assessment and evaluation, inquiring, teaching methods and human affairs. In Açıkgöz (1990), necessary qualifications are discussed under subgroups such as teacher-student relationships, classroom management, in-class teacher behaviours and personal traits. As literature supports, the qualifications required of instructors are discussed differently by different researchers. Thus, qualifications in different aspects are considered in this study.

### *1.1. Aim and Purpose of the Study*

In pair-wise comparison method, variables in an ordinal scale can be assessed as interval scales, and thus measurement results of observed variables become equivalent to interval scales. In other words, scaling is used in order to improve scale quality of the data. Both judgement and reaction approaches are used in scaling. The judgement approach aims at scaling obtained stimuli at an extent determined through an observer's or expert's judgement. Scaling via Thurstone methods provides a typical judgement approach. The reaction approach is built on collecting reactions of a group of N participants by applying a K number of stimuli. A typical reaction method can be seen in developing Likert type attitude scale. One of the scaling techniques in psychology is called pair-wise comparison method developed by Thurstone. The technique can be used in all cases where stimuli are applied in pairs. Particularly, they are useful for scaling many affective behaviours and assessing some personality traits (Turgut ve Baykul, 1992).

There are many studies on what qualifications instructors must have (Aslan ve Yakar, 2011; Çakmak, 2009; Collins, 2002; Yıldız, 2008; Genç, 2007; Ergün, Duman, Kınca ve Arıbaş, 1999; Saylan ve Uyangör, 1998; Morgan, 2003; Açıkgöz, 1990; Akgöl, 1994; Kavak, 1986). However, there is not a sample which uses pair-wise law and resulting scaling methods for qualifications required of instructors. Present study is significant due to this aspect. To this end, the scaling method using pair-wise comparison seeks answers for the following research questions:

1. What are the scale value results of all students like?
2. How are the scale value results of students distributed by gender?
3. How are the scale value results of students distributed by grade level?
4. How are the scale value results of students distributed by faculty?
5. How are the scale value results of students distributed by field of study (social/applied sciences/health)?
6. How are the scale value results of students distributed by universities?

## **2. METHOD**

### *2.1. Research Type*

The aim of this study is to scale qualifications of instructors as preferred by university students by means of pair-wise comparison method. As the study is designed to describe an existing situation, it is a descriptive one.

### *2.2. Study Group*

1241 students in different faculties of 9 Turkish universities participated in this study during the 2012-2013 academic year. This study attempts to provide a multidimensional description of the qualifications as opted by students.

Information regarding the study group is given in Table 1 and Table 2.

Table 1 displays frequency and percentages of the study group by university.

Table 1: Frequency and Percentage of Study Group by University

	f	%	
Ankara University	80	6,4	
Bayburt University	377	30,4	
Celal Bayar University	36	2,9	
Universities	Çukurova University	115	9,3
Hacettepe University	380	30,6	
Mardin Artuklu University	143	11,5	
Marmara University	33	2,7	
METU	40	3,2	
Osmangazi University	37	3	
Total	1241	100	

Total frequency of the study group for all of the universities is given as 1241 in Table 1. Distribution of the study participants by universities is as follows: Ankara University (80), Bayburt University (377), Celal Bayar University (36), Çukurova University (115), Hacettepe University (380), Mardin Artuklu University (143), Marmara University (33), Middle East Technical University (40), and Osmangazi University (37).

In Table 2, frequency and percentage of both male and female participants by faculty/higher school is given.

Table 2: Frequency and Percentage of Male and Female Participants by Faculty/Higher School

		Gender		Total
		Female	Male	
Pharmacy	f	96	31	127
	%	7,70	2,50	10,20
Education	f	124	117	241
	%	10,00	9,40	19,40
Science-Letters	f	123	69	192
	%	9,90	5,60	15,50
Law	f	76	37	113
	%	6,10	3,00	9,10
Administrative Sciences	f	98	126	224

	%	7,90	10,20	18,00
	f	66	55	121
Engineering	%	5,30	4,40	9,80
	f	84	24	108
School of Health	%	6,80	1,90	8,70
	f	12	103	115
Aquaculture	%	1,00	8,30	9,30
	f	679	562	1241
Total	%	54,70	45,30	100,00%

In Table 2, total frequency of the study group by gender and faculty is given as 1241. Departments of study and frequencies of the study participants are as follows: German Language Teaching (45), Anthropology (20), Biology (88), Midwifery (38), Pharmacy (117), Electrical and Electronic Engineering (64), Food Engineering (97), Philosophy (17), Nursing (70), Law (113), Economics (153), Business Administration (71), Statistics (37), Art History (30), Aquaculture (84), Classroom Teaching (167) and Preschool Teaching (30).

### 2.3. Developing the Measurement Instrument

First of all, literature review was done in order to list the 20 qualifications that instructors should have. The list was sent to 28 students from different universities so that they could mark the ones they regard important. 8 (eight) qualifications were selected from the students' comments because of increased number of comparisons and probability of contradictory triadic in pair-wise comparison. Part I of the measurement contains personal information (university, faculty, department, grade, gender), while part II includes the eight qualifications required of instructors to be assessed via pair-wise method.

### 2.4. Data Analysis

Collected data were first scaled on Thurstone's the fifth condition matrix for comparative judgement. A frequency matrix (F) was calculated for each of the variables. Each cell in the frequency matrix was divided by the number of participants (N) to get the matrix of ratios (P). Then, standard normal distribution value corresponding to each of the values in the matrix of ratios was calculated via Excell for finding the unit normal deviation matrix (Z). Scale values are calculated by. If there are any scale values with negative value, a negative scale value is added to all of the scale values. As a result, scale values for other stimuli are found by switching the smallest scale value to 0,00. After the analysis, mean error and  $\chi^2$  statistical values are calculated for each scaling. A significant Chi-Square value may not supply the fifth condition assumptions of the scaled data or pair-wise comparison axioms or both; or it might indicate that the scaled variable is not one-dimensional (Turgut and Baykul, 1992). Thus, scaling was done with the third condition. But, it wasn't applied in Faculties of Pharmacy and Law due to the high internal consistency of collected data.

## 4. FINDINGS

8 different characteristics required for instructors were compared in pairs by university students. Analysis regarding the third and fifth condition scaling was not given directly. Relevant scale values were given an order only. Also, internal consistency data regarding the fifth condition scaling was given for each group below.

Table 3: Internal Consistency of the Scale Values

	N	$\chi^2$
All Students	1241	234,5
Females	679	154,9
Males	562	108,9
Faculty of Education	241	184,5
Faculty of Science and Letters	192	47,4
Economic and Administrative Sciences	224	70,8
Engineering	121	72,3
Pharmacy	<b>127</b>	<b>31,3</b>
Law	<b>113</b>	<b>27,8</b>
School of Health	108	79,7
Aquaculture	115	74,1
First Year	348	184,1
Second Year	395	836,3
Third Year	274	391,7
Fourth Year	224	1052,2
Social	635	153,343
Health	235	235,000
Applied Science	371	78,542
Newly Established Universities	520	88,995
Other Universities	721	136,028

Chi-square table values  $\chi^2 (0,05;21)= 32,671$

As seen in Table 3, mean error value for the fifth condition matrix was found quite low for Faculties of Law and Pharmacy. Smaller  $\chi^2$  values of scaling than table values indicate that scale values have internal consistency.  $\chi^2$  values for the other variables are above the table value, thus scaling is done with the third condition.

The qualifications required of instructors are scaled on the basis of the data collected from 1241 student participants.

Table 4: Scale Values for Required Qualifications of Instructors and Orders of Stimuli

Qualifications	Scale	Stimuli
	Values	Order
Having good content knowledge	0,779	7
Motivating to learn	0,000	1
Having pedagogical competence	0,517	5
Being inquisitive	0,279	3
Having general knowledge	0,887	8
Being democratic	0,128	2
Using communication techniques effectively	0,339	4
Being objective	0,540	6

As seen in Table 4, listing of the required qualifications from the most to the least wanted ones shows that motivating to learn is on the top. It is followed by being democratic, being inquisitive, using communication techniques effectively, having pedagogical competence, being objective, and having good content knowledge, subsequently. The last item is found as “having world knowledge”.

Below are required qualifications of instructors shown by gender.

Table 5: Distribution of Scale Values and Stimuli Order for Required Qualifications by Participant Gender

Qualifications	Female		Male	
	Scale	Stimuli	Scale	Stimuli
	Values	Order	Values	Order
Having good content knowledge	0,853	7	0,5308	7
Motivating to learn	0	1	0,2333	3
Having pedagogical competence	0,392	5	0,7779	8
Being inquisitive	0,587	3	0	1
Having general knowledge	1,0799	8	0,4847	6
Being democratic	0,4385	4	0,1671	2
Using communication techniques effectively	0,1673	2	0,4458	5
Being objective	0,6356	6	0,295	4

According to Table 5, female participants attach the highest importance to motivating to learn, followed by effective use of communication techniques, being inquisitive, democratic, having pedagogical competence, being

objective, having good content knowledge and world knowledge, respectively. As for the male students, the ordering is found to start with being inquisitive. It is followed by other qualifications such as being democratic, motivating to learn, being objective, using communication techniques effectively, having good content knowledge, lastly having pedagogical competence.

Required qualifications of instructors are distributed by grade level of students as following.

Table 6: Distribution of Scale Values and Stimuli Order for Required Qualifications by Grade Level of Participants

Qualifications	First Year		Second Year		Third Year		Fourth Year	
	Scale Values	Stimuli Order	Scale Values	Stimuli Order	Scale Values	Stimuli Order	Scale Value	Stimuli Order
Having good content knowledge	0	1	0,694	2	0,803	7	0,384	4
Motivating to learn	1,072	7	0,000	1	0,000	1	0,000	1
Having pedagogical competence	1,476	8	0,882	4	0,398	5	0,752	8
Being inquisitive	0,839	6	1,037	7	0,322	3	0,245	2
Having general knowledge	0,667	4	0,869	3	1,222	8	0,494	6
Being democratic	0,522	3	0,912	5	0,225	2	0,348	3
Using communication techniques effectively	0,824	5	1,027	6	0,329	4	0,402	5
Being objective	0,499	2	1,363	8	0,456	6	0689	7

In Table 6, instructor qualifications are given in a decreasing importance order from participant students' point of view by first, second, third and fourth year. Among first year students, having good content knowledge is the most important quality. Then, it is followed by being objective, democratic, having world knowledge, using communication techniques effectively, being inquisitive, and motivating to learn. Having pedagogical competence is found to be the last item in the ordering. From the second year students' point of view, motivating to learn is the leading quality for instructors. The list goes on with having good content knowledge, world knowledge, having pedagogical competence, being democratic, using communication techniques effectively, being inquisitive and being objective, respectively. For the third year students, motivating to learn is the most important factor. Then, others are ordered as being democratic, being inquisitive, using communication techniques effectively, having pedagogical competence, being objective, having good content knowledge, and lastly having world knowledge. Lastly, from the fourth-year students' point of view, motivating to learn is the leading quality for instructors. It is followed by being inquisitive, democratic, having good content knowledge, using communication techniques effectively, having world knowledge, being objective and having pedagogical competence, respectively.

Besides, qualifications rated by students are analyzed by faculty.

Table 7: Distribution of Scale Values and Stimuli Order for Required Qualifications by Faculty of Participants

Qualifications	Education		Science-Letters		Pharmacy		Law	
	Scale Values	Stimuli Order	Scale Values	Stimuli Order	Scale Values	Stimuli Order	Scale Values	Stimuli Order
Having good content knowledge	0,672	7	0,414	7	0,525	5	0,717	8
Motivating to learn	0,000	1	0,199	4	0,000	1	0,489	3
Having pedagogical competence	0,402	5	0,270	6	0,549	7	0,513	5
Being inquisitive	0,064	2	0,000	1	0,469	5	0,436	4
Having general knowledge	0,170	3	0,562	8	0,678	8	0,672	7
Being democratic	0,391	4	0,105	2	0,126	2	0,000	1
Using communication techniques effectively	0,819	8	0,130	3	0,310	3	0,251	2
Being objective	0,530	6	0,213	5	0,432	4	0,525	6

Qualifications	Economic and Administrative Sciences		School of Health		Aquaculture		Engineering	
	Scale Values	Stimuli Order	Scale Values	Stimuli Order	Scale Values	Stimuli Order	Scale Values	Stimuli Order
Having good content knowledge	0,865	8	0,255	3	0,580	5	0,216	2
Motivating to learn	0,792	7	0,000	1	0,000	1	0,394	5
Having pedagogical competence	0,608	6	0,334	4	0,574	4	0,496	7
Being inquisitive	0,210	3	0,409	7	0,443	3	0,000	1
Having general knowledge	0,000	1	0,858	8	0,926	8	0,679	8
Being democratic	0,022	2	0,357	5	0,308	2	0,287	4
Using communication techniques effectively	0,245	4	0,179	2	0,713	6	0,458	6
Being objective	0,413	5	0,395	6	0,727	7	0,256	3

Table 7 displays qualifications required of instructors in a decreasing order of importance from perspectives of the students in Faculties of Education, Science-Letters, Law, Pharmacy, Economic and Administrative Sciences, School of Health, Aquaculture and Engineering. As seen in the table, the most important attribution is found as motivating to learn among students from education faculties. It is found as being inquisitive for faculties of science and letters, motivating to learn for pharmacy, being democratic for faculty of law, having world knowledge for economic and administrative sciences, motivating to learn for school of health and aquaculture, and being inquisitive for students from faculty of engineering.

The necessary qualifications from the students' point of view are also investigated by participants' field of study.

Table 8: Distribution of Scale Values and Stimuli Order for Required Qualifications by Field of Participants

Qualifications	Applied Sciences		Social		Health	
	Scale Values	Stimuli Order	Scale Values	Stimuli Order	Scale Values	Stimuli Order
Having good content knowledge	0,663	7	0,247	3	0,000	1
Motivating to learn	0,000	1	0,000	1	0,375	3

Having pedagogical competence	0,460	5	0,509	6	0,645	6
Being inquisitive	0,219	3	0,292	4	0,395	4
Having general knowledge	0,778	8	0,880	8	1,102	8
Being democratic	0,201	2	0,173	2	0,820	7
Using communication techniques effectively	0,347	4	0,400	5	0,191	2
Being objective	0,536	6	0,593	7	0,585	5

In Table 8, the qualifications are given in a decreasing order of importance from the students' point of view. As seen in the table, motivating to learn is considered the most important quality for students in both applied and social sciences, while having good content knowledge is the first factor for health students. Having world knowledge is found to be the least important factor for students from all of the three fields.

The universities founded 1 to 10 years ago are taken as newly founded ones, whereas those founded earlier than 10 years ago are taken as other universities. On this context, Mardin Artuklu and Bayburt Universities are newly founded ones, while the others are Hacettepe, METU, Ankara, Marmara, Osmangazi, Celal Bayar and Çukurova Universities. Scaling was done in parallel with such grouping.

Table 9: Distribution of Scale Values and Stimuli Order for Required Qualifications by Foundation Years of Universities

Qualifications	Newly founded		Other universities	
	Scale Values	Stimuli Order	Scale Values	Stimuli Order
Having good content knowledge	0,000	1	0,438	6
Motivating to learn	0,276	4	0,263	3
Having pedagogical competence	0,693	7	0,419	5
Being inquisitive	0,144	2	0,000	1
Having general knowledge	0,761	8	0,259	2
Being democratic	0,592	6	0,301	4
Using communication techniques effectively	0,255	3	0,655	8
Being objective	0,292	5	0,502	7

As seen in Table 9, listing of the items demonstrates that having good content knowledge is the most important qualification for participants in newly founded universities. It is followed by being inquisitive, using communication techniques effectively, motivating to learn, being objective, democratic, having pedagogical

competence and world knowledge. On the other hand, being inquisitive is the first factor for students in well established universities. It is followed by having general knowledge, motivating to learn, being democratic, having pedagogical competence, good content knowledge, being objective and using communication techniques effectively.

## 5. DISCUSSION AND CONCLUSION

This study investigates the qualifications instructors should have by using the pair-wise comparison method from the university students' point of view. Study participants come from different universities, faculties, departments, grades and have different genders. As a summary, all of the study participants report motivating to learn as the most important qualification expected from instructors. In a study carried out by Wolters and Rosenthal (2000), it is shown that highly motivated students seem more resolved, enthusiastic, willing, active, curious and insistent to learn during in-class activities than other students. As a result, highly motivated students learn more, feel themselves better and are voluntary to continue education in the future. Our study shows that motivating to learn is the most wanted quality for instructors from the students' point of view. According to Martin (2001), motivation is a power that drives, sustains and guides behaving towards a certain target. This implies that motivation is quite influential on learning. Bearing in mind motivation as the most important factor accelerating learning, it is a meaningful finding that motivation is the most preferred quality for instructors. In studies by Yıldız (2008) and Genç (2007), it needs consideration that students in higher schools of physical education and sports rate having good content knowledge as the leading qualification for instructors, it is in the 7<sup>th</sup> order in our study.

From the grade level point; first-year students prefer instructors with good content knowledge, but second, third and fourth year students opt for motivating to learn. Freshmen mostly prefer instructors that are knowledgeable in their fields. The finding in Saylan and Uyangör (1998) about the same goes parallel with the result regarding the first-year students. The students in the second, third and fourth years prefer instructors who are able to guide others and encourage researching and learning.

As for the participants' fields of studies, the students in applied sciences and social sciences want instructors who can motivate students to learn, while those in health sciences place importance to having good content knowledge.

As for rating by faculty; the students in faculties such as education, aquaculture, pharmacy and school of health choose motivating to learn as the leading quality for instructors, those in faculty of law attach utmost importance to being democratic; faculties of science and letters and engineering have a high opinion of being inquisitive, and those in faculty of economic and administrative sciences opt for having world knowledge. Particularly, the fact that students of law expect democratic instructors is a considerable finding in connection with the department they study. In another study carried out by Ergün, Duman, Kınca and Arıbaşı (2005) in different departments and universities, the leading qualification was found as being objective, democratic and respectful for any idea, which is supportive of our findings. Since research and development bear importance for fields such as science and letters as well as engineering, it is quite understandable that relevant expectation is on the top of the list. As for the students studying economic and administrative sciences, the importance they place on world knowledge can be explained with the fact that they are supposed to keep up with not only their curriculum but also national agenda, and economic and political news.

In a qualitative study by Aslan and Yakar'ın (2012); pre-service teachers placed emphasis on academic competence, social awareness, humaneness/sincerity, friendliness/good humour, attitude towards students, communication skills and professional skills. However, in present study, the order is motivating to learn, being democratic, being inquisitive, using communication techniques effectively, having pedagogical competence, being objective, having good content knowledge and lastly having world knowledge. Despite some similarities between given qualifications, the items of primary importance are different. Also in Çakmak's study (2009) on identifying Turkish pre-service teachers' views about effective teacher qualifications, the highest average was calculated for being objective; however, that item is found to be the second most important factor for first-year students only in our study.

## 6. RECOMMENDATIONS

Due to the constant communication between students and instructors in the class, students' assessment about instructors is becoming one of the most widespread methods. To this end, students' opinions can be conveyed to instructors (depending on university/faculty). Future researchers can discuss other scaling methods and personal and education-instruction related qualifications separately. In addition, the qualifications required of instructors can be studied from instructors' point of view.

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# Investigation of the pre-service physics teachers' learning approaches

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## Abstract

The purpose of this study is to investigate the effect of metacognitive self-regulation and academic self-efficacy on pre-service physics teachers' meaningful learning and rote learning approaches. 111 pre-service physics teachers were participated in this study. Research data were collected through "Metacognitive self-regulation" and "Academic self-efficacy" scales and "Learning approaches questionnaire". Stepwise multiple regression analysis revealed that metacognitive self-regulation and academic self-efficacy were significant predictors of pre-service physics teachers' meaningful learning scores and the whole model explains 43% of the variance. However, those independent variables did not significantly predict pre-service physics teachers' rote learning scores.

Keywords: learning approaches; metacognitive self-regulation; academic self-efficacy, physics education

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## 1. INTRODUCTION

Studies in science education concentrate on investigating factors that affect students' learning of science. Construction of knowledge during the learning process and establishing connections between the newly learned concepts and the concepts learned before will enable students to learn the subject better and thus become more successful. Studies that have been conducted indicate that students' learning approaches constitute one of the factors that influence learning (Cavallo & Schafer, 1994; Cavallo, Rozman, Blickenstaff, & Walker, 2003; Cavallo, Potter, & Rozman, 2004). Similarly, some studies point out that the learning approaches that students adopt are an important factor that affects the quality of their learning (Gordon & Debus 2002; Newble & Entwistle, 1986).

Ausubel (1963) defines the process of establishing connections between the newly learned concepts and the concepts learned before as meaningful learning. Ausubel (1963) emphasizes that in order for meaningful learning to take place, a) students must have prior knowledge appropriate for the subject to be learned, b) learning environments that will provide meaningful learning must be created and c) students must have a positive attitude towards meaningful learning. According to the theory, even if only one of these conditions is missing, rote learning, not meaningful learning, may take place (Cavallo, Potter, & Rozman, 2004). In meaningful learning, which is usually associated with deep learning (Entwistle & Ramsden, 1983), knowledge is constructed by relating new concepts to prior knowledge and establishing connections between concepts. However, connections are not made between concepts in the rote learning approach, which is also called the surface learning approach. Instead, only memorization takes place. It is stated in studies conducted in the fields of physics, chemistry and biology education that students with meaningful learning orientation have better meaningful understanding of

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physics, chemistry and biology (BouJaoude, 1992; BouJaoude & Giuliano, 1994; Cavallo & Schafer, 1994; Cavallo, 1996, Cavallo, Potter, & Rozman, 2004).

One of the concepts connected with meaningful learning is the concept of self-efficacy belief. Bandura (1997 p.3) defines self-efficacy belief as “belief in one’s capabilities to organize and execute the courses of action required to produce given attainments”. The belief in self-efficacy is usually handled in the context of a specific subject or field, but on a larger level, it is also dealt with as a general perception that describes ability to cope with various stressful conditions (Luszczynska, Scholz & Schwarzer 2005). Academic self-efficacy belief, on the other hand, is an individual’s belief in their ability to perform an academic task assigned to them at the desired level (Schunk, 1991; Solberg et al. 1993; Zimmerman 1995). Studies indicate that students with high self-efficacy tend to adopt the deep learning approach (Pintrich & DeGroot, 1990; Sobral, 1997; Zimmerman, Bandura, & Martinez-Pons, 1992).

Self-regulation, which is another factor that is considered to be influential on individuals’ meaningful learning approaches, concerns individuals’ being effective on their own learning processes. Pintrich (2000, p.453) defines the self-regulation concept as “an active, constructive process whereby learners set goals for their learning and then attempt to monitor, regulate, and control their cognition, motivation, and behavior, guided and constrained by their goals and the contextual features in the environment”. There are many definitions and models by various researches regarding the concept of self-regulation (Boekaerts 1996; Pintrich 2000). Studies on cognition reveal that there are learning strategies that students can use as far as academic issues are concerned. There are also learning strategies where metacognitive control and self-regulatory skills such as planning and monitoring their own learning are used to enhance their learning (Garcia & Pintrich 1994; Schraw & Moshman, 1995).

Students’ meaningful understanding of physics is important in order to increase their achievement in physics classes and better understand physics in daily life and make connections. Therefore, determination of variables that predict students’ meaningful learning approaches will contribute to the field. The purpose of this study is to investigate the effect of metacognitive self-regulation and academic self-efficacy on meaningful and rote learning approaches of pre-service physics teachers.

## **2. Method**

### *2.1. Participants*

The study was carried out with 111 Turkish pre-service physics teachers. The majority of the participants (70%) were females. The age of pre-service teachers ranged from 17-25.

## 2.2. Data collection tools

### *Metacognitive self-regulation scale (MSR)*

In the study, the self-regulation subscale of the metacognitive strategies scale of the Motivated Strategies for Learning Questionnaire, which was developed by Pintrich, Smith, Garcia and McKeachie (1991), was used in order to determine students' motivation and learning strategies. Pintrich et.al reported its Cronbach alpha reliability coefficient as  $\alpha = .79$ . MSR which is adapted into Turkish by Sungur (2004), is a seven point Likert type scale ranging from "not at all true of me" to "very true of me" and Cronbach alpha reliability coefficient of the adapted scale was reported as  $\alpha = .81$ . The minimum and maximum scores that a student could receive from this 12 item scale varied between 12 and 84. A sample item from the scale is: "When I study for this physics course, I set goals for myself in order to direct my activities in each study period." In this research the Cronbach alpha reliability coefficient of the MSR was calculated as  $\alpha = .82$ .

### *Academic self-efficacy scale (ASE)*

The academic self-efficacy scale developed by Jerusalem and Schwarzer (1981) consists of 7 items. The scale was developed to determine individuals' belief in executing an academic task successfully. High scores received from the academic self-efficacy scale indicate that individuals strongly believe that they will be able to perform an academic task successfully. The 4-point likert type scale involves the statements "Describes me well", "Describes me usually", "Describes me somewhat", "Describes me not at all". Minimum and maximum scores that can be received from the scale vary between 7 and 28. Sample items from the academic self-efficacy scale are as follows: "I exhibit a relaxed attitude in tests because I have confidence in my intelligence". The Cronbach Alpha reliability coefficient of the original scale was .87. The academic self-efficacy scale was adapted to Turkish by Yılmaz, Gurçay & Ekici (2007). The Cronbach Alpha reliability coefficient of the adapted scale was reported as .79 (Yılmaz, Gurçay & Ekici, 2007). In this study, on the other hand, the Cronbach Alpha reliability coefficient was found to be .81.

### *Learning approach questionnaire (LAQ)*

The learning approaches questionnaire, which was developed by Cavallo (1996), tries to determine whether students are rote learners or meaningful learners. Items in the learning approach questionnaire refer to students' study attitudes and processes in learning physics. The learning approaches questionnaire consists of two sub-dimensions: rote learning approach questionnaire (LAQ-R) and meaningful learning approach questionnaire (LAQ-M). The questionnaire, which is composed of 22 items, is of four-point likert type ranging from "I strongly agree" to "I strongly disagree". Each of the subdimensions (LAQ-M and the LAQ-R) consists of 11 items. Minimum and maximum scores that can be received from both the rote learning approach questionnaire and the meaningful learning approach questionnaire vary between 11 and 44. The questionnaire indicates that students who get high scores in the meaningful learning questionnaire have meaningful learning approach whereas students who get high scores in the rote learning questionnaire have the rote learning approach. Sample items for the rote and meaningful learning approach questionnaires are respectively: "I tend to remember things best if I concentrate on the order in which they were presented by the instructor" and "While I am studying, I often think of real life situations to which the material I am learning can be applied". The Cronbach Alpha reliability coefficient of the original questionnaire was .76 for the rote learning approach questionnaire and .81 for the meaningful learning approach questionnaire (Cavallo et al., 2003). The questionnaire was adapted to Turkish by Yenilmez (2006). The Cronbach alpha coefficient of the adapted questionnaire is .62 for rote learning and .78 for

meaningful learning. In this study, on the other hand, the Cronbach alpha coefficient for rote learning was calculated to be .64 and for meaningful learning .79.

### 3. Results

Descriptive statistics was used to determine the pre-service physics teachers' meaningful learning orientation, rote learning orientation, use of metacognitive self-regulation, and academic self-efficacy belief levels. Mean, standard deviation, kurtosis, and skewness values regarding all these variables are given in Table 1. It was determined that the students' mean scores of the meaningful learning, and academic self-efficacy were high, but pre-service physics teachers' rote learning, and metacognitive self-regulation scores were at a moderate level.

Table 1. Descriptive statistics

	LAQ-M	LAQ-R	MSR	ASE
Mean	33.78	25.92	41.28	19.11
Std. Dev.	3.99	3.80	6.43	3.08
Skewness	0.02	-.26	-.56	-.08
Kurtosis	-.02	-.45	.22	-.12
N	111	111	111	111

Pearson correlation analysis was performed among the variables of meaningful learning, rote learning, use of metacognitive self regulation and academic self-efficacy. As can be seen from Table 2, a low level, negative and statistically significant correlation was found between the meaningful learning approach and the rote learning approach. However, low level, positive and statistically significant correlations were found between the meaningful learning approach and metacognitive self-regulation and academic self-efficacy.

Table 2. Pearson Correlation Analysis

	LAQ-M	LAQ-R	MSR
LAQ-R	-.21*		
MSR	.34*	-.19	
ASE	.31*	-.17	.16

\* Correlation is significant at the .05 level.

Stepwise multiple regression analysis was performed in order to determine how well metacognitive self-regulation and academic self-efficacy predict pre-service physics teachers' meaningful learning and rote learning approaches. The assumptions for multiple regression analyses were tested before the analyses were conducted. Accordingly, it was seen that the sample size was sufficient according to the formula:  $N > 50 + 8m$  (Tabachnick & Fidel, 1996) considering the number of independent variables ( $111 > 66$ ). Therefore, there was no violation of this assumption. Moreover, VIF values were also calculated to examine the multicollinearity assumption. It was

determined that VIF value was lower than 10. This result shows that multicollinearity assumption was met. Moreover, normality and linearity assumptions were also met.

According to the results of the stepwise multiple regression analysis, which was performed to determine the effects of the pre-service physics teachers' use of metacognitive self-regulation and academic self-efficacy beliefs on their meaningful learning approaches, the main variable that accounted for the meaningful learning approach was the use of metacognitive self regulation ( $R^2 = .34$ ;  $F(1, 104) = 13.82$ ,  $p < .05$ ). It was found that when academic self-efficacy was added to the model, these two variables predicted 43 % of the total variance of the meaningful learning approach ( $R^2 = .43$ ;  $F(2, 103) = 11.63$ ,  $p < .05$ ). The direction of the correlation between the meaningful learning approach and metacognitive self-regulation in physics and academic self-efficacy was positive (Table 3.).

Table 3. Stepwise Multiple Regression Analyses for the Meaningful Learning Approach

Model	B	Std. Error	Beta	t	Sig.	Collinearity Statistics	
						VIF	
1	(Constant)	24.995		10.449	.000		
	MSR	.214	.057	.342	3.718	.000	1.000
2	(Constant)	19.543		6.565	.000		
	MSR	.190	.056	.305	3.391	.001	1.021
	ASE	.335	.115	.261	2.905	.004	1.021

Dependent Variable: Meaningful Learning Approach

Similarly, stepwise multiple regression analysis was conducted to determine the effects of pre-service physics teachers' use of metacognitive self-regulation and academic self-efficacy beliefs on their rote learning approach. According to the results of this analysis, neither of the independent variables accounted for the variance of the rote learning approach by providing a statistically significant contribution ( $R^2 = .24$ ;  $F(2, 103) = 3.02$ ,  $p > .05$ ). Moreover, the direction of the correlation between the rote learning approach and metacognitive self-regulation in physics was negative (Table 4.).

Table 4. Stepwise Multiple Regression Analyses for the Meaningful Learning Approach

Model	B	Std. Error	Beta	t	Sig.	Collinearity Statistics
						VIF
(Constant)	33.630	3.161		10.641	.000	
1						
MSR	-.102	.059	-.168	-1.720	.089	1.020
ASE	-.182	.121	-.146	-1.498	.137	1.020

Dependent Variable: Rote Learning Approach

#### 4. Conclusion & Discussion

The purpose of this study is to investigate the effects of metacognitive self-regulation use and academic self-efficacy on pre-service physics teachers' meaningful and rote learning approaches. Pre-service physics teachers' meaningful and rote learning approaches, use of metacognitive self-regulation and academic self-efficacy beliefs were studied descriptively.

According to the results of the descriptive analysis, pre-service physics teachers use meaningful learning approach at a high level but they also tend to use the rote learning approach at a medium level during physics learning process. This indicates that though at a medium level, they prefer to learn via the rote learning approach but that when they learn new concepts, instead of rote learning, they prefer to learn by relating them to the previously learned concepts or by establishing connections between the concepts. However, it is seen that when pre-service teachers learn a subject, they use self-regulation skills such as planning, self-monitoring and making judgments about their learning at a medium level. Moreover, it is observed that pre-service physics teachers' academic self-efficacy belief, i.e. their beliefs regarding how well they will be able to perform a task assigned to them when they learn an academic subject, is at a medium level.

Pearson correlation analysis was conducted among the variables of meaningful learning, rote learning, academic self-efficacy and use of metacognitive self-regulation. According to the results of this analysis, a low level, negative and statistically significant relationship was found between the meaningful learning approach and the rote learning approach. This can be interpreted to mean that as pre-service physics teachers' tendency to learn by making connections among concepts increases, their tendency towards rote learning, which means storing concepts in their memory without establishing connections in their minds, is likely to decrease. Cavallo et. al (2004) also found a negative and statistically significant correlation between the meaningful learning approach and the rote learning approach. Moreover, a significant correlation was found between the meaningful learning approach and metacognitive self-regulation. This can be interpreted to mean that as pre-service physics teachers' use of metacognitive self-regulation such as making plans, monitoring their learning and making judgments about their learning in the learning process increases, they may be inclined towards the meaningful learning approach. Various studies have emphasized that learning approaches are related with metacognitive self-regulation processes (Gordon & Debus, 2002; Case & Gunstone, 2002). Case and Gunstone (2002) stated that there is a

significant correlation between the meaningful learning approach and self regulation. Furthermore, a low level, positive and statistically significant correlation was found between the meaningful learning approach and academic self-efficacy. This can be interpreted to mean that pre-service physics teachers who learn by making connections between the concepts they have learned before and the concepts they have learned recently, i.e. who use the meaningful learning approach, have a strong belief in their ability to perform a task given to them successfully. Some studies point out that individuals with high self-efficacy prefer the meaningful learning approach (Bandura, 1993; Hoy, 2004).

According to the results of the stepwise multiple regression analysis, pre-service physics teachers' use of metacognitive self-regulation and academic self-efficacy are influential on their tendency towards meaningful learning. Another result of the study is that these variables do not have an effect on pre-service physics teachers' inclination towards rote learning. It was found that the variable that best predicted the meaningful learning approach was the use of self-regulation. In conclusion, it can be said that the use of metacognitive self regulation is an effective factor on pre-service physics teachers' having the meaningful learning approach. Another factor that is influential on pre-service physics teachers' having meaningful learning approach is their academic self-efficacy beliefs. Case and Gunstone (2002) argues that some factors concerning course design may support metacognitive development. Therefore, if physics classes help students make plans, monitor their learning and make judgments about their learning; this will cause them to be inclined to meaningful learning. Moreover, if pre-service physics teachers attend learning environments of this kind in pre-service education, this will create the quality of the learning environments that they will form in the future. Likewise, it is evident that improvement of pre-service physics teachers' academic self-efficacies will increase their inclination towards meaningful learning. Activities supporting sources of self-efficacy as stated by Bandura (1997), namely direct experience, indirect experience, oral persuasion and psychological state; can be used to improve pre-service physics teachers' academic self-efficacies.

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4<sup>th</sup> International Conference on New Horizons in Education

# Investigation of the relationship between self-esteem and metacognitive awareness level of 9th grade students

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## Abstract

This study was conducted with the aim of ascertaining whether there is a relationship between the self-esteem levels and metacognitive awareness in teenagers. Further, it was investigated whether gender and school type had any effect of the level of self-esteem and metacognitive awareness. With this aim, a sample of students attending one public school and one private school located in the municipal district of Çankaya in the province of Ankara. The study sample consisted on 211 9th Grade students. The Rosenberg Self-Esteem Scale and Metacognitive Awareness Scale were used to collect data for the research. The data of the research was analysed with a t test and Pearson correlation analysis. Results of the study suggest that there is a medium level relationship between self-esteem and metacognitive awareness in upper secondary level students.

*Keywords:* Metacognition awareness, self-esteem.

## 1. Introduction

The term metacognition refers to a learner's knowledge about his or her processes of cognition, and the ability to control and monitor those processes as a function of the feedback the learner receives via outcomes of learning (Baker and Brown, 1984; Schwartz, et al., 2004). The term metacognition was originally coined by Flavell in the early 70's who described it as "*knowledge and cognition about cognitive phenomena*" (Flavell, 1979). The term metacognition includes two broad categories of mental activities: self-appraised knowledge about cognition and self-management of one's thinking (Livingston, 1997; Cross and Paris, 1988). Metacognition may be more easily understood as "*awareness of how one learns; awareness of when one does and does not understand; knowledge of how to use available information to achieve a goal; ability to judge the cognitive demands of a particular task; knowledge of what strategies to use for what purposes; and assessment of one's progress both during and after performance*" (Gourgey, 1998; Gourgey, 2001). Metacognition refers to thoughts about thinking, cognition, and mood (Semerari et al., 2003).

In general term, self esteem is considered as the feeling of personal value (Rosenberg, 1965) reached by the result of the evaluation of individual's attitude toward oneself, personality characteristics, people's behaviors and attitudes towards them and individual's interest in himself (Açak ve Karademir, 2011). Apparently, high self-esteem is a state of mind that can potentially boost individual's feelings of self-worth, thus providing the impetus

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for achievement and life satisfaction. A great deal of the literature argues that having high self-esteem seems to be a key academic achievement, psychological well being, and other positive outcomes in people's lives (Brett, 2007). Self-esteem involves a person's view about his or her own worth and comprises cognitive, affective and social components that are thought to evolve as individuals mature, and as a result of personal interactions with significant others and life experiences (Price, 2007).

Metacognitive belief moderated the association between stress and resultant negative affect, and negative affect and suspicious thinking. Individuals who placed greater emphasis on controlling their thoughts had greater variability in their self-esteem during the stress condition, which in turn predicted the severity of their attenuated psychotic phenomena (Palmier-Claus et al., 2011). The approach of metacognition examines the variables of self-awareness of cognition of an individual, their monitoring and organisation and the choices and changes of preference for strategy of the individual (Karakelle and Saraç, 2010).

This study aims to investigate the relationship between students' general self-esteem and metacognitive awareness. Further, the differences between the variables of gender and school type for self-esteem and metacognitive awareness were also investigated.

## **2. Method**

### *2.1. Research Model*

The relational screening model was used in the study. The relational screening is conducted with the aim of obtaining clues as to cause and effect and to ascertain the relationship between two or more variables (Büyüköztürk, et al., 2008). The relationship between self-esteem and the level of metacognitive awareness in upper secondary level students was calculated. The general self-esteem and level of metacognitive awareness was also investigated in regard to gender and school type.

### *2.2. Research Sample*

The sample of the study comprised of a public high school and private high school within the boundaries of the district of Çankaya of the province of Ankara. The study sample consisted of 211 9<sup>th</sup> Grade students. Of the sample, 56.9% of the students were female and 43.1% were male and 52.6% of the sample attended private school, while 47.4% attended public school. Of the students, 10% had no siblings (only child), 57.8% had one sibling and 25.6% had two siblings. It was found that the age groups of the parents of the students in the sample were as follows: 38.4% of mothers were in the 36-40 age group and 34.1% were in the 41-45 age group; 46.4% of fathers were in the 41-45 age group and 37.4% of fathers were over the age of 46. The education level of parents of the students in the study were as follows: 19.0% of mothers were primary education graduates, 38.4% were high school or equivalent graduates and 37.0% were graduates of tertiary education; 6.2% of fathers were primary school graduates, 28.4% were high school or equivalent graduates, 52.6% were graduates of tertiary education and 12.8% of fathers had post-graduate education degrees.

### 2.3. *The Instruments*

#### 2.3.1. *The Rosenberg Self-Esteem Scale (RSES)*

The Rosenberg Self-Esteem Scale (RSES) was originally developed by Rosenberg (1965). RSES is a widely used unidimensional measure of global self-esteem and consists of 10-items with a 4-point Likert-type scale ranging from “strongly disagree” to “strongly agree”. The scale has five positively (e.g., “I am proud of myself”), and five negatively worded items (e.g., “I certainly feel useless at times”). Scores can range from 10 to 40. People who have the highest self-esteem get 40 from the scale, and those who have lowest self-esteem get 10 points. Items 3, 5, 8, 9, and 10 are reverse scored. Rosenberg (1979; as cited in Chubb, Fertman, and Ross, 1997) studied the scale's reliability and validity on two small college samples and had two week test retest reliability coefficients of  $r = .85$  and  $.88$ . Also, evidence for validity was provided by correlating the instrument with Coopersmith Self-Esteem Inventory (Coopersmith, 1967,  $r = .60$ ). Çuhadaroğlu (1985) adapted Rosenberg's Self Esteem Scale to Turkish adolescents. In the Turkish version, the rating of the scale ranges from “totally right” to “totally wrong” with items 3, 5, 8, 9, and 10 reversely scored. Çuhadaroğlu (1985) reported the correlation coefficient between psychiatric interview scores and scores of RSES as  $.71$ . Test-retest reliability of the scale was also  $.75$ . Another validity evidence was provided by Çankaya (2007). It was reported that there was a significant correlation between RSES and Self-Concept Inventory ( $.26$  for the whole group,  $p < .001$ ;  $.26$  boys and girls  $p < .05$ ). In the present study, an alpha coefficient of  $.86$  ( $N=211$ ) was obtained for self-esteem scale.

#### 2.3.2. *Metacognitive Awareness Inventory for Children (Jr. MAI-Form B)*

The Turkish version of the Jr. Metacognitive Awareness Inventory- Form B was used for the study (Sperling et al., 2002). Jr. Metacognitive Awareness Inventory-Form B (Jr. MAI-B), a self-report inventory, was developed as a measure of general metacognitive awareness of children in grades 6-9. The Jr. MAI was developed from a previous instrument, the Metacognitive Awareness Inventory (MAI), used with adult populations (Schraw and Dennison, 1994). Jr. MAI is a 5-point likert scale ranging from (1=never; 5 =always) the frequency with which they engage in cognitive behaviours when learning and studying. The original inventory consists of 18 items ( $\alpha=.82$ ). The Turkish version of Jr. MAI was adapted by Karakelle and Saraç (2007). The Turkish version of the inventory consisted of 18 items. The internal consistency reliability for the scale was  $.80$  and test-retest reliability of the Turkish inventory was  $.72$  ( $N = 373$ ,  $p < .01$ ). The factor analysis for the Turkish version yielded one factor solution; the authors recommended using the scale as an overall measure of metacognitive awareness. For this study, the internal consistency reliability of the scale was  $.86$  ( $N=211$ ).

### 2.4. *Analysis of the Data*

The data concerning the levels of general self-esteem and metacognitive awareness obtained for upper secondary level students were analysed by using the SPSS 18.0 program. The Pearson Correlation Coefficient was used to calculate the relationship between general self esteem and level of metacognitive awareness. Further,

an independent sample t test was used to investigate general self-esteem and metacognitive awareness levels according to gender and school type.

### 3. Findings

This section includes the findings of the results of the statistical analysis appropriate to the aims of the study.

Table 1: Correlation Between Self-esteem and Metacognitive Awareness

	N	$\bar{X}$	S	r	r <sup>2</sup>	p
Self-esteem	21	19.53	5.31	0.421	0.17	.000*
Metacognitive awareness	21	64.36	13.78			

\*p<.01

Review of Table 1 shows that there is a significant relationship between the scores of self-esteem and the metacognitive awareness levels of 9th Grade students,  $r=0.421$ ,  $p<.01$ . According to this result, it can be stated that as the level of self-esteem increases, the level of metacognitive awareness increases; however, the relationship is of a medium level. When the determination coefficient is considered ( $r^2=0.17$ ), it can be seen that 17% of the total variance (variability) for metacognitive awareness levels is caused by the level of self-esteem.

Table 2. Comparison of Self-esteem and Metacognitive Awareness Scores According to Gender

Gender	Self-esteem						Metacognitive awareness					
	N	$\bar{X}$	S	sd	t	p	N	$\bar{X}$	S	sd	t	p
Female	120	19,75	5,33	209	,687	,493	120	66,20	12,73	209	2,23	.026*
Male	91	19,24	5,30				91	61,95	14,78			

\*p<.05

Review of Table 2 shows that there is a significant difference between the levels of metacognitive awareness between genders,  $t(209)=2.23$ ,  $p<.05$ . The level of metacognitive awareness of females ( $\bar{X}=66.20$ ) were higher than that for male students ( $\bar{X}=61.95$ ). The level of self-esteem in students was not significant between the genders,  $t(209)=.687$ ,  $p>.01$ .

Table 3. Comparison of Self-esteem and Metacognitive Awareness Scores According to School Type

School type	Self-esteem						Metacognitive awareness					
	N	$\bar{X}$	S	sd	t	p	N	$\bar{X}$	S	sd	t	p
Public	100	19,66	5,27	209	.33	.738	100	66,36	10,55	209	2	.046
Private	111	19,41	5,37				111	62,57	15,98			

\*p&lt;.05

Review of Table 3 shows that there is a significant difference in the levels of metacognitive awareness levels according to type of schools,  $t(209)=2$ ,  $p<.05$ . The level of metacognitive awareness in students attending private schools were more positive ( $\bar{X}=62.57$ ) in comparison with that of students attending public schools ( $\bar{X}=66.36$ ). This finding can be considered as a significant relationship between metacognitive awareness and type of school. The level of self-esteem of students was not significant in terms of the type of students,  $t(209)=.33$ ,  $p>.05$ .

#### 4. Result and Discussion

Metacognitive awareness, knowledge and skills are essential components of successful learning since they can guide the choice of strategies, and where necessary, provide for their adjustment (Sternberg, 1997). This paper focused on self-esteem and certain aspects of knowledge of cognition components of metacognition.

According to the first finding of the study, there is a significant medium level relationship between the metacognitive awareness level and self-esteem of 9th Grade students. Studies show that the establishment of self-esteem (Efklides and Tsiora, 2002) and psychological state (Efklides and Petkaki, 2005) have an impact on the experience of metacognition. Compared with persons with low self-esteem; persons with high self-esteem prefer more challenging activities, are more confident that their efforts will lead to success, are less susceptible to emotional mood swings, are less vulnerable to depression, are more receptive to favourable feedback from interaction partners, report less negative affect and are unlikely to experience negative affect when they perceive that others rank above them socially (Yelsma and Yelsma, 1998). According to Silverstone and Salsali (2003), the most important aspect of psychological health is self-esteem, as low self-esteem leads to a lowered sense of self and psychological disorders. A perception of low self worth in teenagers is a disposition factor that may lead to various psycho-pathologies (Kuyucu, 2007). In recent years, studies investigating certain psychological disorders such as obsessive-compulsive disorders, attention deficiency, stress, anxiety and schizophrenia in terms of metacognitive functions are increasing (Karakelle and Saraç, 2010). In this scope, findings of these studies show that several metacognitive treatment techniques are developed for various psychological disorders (Clark, 2000; Mather and Cartwright-Hatton, 2004; Simons, et al., 2006; Fisher and Wells, 2008). According to Nelson (et al., 1999), metacognition can have widespread implications for research in clinical psychology, both in terms of explaining and potentially controlling the positive symptoms of clinical syndromes. Cognitive-behavioural approaches have tended to focus on a limited range of cognition in explaining psychological disorder. In particular, the focus has been dominated by a consideration of the content of thoughts and beliefs rather than cognitive processes such as attention. It is also unclear how key aspects of cognition such as beliefs and their effects on information processing should be represented in information processing terms. Beliefs about the social and physical predominantly in cognitive models of anxiety and depression and treatment focuses on modifying the content of these anxiogenic or depressogenic thoughts and beliefs (Wells and Purdon, 1999).

A further finding of the research is that there are no gender related differences in self-esteem and metacognition awareness in 9th Grade students. It was observed that there is no difference in self-esteem according to gender. Review of the study by Balat and Akman (2004) show that findings were similar and in support of the findings of this study, stating the average scores of self-esteem were high for both genders and having no difference between the genders. The study by Arıçak (1995) on university students also showed no significant difference between genders in regard to self-esteem. Other studies investigating the relationship between depression and self-esteem in teenagers also found no differences in gender (Gür, 1996). Findings in Emil (2003) and Çankaya (2007) concerning self-esteem claim no differences in the total scores between males and females. The study finds that there is a relative significant difference between female students and male students in the gender variable concerning the level of metacognitive awareness. The study conducted by Topçu and Yılmaz-Tüzün (2009) finds that females were positively correlated with knowledge of cognition and regulation of cognition in both 4th and 5th grades and 6th through 8th grades. Liliana and Laviniab (2011)'s study show that the differences between boys and girls regarding metacognitive skills seem to occur solely for specific metacognitive knowledge and skills. The findings indicate that generally both girls and boys use their metacognitive skills in learning.

Investigation of the school type variable, the study finds that the level of self-esteem shows no differences according to school type. Results of the study by Balat and Akman (2004) show similarities with this study as it was found that levels of students self-esteem do not show differences between public school students and private school students. Balat and Akman (2004) find that the level self-esteem of teenagers do not differ according to socio-economic status. However, a significant difference is found for level of metacognitive awareness of students according to school type. The average metacognitive awareness of students attending public schools are higher than that of students attending private schools. This finding should be supported with other studies. In the study by Karakelle (2012), it is stated that all variables are effective at various levels when explaining the level of metacognitive awareness; it is also stated that the variables also affected by the effects of the other variables.

In conclusion, it can be stated that there is a medium level relationship between self-esteem and level of cognitive awareness of teenage 9<sup>th</sup> Grade students attending state and private schools in the Ankara district of Çankaya. Although there were no differences found in self-esteem according to gender or school type, differences were found in the level of metacognitive awareness in terms of gender and school type.

Metacognitive awareness allows the individual to identify their thoughts as their own and creates a foundation for theoretical concepts such as self-efficacy, self-regulation and self-awareness and self-assessment, which are frequently used in the field of psychology (Karakelle and Saraç, 2010). Metacognition plays a key role in effective self-managed learning and research to further understand how other dimensions of metacognition such as goal-setting, attribution, self-monitoring, resourcefulness, self-motivation and strategic choice can contribute toward effective learning is recommended (Gravill, Compeau and Marcolin, 2002). It is strongly recommended that metacognitive processes be researched according to different variables to bring new perspectives to metacognition, as it is a process which affects the daily life of individuals in many aspects.

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4<sup>th</sup> International Conference on New Horizons in Education

# Investigation on perception of mothers about social support who have children with physical disabilities

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## Abstract

This study is planned to determine the perceptions of social support of mothers while growing up their children with physical disabilities. This study included 49 children and their mothers. Family Support Scale-FSS was applied to mothers. (Family Support Scale-FSS) which was developed by Kaner. Of the 49 children, 20.4% were in between 1-6 years of age, 32.7% were in between 7-12 years, 46.9% were in between 13-18 years of age. There was significance difference in variance analysis in mothers' knowledge support ( $p=0.006$ ), and FSS total score ( $p=0.038$ ) in between groups of the mothers who have children in preschool (1-6 years), mid childhood (7-12 years) and teenage (13-18years) period. The perceptions of social support of mothers while growing up their children with physical disabilities may support to determine the services which will be provided to families in the rehabilitation process and may increase the quality of life of the families as well as the children.

Keywords: Children with physical disabilities, family support, mothers of children with physical disabilities, social support

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## 1. INTRODUCTION

To have children with disability may affect both mothers and fathers in physical and emotional aspects (Bailey & Simeonsson, 1988; Bramlett & Blumberg 2007). This study is planned to determine the perceptions of social support of mothers while growing up their children with physical disabilities

## 2. MATERIAL-METHOD

In order to determine the perception levels of social support in mothers of children with physical disabilities, this study included 49 children with physical disabilities and their mothers. Family Support Scale-FSS was applied to mothers. (Family Support Scale-FSS) which was developed by Kaner (Kaner S 2003). FSS have five

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subsections entitled as Emotional Support-ES, Information Support-IS, Caring Support-CS, Close Relationship Support-CRS, Financial Support-FS. Datas were analyzed using SPSS 18.0 statistical programme.

### 3. RESULTS

Of the 49 children 22 (44.8 %) were girls and 27 (55.2%) were boys and mean age of all children were  $11.29 \pm 4.43$  years. Of the 49 children, 10 (20.4%) were in between 1-6 years of age, 16 (32.7%) were in between 7-12 years, 23 (46.9%) were in between 13-18 years of age. Mean age of the mothers were  $40.22 \pm 8.09$  years and 38 (77.6%) of mothers were graduated from primary school and 46 (93.3%) were housewives, while 4 (8.2%) had more than one children with physical disabilities. There was significance difference in variance analysis in mothers' knowledge support ( $F=5.697$ ,  $p=0.006$ ), and FSS total score ( $F=3.508$ ,  $p=0.038$ ) in between groups of the mothers who have children in preschool (1-6 years), mid childhood (7-12 years) and teenage (13-18 years) period. Scheffe significance test indicated that the mothers with preschool age group (1-6) declared more knowledge support compared with the midchildhood (7-12) and teenage(13-18) period group. Similarly, ADO toplam scores, the mothers with preschool age children group perceived more support than the other groups. In addition, the perception of the mothers did not differ according to gender of the their child.

### 4. DISCUSSION

The youngest group- preschool group in this study needed to know and perceived more support than the other groups. It may be due to the older groups may already have it as they live with the disability longer than the preschool group. To have detailed information about the families, to take into consideration of the age of the child will help to determine the requirements and support to families of children with physically disabled children (Lily, 1997; Reinhard, Given, Petlick, & Bemis 2008).

### 5. CONCLUSION

The perceptions of social support of mothers while growing up their children with physical disabilities may support to determine the services which will be provided to families in the rehabilitation process and may increase the quality of life of the families as well as the children.

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4<sup>th</sup> International Conference on New Horizons in Education

# In art education, soul of materials: soap sculptures

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**Abstract**

Intelligibility and adoption of art is possible with art education. Art education teaches visual and tactile sensation of thinking methods. While these methods purpose to become skilful at self-understanding and expressing him/herself, realising importance of details, would be expected. When emotions and thoughts turn into visual and tactual performance, concretization efforts turns intellectual activities into acts. By way of art, imagination power is improved. Designing in mind activates knowledge. In this way people become skilful at self-understanding and expressing themselves. Despite three dimensional practising has importance for art, it is not allowed to exercise, as it should be. About three dimensional practices, first thing come to mind is sculpture. Hardly in our country, sculpture has not been taken an interest deservedly. In process of time sculpture will be adopted and endeared by different practises. Providing mental clarity and energy transition in act images contribute art and education, in part of a big change.

This paper shares exercised works in 2011-2012 education period in Marmara University Atatürk Faculty of Education Classroom Teaching Department during the Art Education.

**Key words:** Art education, Soap, Sculpture

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**1. Main text**

Understanding and adopting the art is achievable through art education. Under this education, individuals can be trained on visual and tactile sensing and thinking methods. The individual becomes skilful at self-understanding and self-expression, and is expected to become aware of the fact that also the details are important. While feelings and thoughts are transformed into visuality and tactility through sensing, mental activities are transformed into action through concretisation attempts. The imagination awareness would be increased by means of the art. When creating the design mentally, the information in memory is activated. Thus, the basis for self-knowledge and self-expression skills is formed.

Always attaching importance to and directing individuals' developments, resulting in improvement in their respective creativity, can be attained through social awareness and education effect. As a result of using and

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assessing new materials, creativity will come into view and fruitful and useful products will be concretised. Imitating and reproduction is important to improve the skills, in any field whatsoever. But, if something can be generated beyond imitation or reproduction, then one can make mention of added value. Incorporating technical progress to each work will result in professional outcomes, not amateur works. It should be noted that patient, motive, interest, determination and commitment are keys to the success. When imagination and imitation become integrated, problem solving ability will be improved, as well. Benefitting from various materials in a well-organised training environment will keep the individual away from stress, thus enabling him/her to attain emotional satisfaction. Using the materials in different and various ways will support the individuals to maintain success by developing their achievements positively. Experimental richness gained through using different materials contributes to widening the individuals' creativity horizons and also to evolution of the sixth sense.

Although three dimensional applications in art are important, such works are not mentioned as much as is required. Three dimensional works recall sculpture works at first step. However, in our country the field of sculpture has not drawn as much attention as it deserves. It is intended to popularise the sculpture art and make it adopted during the course of time through different practices. As a matter of fact, Atatürk, the Head Teacher, mentioned the sculpture art during his speech made in Bursa on January 22, 1923:

“It seems that our friend meant sculpture when he mentioned monuments. Any nation seeking to attain civilization, to develop and progress shall, unavoidably, sculpture and train sculptors. Those who claim that erection of monuments here and there as historical monuments is unholy are people who failed to quest and read the religious provisions, as properly as they should. When the Prophet announced God's commandments, people listening to him had idols in their minds and conscience. The Prophet had to throw away those stone figures and delete them from those people's pockets and hearts, in order to call people to believe in God. As the Islamic facts have been fully understood and the evolving conscience faith has been proven to be right by strong facts, assuming and believing that some intellectuals would still worship such stone figures implies to insult the Islamic world. This intellectual and religious nation will improve sculpture, one of the motives of development, at highest level and the memories of our ancestors as well as of our children will reach large masses through sculptures to be erected throughout the country.” With Atatürk sculptures erected immediately after the proclamation of the Republic and following the speech, the Turkish nation began to meet, get accustomed to and like sculptures. “Considering the prevailing circumstances of the period, it was required to start sculpture plastic works in Turkey right from the first step, by launching certain, almost revolutionary, implementations/measures by the government of the Republic, due to the taboos people had as regards to sculpture as well as lack of necessary environment, practice areas and possibilities and lack of qualified sculptor at level and in number to ensure the targeted development in this field, although four well-qualified sculptors, namely İhsan Özsoy, İsa Behzat, Mahir Tomtuk and Nijad Sirel, were trained within the period from Sanayii Nefise School to the proclamation of the Republic. Although the Turkish primary school curriculum contains the subject of sculpture, it is well known that the subject is not handled with required interest and attention because of the teachers' adverse approach to the subject. Whereas there are notable sculptors educated during Republic period. It needs to mention herein some major of them: Osman Yervant Efendi, Hadi Bara, Zühtü Müridoğlu, Hüseyin Anka Özkan, Sadi Çalık, Hüseyin Gezer, İlhan Koman, Ali Teoman Germaner, Burhan Alkar, Ernur Tüzün, Hakkı Karayiğitoğlu, Haluk Tezozar, Mehmet Aksoy.

Showing sensitivity and attention to three-dimensional works (sculpture, large-scale works) at each level of formal and non-formal training & education is of great importance with regard to our future. Thus, sophomores of Classroom Teaching Department, Primary School Branch, Atatürk Faculty of Education at Marmara University made sculptures using soap material, in the Art Education class. The first thing coming to mind when talking about soap is the solid or liquid material we use to wash our hands, which can be bought at affordable

prices. It is found that a substance obtained by mixing potassium with oil was mentioned on clay tablets found in Mesopotamia, which dates from III. Century BC; this finding is evidencing the old and indispensable place soap has in our lives. Soap is a chemical substance composed of the reaction of fatty acids and bases. If required, the cleaning agent can be removed and it can be used as a work of art. It is quite easy to give form to a non-solid, soft soap. For an intact (rectangular) soap bar, the theme to be created is defined as the first step. The theme, a figure or a scenery, plant etc, should be thoroughly studied. The harmony between the teacher and the student constitutes the basis for the shaping plan for the material. A table or a bench shall be covered with newspaper, cloth or linoleum. Rough sketch of the object studied shall be prepared. During the study, the low, high, deep or shallow parts of the object shall be identified. Soap surface can be of different nature – smooth, splintery or rough. Materials to be used when working with soap are available ones during everyday life. They include modelling tools as well as wire, spatula, metal brush, needle, fork, comb, screw, nail, toothpick and similar. The important point is to select them appropriate for the artist's age. Soap residues shall be separately used.

When making a sculpture using soap, the individual is dependent on the size and colour of soaps offered at supermarkets and shopping malls. Anyway, two rectangular soap bars can be combined to increase the size of the material. If soap can be produced at home, the size can be bigger. Soap producers can also produce soaps for children with different sizes and colours. Producers can hold contest for soap shaping and sculpturing and introduce the winning form to the market, and give support to this field of art. After forming, soap can be painted with different colours and water based varnish can be applied to improve the duration of colour. Ensuring energy transition to ways of action in order to attain a widespread power of change shall make contribution primarily to the art and education.

The most difficult thing during this process of creativeness is to be able to leave the fears out. The fear of making a mistake, the anxiety of becoming incapable, the desire of being in safety constantly, all of those mentioned sentiments pointing the lack of trust as of obstacles profoundly settled down in the sense of creation shall force the designer to grasp the initial idea instead of seeking the solution. Being conditioned to the achievement in our mind, even if possibility of “the failure” to be an aspect of testing, this is not be desired. However artist-designer has not only chance of testing but also the chance of failure (Inceoğlu, 2012, p. 30).

While starting the study the individuals having low self-esteem shall be encouraged. It shall make feel that this is not a competition and it is satisfactory to express something. Also it is expressed that it is not required whether the product resemble something or not and to interrogate whether the product is the same or not and also the plotting can be effective. Timid and careless touching which influentially express the sense shall turn into the way of determined and impassioned and free. Beside the impact of products which free of details and based on the simplicity shall become different.

The first form of the design gives clues of the whole. Maturation of thought through design is possible with the help of study. Every single design includes new quests. However products which come into being without being designed on the paper are a sign of talent, ability and skills of an individual. It is not possible to say ‘I just made it without thinking’. Originality is sought by avoiding learned stereotypes and stereotypical thoughts. The forms on the soap are extension of innovation and originality. The construction, structuration and comprehension of designs show an improvement proportional to cultural accumulation in terms of knowledge and skills. So, the individual gains both identities of master of design and artist. In a sense, this artistic product is an expression of the individual and an analysis of the technique.

Different skill levels and styles shall indicate the person's qualities. The method to present person's product to others shall manifest itself by the various appearances and particulars as well. The soap is a kind of stuff suitable for performing the trial and error method easily. Because of that its remaking is easy, the soap performing shall appear in the way of artifact building which can be varied by the replicates. The individuals who are performing an application can be called as soap architecture, soap builder and soap sculptor. As a result of studies, the products shall form the documentary of soap sculpture culture enriching gradually.

### Examples of applications:





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<sup>1</sup> Hızal, Aktara (1983). *Cumhuriyet Dönemi Türkiye Ansiklopedisi*, İletişim, İstanbul, p. 892.

<sup>2</sup> Available at: <http://ekitap.kulturturizm.gov.tr/belge/1-23908/cumhuriyet-donemi-turk-heykel-sanati.html>, accessed 13 January 2013.

<sup>3</sup> İnceoğlu, Necati (2012), *Eskizler: Çizerek Düşünme Düşünerek Çizme*, Nemli Yayıncılık, İstanbul, p.30.

4<sup>th</sup> International Conference on New Horizons in Education

# Is every kind of play suitable for the child?

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## Abstract

Play is a term that covers a wide range of activities, which has many meanings. The situation is complicated by the Italian language because, unlike the Anglo-Saxon one that can make use of play and game, in Italian the term "play" is unique. Present the results of some research that clearly indicate how important the play is freely chosen and understand the role that each educator plays in this choice. Also how any intervention aimed at giving assistance not required, to suggest or worse to impose a not suitable play it can be an obstacle to the development of the child.

*Keywords:* Type your keywords here, separated by semicolons ; Free Play , play.

## 1. INTRODUCTION

That playing is fundamental in the lives of small and older children is stated by many. Even the "Convention on the Rights of the Child", adopted by 192 countries of the UN Assembly on 20 November 1989, recognizes in article 31 play as a right of the child. Yet this right is somewhat hindered, forgotten and ignored when we think of children abused in many ways, of child soldiers and of the beautiful European cities that steal space to accommodate more cars instead of children's games. All this is a pertaining to a general disregard of childhood.

### 1) The meaning of play in the past times

Some languages, including Italian, have only one word for play while others such as English have two: play and game that refers to structured play. This difference says a lot about the way play refers to different childhood periods, one bound to imagination and improvisation and another to a more rational approach imbedded in games with precise rules such as dodge ball or chess. The English concept "play" is also used in English for playing an instrument and therefore this word has a meaning that especially refers to the first and second childhood period. The concept "game" on the contrary refers to the second and later periods in childhood because children up to six years, sometimes also seven, hardly agree to play by rules different from those that they themselves have stated: "I was the king, and you ..." or "you were ... and I ...", usually using the past tense: "it seemed to me ...". Every human being develops from childhood to adolescence passing different stages of maturation during which play is of the utmost importance: from being small and playing alone in a thousand ways meanwhile taking on or stepping out of roles and manipulating objects or persons to the second childhood during which large group games with strict rules are invented as so well described by Ferenc Molnar in "The Pal Street Boys".

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It is interesting to note that younger children evolve from individual play based on dynamic and sensorial knowledge of diverse objects to smaller or larger playgroups that progressively come closer to the way of life and activities of adults. So the progressive differences in play activities should be experienced in full by any child or youngster during the different periods of life and repeated with pleasure and spontaneously without which children enter adult life in a bad condition.

It is an internal process of development implemented through personal experiences and different from child to child because each one of them is unique and irreplaceable moreover requiring no intervention by adults, whether they are family members or educators. Like other living beings every little boy or girl knows what it needs. We send them to school, train them for this or that, but not in relation to play - why and how, where and how much – something they know much more about than us adults. Only their intuition regarding play helps them to grow and develop skills related to the precise moment in their life.

Many parents are surprised that his their children reject an expensive toy and prefer another cheap and less showy toy. Obviously, the child finds stimulations in that toy that the other toy cannot give him. Using external pressure to make the child comply with our requirements is useless if not harmful because it requires reactions contrary to the laws of development and to what nature predisposes for childhood in many species (look at how puppies of cats or dogs act), including our own species, and even with more reason given the complexity of the human brain.

There are many scholars who have highlighted the relationship between play and growth, including spontaneous movement and mental development. See the experiences and writings of Maria Montessori in particular for 3 to 6 year old children and older ones or those of Emmi Pikler on small children from 0 to 3 years. In both cases, the educational project starts from the idea of preparing a suitable environment in which children can operate their free choice, according to the terms proposed by Montessori. This is confirmed by the research conducted by Bortolotti and Ceciliani, professors at the University of Bologna and by Anthony D. Pellegrini of the University of Minnesota who says: "The free play can offer creative responses (...) because it stimulates the brain in developing more than when following predetermined rules. In free play children use their imagination and experience new activities and new roles. Play with structured rules establishes in advance what must be followed. Spontaneous play, however, has no a priori rules and offers more creative answers. In other words, it is a fundamental aspect that favors the development of the brain more than predetermined rules do".

## 2) - *Once upon a time*

In ancient times play was widely recognized. Every opportunity was good to celebrate (equinoxes, harvests, religious events, etc.). During the Carnival, the "Magister Ludi", the "master of play" also assumed political power in the city.

This was possible because the concept, the idea of play was rooted in the soul and heart of the people, there was a general awareness of a culture of the play. All this made the play activities become an important part of individual and collective life.

In the first "National Seminar on Italian toy libraries", which was held on the wonderful island of Ischia in October 1985, there were three different working groups.

The first group was centered on "Culture of Play", and coordinated by prof. Andrea Canevaro from the University of Bologna. The result of our workshop focused on "the need to be aware disclose and disseminate the irreplaceable values of the play for the development of the human personality, even if we recognize evident difficulties for let appreciate play in a society that has deliberately created a dichotomy between work and play, between fiction and reality, among gratuity and possession, leaning on this many of its values leading to a segmentation of society, to a cultural sterility, to a distorted conception of the relationship with the environment.

We need a constant commitment of all the game area operators to enforce the play as a cultural content, a tool, a way of life. In this context, particular attention should be paid to the cultural traditions scattered by emigration or suffocated by an internationalization of the play material. The toy librarian must reflect on the importance of their role and the seriousness of their profession.

The stakes are very high and difficult. The society is experiencing a crisis of values and relationships, violence is becoming a lifestyle, the inability to achieve the objectives that often are not real but induced, leads the individual to make personal choices sometimes destructive. All this makes a change increasingly necessary and urgent, a change that affects deeply both interpersonal relationships and the environment.

A culture centered on its playful aspect, creates environments and relationships that lead to a high quality of life.”

And we should not forget the cultural value. In his book "Homo Ludens" (1938), Huizinga examines play as the foundation of every aspect of culture and as part of the social organization.

#### *1.2. - Learn from the animals*

Has we know even animals play and this means that play is a pre-cultural phenomenon.

The puppies of animals plays: they recognize the objects they find around them as the possible toys and use them to train. A kitten is exercised, attacking and dodging a twisted branch, to fight against snakes and, by rolling a pinecone with legs, to hunt rats. But for them all end there: maturity concludes the play.

It is interesting to observe the puppies playing; the mother is present but doesn't intervene, merely she observe and monitor; her presence is sufficient to ensure the emotional security that allows to her sons the total immersion in the play so that it can be most effective.

For us humans instead the matter is more complex because we have a history, we are our history, and the stories we weave around the toys anticipate the future and, in some ways it determine, for the ability of the predictions of self occur. It is not the same thing if a child prefers the ball, sword or board games and a little girl playing the mothers rather than the ladies.

#### *1.3.- Pinocchio is arrived*

With the advent of the industrial revolution, and simplifying things, productivity at any cost became the rule and the slogan "Who plays does not produce" was extended to children. Pinocchio is an example: wasting time by playing instead of studying he was transformed into a donkey and exiled to Toyland. He returns to being a "good boy" when he stops playing. No one ever thought he could become a good boy because he played a lot.

If we want play to be appreciated again, we have to revalue an important social aspect. It is necessary to re-establish play as a strong cultural value so that it will be universally recognized and fully recovers its role.

### **3) The meaning of play in the present time**

For this reason ITLA (International Toy Libraries Association) ruled in 1999 that once a year children and adults should be able to play freely in the streets, squares, parks, schools, etc. to rediscover the pleasure of play as a personal satisfaction and as an element of cohesion between individuals of different ages and conditions.

Therefore every year on May 28th the World Play Day is organized to support and promote article 31 of the "Convention of Children's Rights", which recognizes play as a basic right. That day in forty countries around the world play is promoted for all, the older and younger ones.

In Argentina, the "Day of Play" has been legally recognized and parents who want to play with their children, have the right to a paid holiday.

We are convinced that play is a daily necessity, especially for boys and girls, young and old, and we hope that this initiative is the first step to bring play into everyday's life for everyone.

4<sup>th</sup> International Conference on New Horizons in Education

# Is Gender Important On Understanding Construction Course In Architectural Education?

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## Abstract

Architectural education has a different formation when compared with other profession educations. The first year of architectural education is specially difficult because, students directly start to architectural education after high school without any opinion about architecture. The first class construction course is given as Construction Knowledge I in Erciyes University Architecture Faculty. Construction Knowledge I course is given for familiarization for elements like foundation, floor, wall, column and joist of a building. In this study, it is aimed to determine the thoughts of students and their sensations for construction course in the first year of architectural education. It is tried to measure the effect of sex on understanding the construction course. It is tried to find out that which sex (male or female) has a positive/negative opinion for home works and studio studies. This study was done between the years 2003-2012 in a period of 9 years and 18 semesters, by performing a questionnaire to all students who are taking Construction Knowledge I course. By this study, we tried to find out that which systems for understanding the construction lesson may be better for students of different gender. We hope that this study will positively improve the construction education in the first year of architectural education.

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*Key words:* Construction course; Architectural education; gender differentiation;

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## 1. INTRODUCTION

The purpose of this study is to investigate whether gender has any effect on architecture education, with special emphasis on construction lessons. This study measures whether there is a difference between female and male students in the understanding and comprehension of lessons offered in architecture departments providing education for an important profession within the construction sector. The roles of men and women in male-dominant developing countries differentiate through some social functions, although the distinction is not sharp. The construction sector is densely populated by men in line with this understanding. There are many female architects in the Turkish construction sector. In architecture education, the number of female students sometimes exceeds that of men. Architecture education has a different formation than other professional education programs. Since students proceed to architecture education directly after high school in Turkey and they lack the basic information about the profession and professional education, the first year of the architecture education is difficult. It makes it difficult for the students to understand the new information in a field they are being introduced to for the first time. This is more evident in construction and design lessons in particular.

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There are publications in literature about the role of gender in choice of profession or differences between men and women in terms of understanding the work in the construction sector (Gale, 1994). Also, research has been conducted on the definition and scope of “business ethics” in the last 20 years. However, the issue is not found among the concepts that are “illuminated” in the literature. Generally, men perceive moral issues in terms of “justice, rules and individual rights”, whereas women associate them with “relations, showing interest and mercy”. Research results have manifested the perceptual and behavioral differences of female employees. Although there is research (Schermer, 2001) in the literature warning instructors to have a better understanding of customer-oriented organizations in order to prepare architecture students better for their professional careers, no study was found about the effect of gender on understanding the lessons in architecture education except the study carried out by us that included a small number of students. Although efforts have been made in recent years aimed at reducing the gender difference among people working in the science field, women continue to be represented less in scientific branches such as engineering and technology (Brotman & Moore, 2008).

It is not wrong to say that architecture education has a different formation than other professional educations. However, instructors of our university’s Faculty of Architecture who try to provide architecture education have no training in formation. This brings along many problems in areas such as student-instructor, student-lesson understanding and similar fields. The role of student gender in understanding the lessons is studied. In this study, it was tried to identify the thoughts and perceptions of students about the basics of construction unit they encounter in the first year of architecture education. In the study, the Basics of Construction I unit was addressed. The construction unit, which teaches construction techniques and technologies, in the second term of first year of the Architecture Department of Erciyes University is Basics of Construction I. This course aims at introducing components such as foundation, flooring, columns, girders and massive and skeleton systems. Systems and subjects addressed in the Basics of Construction I unit are: Massive construction system, Skeleton construction system, Foundations, Walls, Floorings.

Students are divided into four to five groups depending on the number of students and whether it is fall or spring. Each group is headed by Construction Department Instructors who supervise and follows the application. This means one instructor per 10 to 15 students, depending on the term of the lesson. This system, which is not found in university departments other than architecture, includes the application of the course. In universities, where the system is based on passing the unit, students who cannot pass the unit on their first attempt repeat the unit in the following terms. For this reason, although the topics discussed are the same each year, applications and tasks differ. Also, in-class applications are graded and combined with mid-term and/or final test grades at certain ratios, which results in the term grade. Mid-term and final tests as measurement and evaluation methods are based on application projects. In the architecture departments of other universities, the same subjects are taught under different unit titles. Construction units in which the same topics are discussed and the same applications conducted are found all over Turkey. Male and female students in the Architecture Departments define the gender distribution of those who are thinking of entering into the profession. In the 19-year period that passed from the foundation of the Department of Architecture until today, the number of female students has always exceeded the number of male students. It is possible to see an increase in the number of female students and a decrease in the number of male students in just one year.

Society’s perception of whether a particular profession should be populated by men or women has affected channelization into certain professions. In this study, main pillars of the building site work, i.e. construction work, are considered to be part of a man’s profession. Therefore, gender of students and their levels of understanding and comprehension of the subjects discussed in class form the foundation of this study. Measurement of attitude of students by gender towards the unit “Basics of Construction I”, which they take in the first year of architecture education, was achieved by a survey conducted on all students.

In this study, it was aimed to identify the thoughts and perceptions of students encountering the basics of construction unit in the first year of architecture education. While doing this, the effect of student gender on understanding the lesson was measured. Measurement of the attitudes of students towards the “Basics of

Construction I” unit, which they complete in the first year of architecture education, according to their gender was achieved by a survey conducted on all students during a nine-year. We hope that the study will contribute to the first years of construction education as part of architecture education and assist in understanding the importance of construction education.

## 1. MATERIAL AND METHOD

The study first of all examines construction education and techniques. Studies relating to the significance of gender in different areas in Turkey and the world are reviewed. With the direct application of the survey to students, all the details needed for the research were observed in minute detail, which led to an unprecedented study in Turkey. The effect of gender differences on architecture education was determined, which creates a foundation for diversifying construction education alternatives and enhances their reliability in line with these findings in all universities providing architecture education. Working over such a long period is necessary for accuracy of data. Also, this survey is applied to students in their senior years or interim years that can be reached and all of the students in their first years during the previous year. Creating a model for and evaluating the differences between female and male students in understanding and perceiving the construction unit was done by SPSS program by help of the chi square test (Table 1.).

Table 1. The Effects of Gender on Construction Knowledge I Course

	How many times did the student take the course and when did he/she passed	
	The opinions of students about the necessity of course content	Necessity of solid masonry system Necessity of framework system Necessity of foundations Necessity of walls Necessity of floors
	Why students think as they mentioned above about the necessity of course	
	The understanding level of students on the content of course	solid masonry system framework system Foundations Walls floors
GENDER	Opinions of students about the studio practices of the course	
	Opinions of students about the homework practice of the course	
	Opinions of students about the group studies in the course	
	Are the practices in the course adequate for understanding the content of the course?	
	Expectations of the students from the teaching assistant for better understanding of the course	
	Do students have any negative effect on the understanding of course?	
	Do students want to search the content of the course out of the studio?	

In the literature, no research was found about the effect of gender on architecture education except our previous study which contained fewer students. Most of the research on the effect of the gender parameter on lessons or general school outlook was conducted at the level of secondary education. The survey was applied to all architecture students taking the unit who could be reached. All of the students of Architecture who take the unit were included in the study instead of a sample group.

## 2. FINDINGS

In 9 years period, 321 (191 female and 130 male) students took Construction Knowledge I unit. The number of student that took part in the survey is 179, including 101 female and 78 male students. Students are free to take

Basics of Construction Unit I once or more than once. The effect of gender in terms of in how many attempts the unit was passed was measured. Whether girls or boys pass the lessons covered in this study, where constructions subjects are taught, in the lowest number of trials was investigated. When all the answers to all items related to the question were compared, no statistically significant difference was found between female students and male students ( $P=0.063$ ). Subjects taught in class are discussed under main topics of massive system, skeleton system, foundations, walls and floorings. It was investigated whether there is a difference in perception of necessity of the subjects covered in the lesson according to female and male students, and each topic was rated in five steps. When all the answers in the survey given to the questions on necessity of topics of massive system, skeleton system, foundations, walls and floorings were compared, no statistically significant difference was found between female students and male students (Table 2).

Table 2. The effects of student gender on the perception of necessity of the subjects as, floorings, massive and skeleton system constructions, foundations and walls

	Floorings	Massive Constructions	Skeleton Constructions	Foundations	Walls
Absolutely Unnecessary F/M n(%)	0(0.0) / 0(0.0)	1 (1.0) / 1(1.3)	0 (0.0) / 1(1.3)	0 (0.0) / 1(1.3)	0(0.0) / 0(0.0)
Unnecessary F/M n(%)	1(1.0) / 4(5.3)	6 (6.0) / 4(5.2)	0 (0.0) / 1(1.3)	0 (0.0) / 1(1.3)	0 (0.0) / 2(2.7)
No comment F/M n(%)	3(3.0) / 4(5.3)	5 (5.0)/7(9.1)	1 (1.0)/2(2.6)	1 (1.0)/2(2.7)	1 (1.0)/2(2.7)
Necessary F/M n(%)	43(43.4) / 31(41.3)	49(49.0) / 38(49.4)	40(40.0) / 31(40.8)	45(45.0) / 33(44.0)	44(44.4) / 35(47.3)
Absolutely Necessary F/M n(%)	52(52.5) / 36(48.0)	39(39.0) / 27(35.1)	59(59.0) / 41(53.9)	54(54.0) / 38(50.7)	54(54.5) / 35(47.3)
TOTAL F/M n(%)	99 / 75	100 / 77	100 / 76	100 / 75	99 / 74
$P$	0.314	0.855	0.477	0.484	0.274

$p \leq 0.05$  considered significant

F = Female, M = Male

In the survey, students replied to the question that enquired about their awareness that they may benefit from the subjects covered in the lesson in the future. When the answers to the items related to the question were compared, no statistically significant difference was found between female students and male students ( $P=0.834$ ). In the survey conducted, students replied to the question about compensation of the deficiencies related to the subjects covered in the lesson. When the answers to the items related to the question were compared, a statistically significant difference was found between female students and male students ( $P=0.033$ ) (Table 3). Female students do not think that they can learn the subjects covered in the lesson through the help of other lessons in the future compared to male students; i.e. they stated that everything can be learned within the scope of this unit.

Table 3. Compensation of the deficiencies related to the subjects covered in the lesson by the help of other lessons in the future

	Female n (%)	Male n (%)	Total n (%)	P
Can not compensate	96 (95.0)	67 (85.9)	163 (91.1)	0.033
Can compensate	5 (5.0)	11 (14.1)	16 (8.9)	
TOTAL	101	78	179	

$p \leq 0.05$  considered significant

In the survey, students replied to the question about learning the basics of the field owing to this unit. When the answers to the items related to the question were compared, no statistically significant difference was found between female students and male students ( $P=0.380$ ). In the survey, how the place of the unit in architecture education was perceived by students was examined. Students replied to the question about the unit being the foundation for other subjects. When the answers to the items related to the question were compared, a statistically significant difference was found between female students and male students ( $P=0.002$ ) (Table 4). Female students (49.5 %) think more than male students (26.9 %) that other subjects will not have a foundation without this unit.

Table 4. Is this a primary lesson and a foundation for other lessons and architectural education?

	Female n (%)	Male n (%)	TOTAL n (%)	P
No it is not	51 (50.5)	57 (73.1)	108 (60.3)	0.002
Yes it is	50 (49.5)	21 (26.9)	71 (39.7)	
TOTAL	101	78	179	

$p \leq 0.05$  considered significant

It was thought that female and male students could have interests in different subjects. This interest makes it more difficult or easier to understand the topic discussed in class. Levels of understanding the topics discussed in class by female and male students separately was measured in five steps. In the survey prepared in parallel to this, it was found that the gender of the student has no effect on understanding the lessons on the subjects of floorings, massive construction, skeleton construction, foundations and walls ( $p > 0.05$ ) (Table 5).

Table 5. The effect of student gender on understanding the lessons on the subjects of floorings, massive construction, skeleton construction, foundations and walls.

	Floorings	Massive construction	Skeleton construction	Foundations	Walls
I never understand F/M n(%)	2(2.1) / 0(0.0)	2(2.0) / 1(1.3)	1(1.0) / 2(2.6)	0(0.0) / 0(0.0)	0(0.0) / 0(0.0)
It is very hard but I understand F/M n(%)	23(24.2) / 11(14.9)	26(25.7) / 10(13.2)	30(30.9) / 11(14.5)	23(24.2) / 11(14.5)	19(20.2) / 10(13.3)
I do not have an idea F/M n(%)	6(6.39) / 5(6.8)	3(3.0) / 6(7.9)	3(3.1) / 3(3.9)	8(8.4) / 4(5.3)	7(7.4) / 3(4.0)
It is easy but need to study F/M n(%)	42(44.2) / 38(51.4)	44(43.6) / 42(55.3)	46(47.4) / 44(57.9)	42(44.2) / 41(53.9)	43(45.7) / 38(50.7)
It is very easy F/M n(%)	22(23.2) / 20(27.0)	26(25.7) / 17(22.4)	17(17.5) / 16(21.1)	22(23.2) / 20(26.3)	25(26.6) / 24(32.0)
TOTAL F/M n(%)	95 / 74	101 / 76	97 / 76	95 / 76	94 / 75
P	0.396	0.137	0.149	0.307	0.454

$p \leq 0.05$  considered significant

F = Female, M = Male

Within the scope of the tests, sample projects are assigned to help the students to consolidate the subjects taught in class. Students' ideas about these applications conducted under supervision of instructors in class were investigate, and whether the gender of the student is an effective factor for the application examples in class. In the survey, students replied to the question that enquired about applications in class. When the answers to the items related to the question were compared, no statistically significant difference was found between female students and male students ( $P=0.061$ ) (Table 6).

Table 6. The effect of student gender on applications in class room.

	Female n (%)	Male n (%)	TOTAL n (%)	P
It is hard to understand the examples given in classroom	11 (11.0)	2 (2.7)	13 (7.4)	0.061
Although it is hard to understand the examples, I can understand when teachers explain	34 (34.0)	29 (38.7)	63 (36.0)	
I do not have an idea about applications in classroom	4 (4.0)	7 (9.3)	11 (6.3)	
The applications are enough for lesson explanation	19 (19.0)	20 (26.7)	39 (22.3)	
It is easy to understand lesson with applications and support our knowledge about the lesson	28 (28.0)	12 (16.0)	40 (22.9)	
Other answers and comments	3 (3.0)	5 (6.7)	8 (4.6)	
TOTAL	100	75	175	

$p \leq 0.05$  considered significant

As part of the unit, students are assigned application projects as homework in order to help them understand the subjects better. Also, students prepare project papers in some periods by conducting investigations on subjects covered in class. Students' thoughts on homework they prepare on their own without the supervision of the

instructors were investigated, and whether the gender of students is an effective factor in the projects they prepare themselves as homework. In the survey, students replied to the question that enquired about the applications assigned as homework. When the answers to the items related to the question were compared, no statistically significant difference was found between female students and male students ( $P=0.632$ ) (Table 7).

Table 7. The effect of student gender on applications assigned as homework

	Female n (%)	Male n (%)	TOTAL n (%)	P
I think the applications assigned as homework are adequate	34 (34.7)	24 (31.6)	58 (33.3)	0.632
I think topic preparation homeworks are adequate	11 (11.2)	8 (10.5)	19 (10.9)	
Both homeworks are adequate	29 (29.6)	24 (31.6)	53 (30.5)	
Application homeworks are unnecessary	6 (6.1)	4 (5.3)	10 (5.7)	
Topic preparation homeworks are unnecessary	15 (15.3)	9 (11.8)	24 (13.8)	
Other answers and comments	3 (3.1)	7 (9.2)	10 (5.7)	
TOTAL	98	76	174	

$p \leq 0.05$  considered significant

The possible effect of gender of student on group work was deemed to be important. It was investigated if group work is perceived as negative or positive by male and female students. In the survey, students replied to the question about group work in the atelier. When the answers to the items related to the question were compared, no statistically significant difference was found between female students and male students ( $P=0.476$ ) (Table 8).

Table 8. The effect of student gender on group work in the atelier.

	Female n (%)	Male n (%)	TOTAL n (%)	P
It helps for beter understanding	21 (21.4)	21 (28.0)	42 (23.39)	0.476
It increases our cooperation with friends in group	12 (12.2)	9 (12.0)	21 (12.1)	
Teachers and friends in group are helping me when I do not understand the topics during atelier work	18 (18.4)	13 (17.3)	31 (17.9)	
I do not want group work because it may effect my notes negative	13 (13.3)	10 (13.3)	23 (13.3)	
I do not want group work because I can not understand the lesson with group	2 (2.0)	5 (6.7)	7 (4.0)	
Other answers and comments	32 (32.7)	17 (22.)	49 (2.3)	
TOTAL	98	75	173	

$p \leq 0.05$  considered significant

Applications in class are sometimes performed using examples drawn and sometimes using models, and sometimes by both equally. This type of lesson teaching is preferred to help students to understand the subjects better. It was thought that the gender of the students would have an effect on understanding the subject by using drawings or models. A question was prepared for the type of application in class. In the survey, students replied to the question about the method of teaching the unit. When the answers to the items related to the question were compared, no statistically significant difference was found between female students and male students ( $P=0.389$ ) (Table 9).

Table 9. The effect of student gender on the application types in classroom

	Female n (%)	Male n (%)	TOTAL n (%)	P
Drawings are helping me for better understanding the topic	11 (11.2)	13 (17.6)	24 (14.0)	0.389
Models are helping me for better understanding the topic	17 (17.3)	11 (14.9)	28 (16.3)	
Both models and drawings are necessary for all topics	40 (40.8)	25 (33.8)	65 (37.8)	
Models are not always necessary	8 (8.2)	4 (5.4)	12 (7.0)	
Drawings are not always necessary	1 (1.0)	4 (5.4)	5 (2.9)	
Other answers and comments	21 (21.4)	17 (23.0)	38 (22.1)	
TOTAL	98	74	172	

$p \leq 0.05$  considered significant

Participants were not required to supply their names and were asked to reply to the survey sincerely. As a result of the anonymity, they provided their real thoughts comfortably. It was investigated if there was a difference of opinion between female and male students who take the lesson. Since students chose more than one option in this question, all of the items were tested using the chi square test within themselves. According to this, students replied to the questions about sufficiency of the subjects covered by the unit ( $P=0.429$ ), teaching of the new construction systems in the unit ( $P=0.125$ ), necessity of new units for new construction systems ( $P=0.874$ ), measurement of the sufficiency of the subjects ( $P=0.891$ ) covered in the unit according to whether they are taking other units and to the question on finding the subjects sufficient which are covered by the unit ( $P=0.460$ ). When the answers to the items related to the question were compared, no statistically significant difference was found between female students and male students ( $P > 0.05$ ).

In the survey, students replied to the question on teaching construction systems that make use of modern materials. When the answers to the items related to the question were compared, a statistically significant difference was found between female students and male students ( $P=0.004$ ) (Table 10). In the survey, there were students who did not offer any opinions about the subjects taught in the unit.

Table 10. Is it necessary to teach the construction systems that make use of modern materials?

	Female n (%)	Male n (%)	TOTAL n (%)	P
Unnecessary	57 (56.4)	60 (76.9)	117 (65.4)	0.004
Necessary	44 (43.6)	18 (23.1)	62 (34.6)	
TOTAL	101	78	179	

$p \leq 0.05$  considered significant.

It was thought that female and male students would have suggestions for the all instructors who teach and assist the teaching of the unit for a better understanding of the lesson. It was measured how the negativities between those taking and teaching the knowledge would be mended on the side of those receiving the knowledge. It was hoped that students would contribute to the way unit is taught. Here, we attempted to question the deficiencies of the unit and instructors through the eye of the student. In the survey, students replied to the question on suggestions for the instructors for a better understanding of the unit. When the answers to the items related to the question were compared, no statistically significant difference was found between female students and male students ( $P=0.341$ ) (Table 11).

Table 11. Is there any difference between male and female students with respect to the suggestions for the instructors for a better understanding of the unit?

	Female n (%)	Male n (%)	TOTAL n (%)	P
Atelier work should be decreased	1 (1.0)	3 (4.0)	4 (2.3)	0.341
Homework should be decreased	20 (20.6)	18 (24.0)	38 (22.1)	
Group works should be increased	11 (11.3)	9 (12.0)	20 (11.6)	
The variety of homeworks should be increased	13 (13.4)	7 (9.3)	20 (11.6)	
The variety of atelier works should be increased	24 (24.7)	16 (21.3)	40 (23.3)	
Subjects in the lesson should be more understandable and supported by examples	17 (15.5)	7 (9.3)	24 (14.0)	
Other suggestions	11 (11.3)	15 (20.0)	26 (15.1)	
<b>TOTAL</b>	<b>97</b>	<b>75</b>	<b>172</b>	

$p \leq 0.05$  considered significant.

Students studying in the Architecture Department can achieve success in some units but fail some others. Attempts were made to investigate some of the problems pertaining to personal problems of the students. In the survey, students replied to the question on problems related to the student resulting in failure to understand the unit. When the answers to the items related to the question were compared, no statistically significant difference was found between female students and male students ( $P=0.196$ ) (Table 12).

Table 12. The effect of student gender on problems related to the student resulting in failure to understand the unit.

	Female n (%)	Male n (%)	TOTAL n (%)	P
I do not try to understand the subjects and homeworks in atelier	13 (15.1)	7 (10.3)	20 (13.0)	0.196
I can not ask questions to teacher when I do not understand the subject	23 (26.7)	9 (13.2)	32 (20.8)	
I have problems about individual working system	10 (11.6)	11 (16.2)	21 (13.6)	
I am leaving my homeworks to the last minute	23 (26.7)	24 (35.3)	47 (30.5)	
I have problems about group working system	3 (3.5)	6 (8.8)	9 (5.8)	
Other problems	14 (16.3)	11 (16.2)	25 (16.2)	
<b>TOTAL</b>	<b>86</b>	<b>68</b>	<b>154</b>	

$p \leq 0.05$  considered significant.

It is clear that students in the Architecture Department do not have the same income, culture etc. levels, which is also the case for other departments. Some out-of-department issues affect areas of the academic life of students or some of their units. External conditions sometimes affect the investigations related to the unit. Here, the effect of gender of the student on investigating the subjects assigned in class for the said unit was addressed. In the survey, students replied to the question on investigations on subjects assigned in class. When the answers to the items related to the question were compared, no statistically significant difference was found between female students and male students ( $P=0.196$ ).

### 3. DISCUSSION

While scanning the resources, data were found pertaining to the place of women in the construction sector and job opportunities by gender (Gale, 1994). However, except our previous study which contained fewer students, no resource was found on the place of gender in architecture education. There was, however, research in business life about women asserting their leadership notion and power in professional business life (Kruse & Prettyman,

2008,). Gender and science is one of the most addressed topics in the field of science education. Articles focusing on topics related to gender increase continually in science education journals. Today, press and other media organs, fashion, and trends play a role in channeling students in a certain direction. Channeling male and female students according to their areas of interest in the early years of their growth plays an important role, too. In the subsequent periods, an imbalance in the number of men and women involved in events related in the textbooks, reserving posters used in the laboratories and examples given in classes to a certain gender, and the inappropriate attitude of teachers cause female and male students to approach science lessons in different ways. Also, it was stated that there are differences arising from the toys provided for children in the early ages of development (Ozay, Ocak and Ocak, 2003).

In a study that summarized the interest of boys and girls in science. it was put forth that male students are generally more interested in science than female students. This is particularly visible in the fields of physics and technology. On the other hand, girls have more interest in biology than boys. Research shows that women have more interest in health, medicine, the body, the brain and healthy living, whereas men want to learn more about physics, chemistry and how technology works (Baram-Tsabari, Sethi, Bry and Yarden, 2006,).

In the study that measured whether there was a difference between female and male students in terms of need for special education at the nursery school level and above, it was found that male students need 65 % more special education in terms of ratio of girls to boys. This ratio goes up to 70 % among those who skip the nursery school level and start with primary school. Ratios are the same in the nursery school. Starting from primary school and in the secondary and high school levels, girls suffer more from problems associated with vision, hearing, language and intellectual problems. Boys in these periods suffer more from problems associated with reading and writing, psycho-social problems and attention deficit. As a result, the need for boys in the pre-school years arises from the genetic and biological differences between genders. The reasons behind an increased need of male students for special education during school years are that pedagogy cannot meet the educational needs of male students, along with genetic and biological factors (Skårbrevik, 2002).

The purpose of Brandell and Staberg's (2003) research was to see that secondary school students in Sweden perceive the math lesson as female-male or neutral gender. A certain majority was found that mathematics lessons are symbolically associated with male gender. While positive opinions about mathematics lesson were in majority among male students, negative opinions were in majority among female students (Brandell G., Staberg E.-M., 2008). In Allen's research, it was investigated if there was a gender difference in terms of what the content of a sex education lesson should be among high school students. Data of the research was collected from youths between 16-19 years of age in 15 schools in New Zealand. In the study, no difference was found between female and male students about what the content of the lesson should be for many of the subjects (Allen, 2008). In the research titled "Sustainability in Construction Education", inclusion of sustainability in engineering education is clearly seen. In order to educate students with new knowledge and techniques, engineering instructors need appropriate in-class content and effective teaching methods. In the light of experiences regarding the development of a sustainability lesson within Construction Engineering Departments, and associated construction management programs, this paper deals with studying sustainable knowledge areas, lesson planning, and lessons that can be learnt in class. At the same time, this paper includes basic class topics and feedback from students about the subjects, which are important for the development of sustainable education in the field of construction (Wang, 2009).

The study of Grebennikov and Skaines (2009) aims to contribute to discussions about gender differences in university education. In this study, the comments of male and female students on several university services were compared. The results show that female students attach more importance to the majority of the university's services compared the male students. Secondly, as female students make progress in their study, they become more demanding regarding the quality of the services provided at the university. Male students, on the other hand, are more tolerant compared to girls. Thirdly, female students have more interest in the fields that develop more compared to male students (Grebennikov & Skaines, 2009). Also, there are studies where the lessons

provided are rearranged according to the gender parameter. In the German project conducted on re-arranging the curricula along a common line, gender effects in medicine education was addressed. At the end of this study, it was found that successful gender blending is both a strategic issue and how strategy is arranged by medicine schools. It was argued that a time strategy would overcome natural dilemmas as well as the resistance to gender blending. More female teachers were accepted than male teachers. However, women were assigned to positions that seemed less strong (Baram-Tsabari, Sethi, Bry and Yarden, 2006,).

In a study, a significant difference in favor of female students was found in terms of the relationship between time management skills of female and male students and their academic successes. Generally, female students can manage time better than male students and they are more successful (Demirtaş & Özer, 2007). In another study, the opinions of university students on pre-school education were investigated. Opinions of university students on pre-school education was investigated according to their genders, the faculties they were in, the education levels of their parents, the jobs and income levels of their families, and whether they attended a pre-school program (Ozturk, Sahin and Mercan, 2010). Another study that deals with gender difference investigated if there is a difference between male and female students in terms of academic success and consolidation in the general biology lesson. As a result, a meaningful difference was found in favor of female students in terms of both academic success and consolidations (Ozay, Ocak and Ocak, 2003). In another study dealing with gender and sensual attitude of university students towards English as a foreign language lessons was investigated according to their gender, disciplines, economic situation of the family, and the education level of parents. At the end of this study, female students were found to have higher attitude, although they do not exhibit a statistically significant level of difference (Tok, 2010).

In the study that was conducted in order to evaluate the “Academic Study Skills” of students in various grades It was found that students see their sufficiency as medium or lower in skills relating to planned study, in-class participation, effective reading, use of the library, learning, health and nutrition, and listening and writing respectively. It was observed that students’ opinions regarding inclusion of this lesson in the curriculum did not differ by age, gender, class or the high school groups they graduated from (Ergür & Saracbası, 2009). In another study conducted to measure self sufficiency beliefs of prospective teachers studying according to their gender, branch and sub-dimensions of the scale, a relational screening model was utilized. No significant difference was determined in the self sufficiency beliefs of prospective teachers by branch and gender (Üstün & Tekin, 2009).

The purpose of the study conducted on first year students aimed to investigate the relationship between gender and their level of understanding the mechanical concepts and problem-solving skills. No statistically meaningful difference was found between final score averages of female and male students (Ateş, 2008). In another study aimed to determine the levels of interest of prospective teachers in the geography lesson and gender differences in interest. Results of the study showed that students had low interest in the geography lesson and there was no gender difference (Cin, 2007).

The goal of the study was to determine the attitude of prospective science teachers towards chemistry lessons and to investigate the relationship between attitude and academic success. The relationship of the mentioned parameters with the gender and school situation was examined. The results pertaining to gender showed that there are differences of attitude and academic success depending on gender and the type of high school they graduated from. Although there was no significant difference between female and male prospective science teachers, it was observed that female prospective teachers have a higher attitude and academic success points (Hançer, Uludağ and Yılmaz, 2007). In another study that aimed to find out the attitude of secondary school students towards geography lessons. The attitude of students towards geography lessons was medium and did not show a meaningful difference by gender and type of school (Alım, 2008). The general goal of another study conducted at the level of secondary education was to evaluate the meaningful deterministic thinking skills of students in terms of academic success, reading comprehension and gender. It was found that the meaningful thinking skill does not differ meaningfully by gender, and gender does not predict meaningful deterministic thinking skills (Berkant, 2009). In another study, the effect of student gender has been measured in the survey application carried out on

students. In this study it was determined that student gender has effects on making up for the inadequacies if any regarding the topics covered in the course, the perception of the status of the course in the architectural curriculum and the explaining of modern structural systems in the course (Parlak Bicer, 2010).

It was observed that, none of the studies in Turkey and the world covered in this section that deal with the effect of gender differences on education is about the gender parameter in architecture education except for our previous study. The reason behind some of the statistical shortcomings of our study is that no other study is conducted in the field of architecture. From another point of view, it is clear that this study included many data that will pioneer the works in this field.

#### 4. CONCLUSION

In this study, which investigated the thoughts and perceptions of students concerning the basics of construction unit that they take in the first year of architecture education, the gender parameter was addressed. It was investigated which of the activities, such as atelier work and homework, are considered positive/negative by female and male students in respect of understanding the subjects discussed in class. The gender difference was addressed by the survey the “Effect of Student Gender on Understanding the Lesson,” which was developed by me.

At the end of the analysis, it was observed that student gender has no effect on passing the course, necessity of the subjects covered by the lesson, awareness that topics discussed in class may be benefited from in the future, awareness that the lesson helps to learn the basics, understanding the subjects discussed in class, applications performed in class and assigned as homework, group work in the atelier, the way the lesson is taught, sufficiency of the topics covered in the lesson, teaching the new construction systems, comparing with the subjects taught in other lessons, suggestions to the instructor for better understanding of the lesson, problems related to student regarding failure to understand the lesson well, investigation of the subjects assigned in relation to the lesson.

As a result of the analysis, a statistically significant difference was observed between female and male students pertaining to compensation of deficiencies in subjects discussed in class by other lessons in the future ( $P=0.033$ ). There is a statistically significant difference between female and male students in perception of the place of the lesson in the architecture education ( $P=0.002$ ). When we looked at the effect of gender on teaching of construction systems that use modern materials, a statistically significant difference was observed between female and male students ( $P=0.004$ ).

It was found that in developing countries like Turkey, gender has no effect, except in some areas, on understanding and comprehension of lessons about construction techniques and technologies by architects who will take part in the construction sector. Female students should be encouraged after their graduation to use their education of construction techniques and technologies not only in offices but on building sites. Thus, women will be able to find more jobs in the construction sector dominated by men. After finding that gender has no effect on architecture education, a result of this study will be to highlight that gender has no importance in the sector, too. It is hoped that this study will open the way for further studies on architecture education.

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# Knowledge analysis of entrance examination knowledge by registered students at the University of Economics, Prague

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## Abstract

We present analysis of results of entrance examinations for the University of Economics, Prague in the subject of “Mathematics” and “English” in our paper. For anonymous data we carried out statistical analysis that take into account dimensions like time series for years 2010-2012, type of high school and country of origin of applicants for study.

Conclusions then point to the better results in admission tests found in case of foreign students and declining number of points acquired in time for all applicants. Overall analysis may be evaluated as a declining number of points acquired while maintaining unchanged difficulty of examination.

*Keywords: Knowledge; Mathematics; English; Education Process, Entrance Examination*

## 1. Introduction

Together with the way in which the demographic distribution of the population in the Czech Republic changes, especially in the “teenage” group, there are also gradual changes in the models according to which the education system is regulated (Fischer, Finardi, 2010), (Finardi, Fischer, Mazouch, 2012), (Kunstova, 2012), (Kunstova, Rezankova, 2012). The uneven population curve of different periods causes a shortage of pupils and students at individual levels of the education system, (Doucek, Maryska, Novotny 2012). These gaps in numbers then on the one hand cause a drop in the number of educational institutions when there is a drop in the number of students, and on the other hand there are situations when there are insufficient institutions when the number of students rises. The present situation, where there has been an expected decline since 2011 in the population years, which might enter the sector of tertiary education, will quite certainly leave, together with the long-term economic recession, strong marks both on the number and the structure of university education in the Czech Republic (Finardi, Fischer, 2011) (Doucek, Kunstova, Maryska, 2011).

With a view to the expected structural changes (Hanclova, Doucek, 2012), we at the University of Economics, Prague (UEP) prepared and elaborated a project, dealing with the analysis of the data from the entrance exams at the University of Economics, Prague divided up according to the type of exam, faculty and eventually also subject, and subsequently evaluating in the simplest version the results achieved in time; in the more complicated versions it then also investigates the relations between the results of the entrance exams and the results achieved in the individual study courses, including the bachelor’s course state examinations. The aim of the project is, in particular, to answer the following questions:

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- What is the level of knowledge of the students who apply to study at the UEP from secondary schools in the subjects of “Mathematics” and “Foreign Language” (in this article presented results are for the “English language”)? How does this knowledge develop in analyzed period, or is this level of knowledge dependent on the type of secondary school?
- Are there any links between the results achieved in the entrance exams and the results in the courses during their studies?
- Are there relationships between the results achieved in the entrance exams and the results of the state examinations of bachelor degree courses?

In this article, only the results of the basic analyses of the entrance procedure in “Mathematics” and “English” are presented. Its aim is, then, to analyze the results of the students applying for admission to the UEP in the years 2010 – 2012 according to nationality and time.

The starting points for the proposed models and analyses were in particular studies (Psacharopoulos, 1995) and the experience gained at the University of Economics, Prague from earlier projects with a similar theme (Scholleova, Mikovcova, 2011) and research on the education systems of European countries (Maryska, Doucek, 2011) and (Ala-Mutka, Punie, Redecker, 2008), (Maryska, Doucek, Novotny, 2012).

## 2. Methods and Data Collection

The data for this project are collected regularly in the course of the admissions procedure from all applicants for studies. In accordance with the provisions of Law No. 101/2000 Coll., on the protection of personal data, the data of applicants are rendered anonymous for the requirements of processing and are then worked with in such a way that all personal identification factors are removed and they are processed in such a way that there is no possibility of ascertaining which applicants they originally indicated.

Further data on the results of the exams are acquired from the university information system by a single transfer of data. The actual analysis and modeling then takes place on inter-connected and completely anonymous data.

The database does not contain all the data of applicants for study at all faculties of the University of Economics, Prague because some faculties do not have exactly the same admission procedure and one faculty admits Czech students on the basis of SCIO tests (SCIO is a leading CEE educational assessment centre offering commercial services to schools, universities, self-governing institutions, school boards and other institutions in the Czech Republic. The company is engaged in development of state-of-the-art products and services aimed at education and student assessment.). For this reason we do not have the data on the results of their entrance exams at our disposal. We do, however, have the data on the level of SCIO points achieved and the data from subsequent examinations in individual subjects. We also subject these facts to further analysis, but not in this article due to the lack of space.

### 2.1. Methodology

The primary data used for evaluation were imported to the database of the MS SQL Server through extracts in the form of text files. These were exported from the central database of the University of Economics, Prague. Connected number registers were also available, enabling the clarification of primary data.

For the processing of data a data model was created in the MS SQL Server 2008 R/2 application. This model respects the principles of business intelligence, thanks to which it was possible to create analytical data cubes (OLAP). (Kimball & Caserta, 2004; Imhoff, Gelammo & Geiger, 2003), (MacLennan, Tang, Crivat, 2009).

For the analysis of the data we used two different approaches. The first was based on the use of OLAP cubes in the MS SQL Server 2008 R/2, in which a larger number of statistical indexes was created (e.g. median, average, maximum, minimum, determining deviation, etc.), enabling the data to be statistically described.

The second approach to the evaluation of the data was based on the use of the Microsoft Excel 2010 application. Through this the acquired data was also analyzed by means of statistical methods.

The combination of suitable dimensions (for instance Year of entrance exam, Selected study subject, Language of entrance exam, etc.) with the selected indexes (Number of applicants for study, Average value of points acquired in the language entrance test, Average value of results of mathematics entrance test, correlation between points achieved, etc.) made it possible to analyze the data effectively and in great detail and thus identify both the trends and the mutual links between data.

The combination of the two above approaches enabled both the mutual verification of the results achieved by the functions of various technologies, and especially the extension in this way of the range of possible statistical analyses. The reason for this is the fact that the groups of functions in the applications MS SQL Server and MS Excel are partly disjunctive.

### 3. Results and Discussion

Among the primary results of the investigation is finding out how many students submitted applications to study at the University of Economics, Prague and what the level of admission to the individual faculties was. For the requirements of this paper there are two basic groups of results – on the one hand the overall analysis of the structure of applicants for study, the proportions of applicants according to country of origin, and then the results achieved in the entrance exam in “Mathematics” and in “English”. The decline in the number of students from the Czech Republic may also be supplemented at Czech schools by admitting students from other countries, or eventually also by what is called delayed demand (studying after several years of practical work experience) (Kunstova, 2011). This is why part of the analyses carried out was not only the number of foreign students applying for admission to the VSE, but also a more detailed analysis of the results of their admission procedure. In this paper, however, there is no room for greater detail and so in Table 1 we give only the proportions of the first six countries in the number of students applying to study at the University of Economics, Prague.

Table 1: Proportions of Applicants for Study at the UPE According to Country

Source: Authors

UEP Applicants	2010	2011	2012
Czech Republic	85.51%	84.22%	83.36%
Slovak Republic	8.05%	8.07%	7.85%
Russian Federation	2.11%	3.18%	3.07%
Vietnam Socialist Republic	0.81%	1.29%	1.47%
Ukraine	1.06%	1.26%	1.45%
Kazakhstan	0.60%	0.85%	0.92%

The proportion of students from the Czech Republic is not surprising, nor is the position of Slovakia in second place surprising. The next countries in order being the Russian Federation and especially Vietnam are, however, a surprise, as is the sixth place of the Republic of Kazakhstan. There is a surprising increase in the number of students claiming Vietnamese nationality. Here we cannot distinguish whether these are really students straight from Vietnam or students who are permanently resident in the Czech Republic and claim Vietnamese nationality. Tab. 1 can be evaluated as a slow but constant decline in the numbers of Czech and Slovak students at the expense of students from other countries, which confirms the expected demographic trend (Doucek et al., 2012).

#### 3.1. Initial Knowledge of “Mathematics”

In general it may be said of the results of the entrance examinations in “Mathematics” that the average level of points achieved declines in the individual years. The incline of the set is slowly returning to a normal division from negative values (the number of smaller values is dropping compared with the middle value) and the spikiness of the set, on the contrary, is growing (more values collecting around the middle value). The scatter is, de facto, unchanged. A very interesting fact is the value of the characteristic Modus – at the level of 100.00 points. Fig. 1 provides more information on this value.

If we started off from the optimum situation, then the values given in Fig. 1 should take on roughly the shape of normal distribution. From the values given in Fig. 1 it is evident that the data ascertained does not follow this distribution. This may be caused in particular by the fact that the entrance exam in “Mathematics” is based on teaching matter generally known to students of all types of secondary schools (detail given in the Table 2) and the majority of the better students master this. A second aspect of the matter is the absence of more difficult examples, which would sort out the applicants at the top end of the point’s spectrum. The question is, however, whether such classification is strictly essential given the declining demographic curve and whether for the needs of admission to the UEP it is not sufficient to divide up the applicants into those who acquire a number of points around the median in the entrance exam and those we accept. An important part is also played here by the number of students admitted to the individual faculties or subjects.

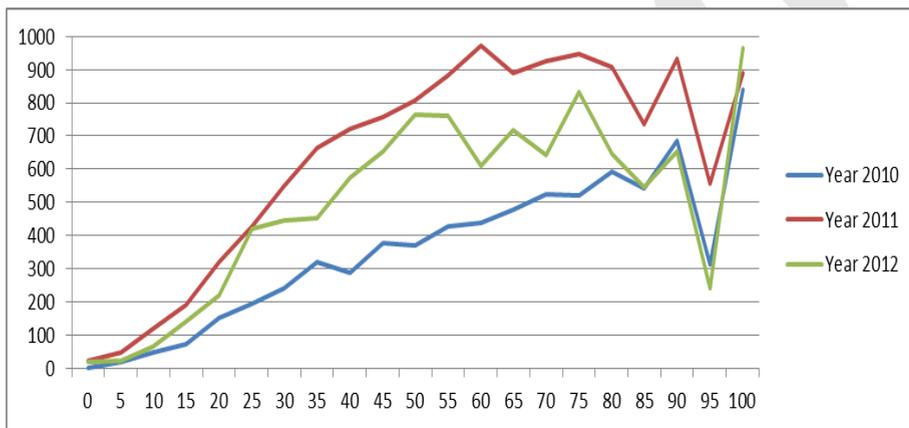


Fig. 1. Frequency of Occurrence of Numbers of Acquired Points from the Entrance Exams in “Mathematics” 2010 – 2012

Source: Authors

In the analysis of the results of the entrance exams in “Mathematics” we also dealt with the results achieved according to the nationality of the applicant.

Table 2. Results of the Entrance Exams in “Mathematics” According to Country of Origin of the Students

Source: Authors

Mathematics	2010		2011		2012	
	Avg.	Med	Avg.	Med	Avg.	Med.
Czech Republic	65.53	70.00	61.36	60.00	59.72	60.00
Slovak Republic	73.57	80.00	67.63	70.00	67.37	70.00
Russian Federation	79.44	85.00	71.89	75.00	77.81	80.00
Vietnam Socialist Republic	69.16	70.00	68.03	70.00	68.36	70.00
Ukraine	74.69	80.00	71.29	75.00	64.65	65.00
Kazakhstan	78.53	80.00	68.04	85.00	73.86	80.00

On first looking at the Table 2 we can see that the level of the number of points achieved is smallest in the case of the Czech students. On the one hand this is due to the number of applicants. They are applying to study at a university in their own land and therefore the range of applicants is wider than in the case of students coming from abroad and with certainly greater motivation. The countries of the former Soviet Union demonstrate traditionally good preparation in the exact sciences, which our investigation also confirmed. Although here too the number of points acquired is showing a certain decline in time.

A more detailed look at the Czech students, or rather at the results of their entrance exams, is shown in the Table 3. This table shows that, according to expectation, the best results are those of grammar school students. Students from grammar schools (gymnasias) are also the majority group of applicants for study at the UEP (Table 3). But even in this index we can trace a decline in the number of points gained in the entrance exam in practically all types of schools in time.

Table 3. Results of the Entrance Exams in “Mathematics” According to Type of Secondary School

Source: Authors

Mathematics	n %	2010		n %	2011		n %	2012	
		Avg.	Med		Avg.	Med		Avg.	Med
Grammar School	68.25	72.28	75.00	65.74	66.96	70.00	62.14	65.11	68.00
Economics School	17.75	58.29	60.00	20.57	53.14	50.00	21.95	52.37	50.00
Vocational School	14.00	49.87	45.00	13.69	47.42	45.00	15.92	48.62	45.00

From the Table 3, it emerges that in course of three consecutive periods we can identify only a declining trend in level of knowledge represented by average number of points achieved in entrance exam. The only exceptions are Vocational Secondary Schools, which in 2012 showed a slight increase in number of points gained.

### 3.2. Initial knowledge of “English”

The English language was identified as the most frequent language for applicants at University of Economics, Prague. Summarizing of data is presented on the Table. 3

Table 4. Results of the Entrance Exams in Foreign Languages 2010 - 2012 Source: Authors

	Total in 3 Years	2010	2011	2012
English	77.31%	76.63%	76.95%	78.04%
German	12,98%	14,33%	12,77%	12.43%
French	6.08%	5.58%	6.61%	5.85%
Spain	3.63%	3.46%	3.67%	3.68%
Total	100.00%	100.00%	100.00%	100.00%

Added information from the Table 4 is that more than three fourth of applicants prefer „English“ as the first language. There were identified faculties (Faculty of Finance and Accounting and some specializations on Faculty of Informatics – for example Applied Informatics), where language entrance examination is performed only in „English“. Other foreign languages in what the entrance examinations are preformed at UEP are Russian and Italian languages, but the share of applicants making entrance exams in these languages represents only 1.5 % of all applicants. Other aspect is the evaluation of results in „English“ according to the applicant’s country of origin – the Table 4.

Table 5. Results of the Entrance Exams in Foreign Languages 2010 - 2012 Source: Authors

English	2010		2011		2012	
	Avg.	Med.	Avg.	Med.	Avg.	Med.
Czech Republic	66.50	68.00	66.95	68.00	65.99	67.50
Slovak Republic	74.79	78.00	72.06	74.00	72.44	74.00
Russian Federation	74.29	78.00	71.59	74.00	72.07	74.00
Vietnam Socialist Republic	66.98	70.00	73.16	76.00	72.91	76.00
Ukraine	74.69	80.00	71.63	74.00	67.56	68.00
Kazakhstan	75.60	78.00	66.98	70.00	71.84	76.00

The best knowledge of “English” was identified by applicants for Kazakhstan in 2010, but in three year this knowledge declined to the fourth place behind applicants from Vietnam Socialist Republic, Slovak Republic and Russian Federation. Knowledge of Czech applicants is the worst of all investigated countries, but the lagging off is not so dramatically.

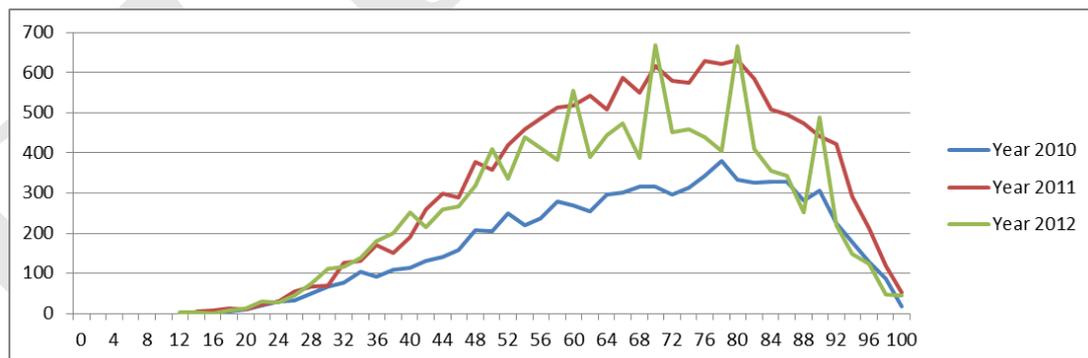


Fig. 2. Frequency of Occurrence of Numbers of Acquired Points from the Entrance Exam in “English” 2010 – 2012 Source: Authors

Other question (the second one) was related to the occurrence of numbers of acquired points from „English“. The reconstructed curve is visible on Figure. 1 and it reflects the normal distribution, as was expected during the survey.

From the Table 6 it emerges that in the course of three consecutive periods we can identify an only declining trend in the level of knowledge represented by the average number of points achieved in the entrance exam. The only exceptions are the Vocational Secondary Schools, which in 2011 and 2012 showed a slight increase in the number of points gained.

Table 6. Results of the Entrance Exams in “English” 2010 - 2012

Source: Authors

English	2010			2011			2012		
	n %	Avg.	Med	n %	Avg.	Med	n %	Avg.	Med
Grammar Schools	60.83	72.53	74.00	65.26	72.13	74.00	61.40	71.78	74.00
Economics Schools	23.36	59.32	58.00	20.20	58.45	58.00	21.65	57.18	56.00
Vocational Schools	15.80	54.69	54.00	14.53	55.61	54.00	16.96	56.23	56.00

The better quality of „English“ learning process seems to be visible (difference for more than 10 per cents of gained points) identified in grammar schools, although the level of gained points is slightly but permanently decreasing during the investigated period.

#### 4. Conclusion

Research into the admission procedure at the University of Economics, Prague was originally undertaken in an effort to acquire basic material to strengthen the qualified decision-making of top management of faculties regarding the manner of admission of applicants to the university. For these needs we used standard statistical methods for statistical analysis on the data we acquired from the entrance exams of applicants for study. For the requirements of this paper and with regard to its limited possibilities we present here only part of the results achieved for the subject of “Mathematics” and “English”.

The decisive share of applicants for study at the University of Economics, Prague comes from the Czech Republic (this share is dropping very slightly). The second most numerous group consists of applicants from the Slovak Republic (their share is also dropping very slightly); the next group are students from the Russian Federation (their number has increased by one percentage point in the three years studied), followed by students from Ukraine.

In the analysis of the collected data for “Mathematics” we reached the following results in particular:

- The number of points acquired in the entrance exam in “Mathematics” is constantly dropping although the difficulty of these tests remains the same. This applies regardless of the nationality of the students or the type of secondary school the applicants attended. The results achieved in the admission procedure are not regulated by normal classification, but have the tendency to separate out the average and below-average applicants from the others – the borderline is somewhere around 55.00 – 60.00 points. The entrance exam also does not identify applicants who are really outstanding in mathematics.

- The best level of “Mathematics” education procedures was identified by grammar schools.

In the analysis of the collected data we reached the following results for “English” in particular:

- English language is the most frequent language of applicants for study on UEP; approximately more than ¾ of applicants selected “English” as the language for entrance procedure; the best results in points gained present applicants from Vietnam Socialist Republic, Slovak Republic and Russian Federation.

- The occurrence of numbers of acquired points from „English“ reflects the normal distribution; it corresponds to presumption, that questions and exercises entrance exams are correctly prepared and examinations give real mirror of applicant’s knowledge.
- The best quality of “English” education procedures was identified by grammar schools.

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4<sup>th</sup> International Conference on New Horizons in Education

# Knowledge and attitudes of university students on consumer rights

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## Abstract

Manufacturing have increased rapidly dragging consumption away frenzy level due to advanced technology and various communication possibilities during recent years. Some products decay before opening the packaging because of excessive amount of buying. The concept of "fashion" emerged for Electronic instruments too. Waste of forests, fuel, water etc. consume the resources in the countries. Before buying, the negligence of consumers about prices, quality, safety or healthy for products is also play important role of increasing this waste. With a view to raise awareness and to protect consumers, "Consumer Protection Act, numbered 4077" was enacted and became effective on 23.02.1995 in Turkey. This Act regulates the issues regarding "*measures to protect consumers' interests, to enlighten and educate consumers, to indemnify consumers, to protect consumers against environmental hazards, to encourage consumers to take actions to protect themselves and to promote voluntary consumer organizations*". As the subject of consumer rights are gaining great significance at national and international levels nowadays, consumer awareness becomes a lifetime process starting from childhood. In this respect, it is important to know whether the consuming preferences of the youths are based on the true knowledge or not. This study was conducted in Alaaddin Keykubat Campus of Selçuk University, in Konya, in order to assess the knowledge of university students on "The consumer protection Act numbered 4077" for determining whether they are conscious consumers or not as they purchasing goods and services.

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Keywords: Consumer Awareness, Consumer Rights, Goods and Services, Defective goods

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## 1. INTRODUCTION

The consumer concept has emerged and used especially beginning from 19th century. Before the industrial revolution of the 19th century, persons who buy goods and service to meet needs was considered as 'buyer, rather than consumer' (Aslan: 1996: 1). The industrial revolution increased production of various types of goods, boomed the consumption level to frenzy bringing several issues with it. Consumers who failed to reach enough information about goods and services such as market prices, quality and healthy level, stayed weak position in the face of strong manufacturers.

They didn't know what they do or where they complain about problems of sold products.

Large increase in the number of consumers forced authorities to solve that kind of problems in legal ways and brought consumer rights on the agenda. Since the early 19th century this topic has gained momentum steadily.

### *1.1. The Emerge of Consumer Rights in Europe*

For the first time, European Union consumer law was mentioned in the Maastricht Treaty. Starting from 1993, consumer rights gained importance in the European Union (Erdoğan, 2011:2). Consumer rights was accepted in European countries such as England, Germany, France, Belgium, Swiss (Poroy,1979:517). U.S. President j. Kennedy, 15 February 1962, laid the base of the rights of consumer in his speech at the Congress for the first time. (Ede and Calcich,1999;113). J. He said: Consumers' fundamental rights are: the right to safety, the right to be informed, the right to choose, the right to be heard (Skinner,1990:673); Kennedy's highlights affected not only advanced Western countries, but also other countries in the world in that direction and resulted in positive approaches to the consumer problems. (Göle,1983:24; Tokol,1977:18; Erdoğan,2011:2).

### *1.2. Fundamental Consumer Rights*

The guidelines were adopted by the UN on 9 April 1985 in the General Assembly of the United Nations and accepted by Turkey too. They gave important legitimacy to the principles of consumer rights and practical support and guidance for developing national consumer protection legislation. The protection of consumers, a number of principles that developed by universal organization of consumer associations was adopted and recognized by the European Union on July 5, 1986 (Hippel,1986: 23; Demir, 2001: 22;

Tuskan,2011:18 [www.istanbulbarosu.org.tr](http://www.istanbulbarosu.org.tr); Tüketiciler Bülteni). The guidelines have been interpreted by CI and translated into clear consumer rights as follows:

1. The right to the satisfaction of basic needs

2. The right to safety
3. The right to choose
4. The right to be informed
5. The right to consumer education
6. The right to redress
7. The right to be heard
8. The right to a healthy environment.

[www.tupadem.hacettepe.edu.tr/evrenseluketicihaklari.php](http://www.tupadem.hacettepe.edu.tr/evrenseluketicihaklari.php). [www.mevzuat.adalet.gov.tr/html/862.html](http://www.mevzuat.adalet.gov.tr/html/862.html).

The right to the satisfaction of basic needs: The minimum needs of the human being to survive, The fundamental right of consumers, To have access to basic essential goods and services; adequate food, clothing, shelter, health care, education and sanitation. They are:

- Basic physiological needs (hunger, thirst, insomnia, gender)
  - Security requirement (a sense of confidence, physical and economic security)
  - Social needs (belonging, being loved, proximity, and friendship),
  - Needs the ego (reputation, achievement, self respect),
  - Self development needs (being a famous scientist or athlete, etc.)
- ([www.tupadem.hacettepe.edu.tr/evrenseluketicihaklari.php](http://www.tupadem.hacettepe.edu.tr/evrenseluketicihaklari.php).)

The right to safety in goods and services bought: The right to expect that household products and children's toys, when used according to manufacturer's instructions, will not explode, set houses on fire, or cause personal harm or injury in any way. In cases where goods and services are not reliable in quality, today's consumer faces with the danger of injury, poisoning, disablement, even death risk at any moment. (Akipek,1999:132). This right is different from others as it relates to the life and health of consumers directly . ( [www.tupadem.hacettepe.edu.tr/evrenseluketicihaklari.php](http://www.tupadem.hacettepe.edu.tr/evrenseluketicihaklari.php), [http://journal.yasar.edu.tr/wp-content/uploads/2011/07/no3\\_vol1\\_08\\_durmaz.pdf](http://journal.yasar.edu.tr/wp-content/uploads/2011/07/no3_vol1_08_durmaz.pdf).)

The right to be informed: to be given the facts needed to make an informed choice, and to be protected against dishonest or misleading advertising and labelling. Consumers can make a rational selection before buying. To do this, informations like the prices, quality and skills of goods should be given; after buying, tools or instructions for using the goods in a healthy and safety way and fit-for-purpose should be given to the consumer. The consumer have the right to be informed about the legal procedure in case of defective goods and services, or in the absence of agreed property, and the prevention of misleading. This refers to the rights of the consumer's right to information. ([www.tupadem.hacettepe.edu.tr/evrenseluketicihaklari.php](http://www.tupadem.hacettepe.edu.tr/evrenseluketicihaklari.php), [www.mevzuat.adalet.gov.tr/html/862.html](http://www.mevzuat.adalet.gov.tr/html/862.html)).

The right to choose between products of different qualities and prices, which are required to satisfy our needs: personal demands, taste and others factors, of course, affect prices. It is the consumer's right to choose a level of quality and performance equal to the price which he/she is prepared to pay. In a democratic system, citizens (consumers) choose political authorities with their free wills (Kuzu,2011:22), similar to this, citizens (consumers) should have to choose the right products or services to meet their needs.(Tanör,1978:9) For this reason, substitute products and services should be provided alternatively; should not be limited since the

fundamental logic of the free market economy is "development-improvement through competition between available alternatives". The consumer's right to choose includes; competitive prices with a wide range of other comparable qualifications, presenting products and services to consumers with so much diversity, even if it is limited in the specific areas, acceptable price with the provision of satisfactory quality and service guarantee. (tupadem.hacettepe.edu.tr/evrensel tuketicihaklari.php)

The right to be heard: to complain to a retailer if one is dissatisfied about a product or service. To have consumer interests represented in the making and execution of government policy, and in the development of products and services. Participation of consumers and consumer organizations to the decisions that are directly or indirectly related to the rights or benefits of consumers taken by the various institutions must be provided. Consumers should attend at the decisions that directly or indirectly concern themselves through unions democratically. They can defend their rights, political thought and interests with legal, administrative, technical, commercial, economic, social etc. tools. The development of voluntary consumer organisations must be encouraged. Consumers should be protected with the institutions created by the public sector and, where applicable, must be supported to be represented. (www.tubitak.com/evrensel.htm)

The indispensable condition of democracy is organized society. The development of the community in economic, social and cultural aspects, to reach at a healthy and contemporary level, to use underground and ground resources of the country efficiently and in accordance with the needs of the community, the settlement of consumer rights and human rights, is possible with organizing society and living democracy. (Kuzu,2009), (www.tupadem.hacettepe.edu.tr/evrensel tuketicihaklari.php)

The right of redress: means the right to a fair settlement of just claims. It includes the right to receive compensation for misrepresentation or shoddy goods or unsatisfactory services. It provides:

- Simplicity of receiving the defective goods back
- Possibility to regenerate the offending services
- If it is not possible to withdraw defective goods, the return of the cost must be provided
- The payment of compensation or loss depending on legal basis (Baykan,1997:22 ; AB, Tüketiciyi korur, 2007) .(www.tupadem.hacettepe.edu.tr/evrensel tuketicihaklari.php)

The right to consumer education: means the right to acquire the knowledge and skills to be an informed and assertive consumer. Consumer's education can be defined as an informative investment to orientate economic activities of an individual and to increase its strength to influence market. Consumer education is important in terms of both protection and information. The most promising solution for protection of consumers in the long term is consumer education for being "a better consumer" . It is believed that informative and protective efforts will not give the expected results without education in developed countries. The main purpose of the training programmes is to teach the consumers to find needed information and how he/she can evaluate or use the information. In addition to this, developing the ability to purchase and use of goods and services; examining production and distribution conditions, creating total environmental awareness, teaching to become party to the economic and social preferences are other objectives. (www.tupadem.hacettepe.edu.tr/evrensel tuketicihaklari.php.)

To reach above aims, followings should be implemented:

1. -Informative education and training in all schools
- Training and education in other institutions through social organizations.
- Notification and enlightenment by printed and visual media (www.tukobir.org.tr/frame.asp?sayfa=haklar.)

2. The right to a healthy environment: means the right to a physical environment that will enhance the quality of life. It includes protection against environmental dangers over which the individual has no control. We live in an age of consumerism. As is well known, people consumed the nature for a long time. As a result of this frantic consumerism, a lot of problems and dangers came up with. Today, the environment has been an extreme precision in developed countries, to overcome, very large plans or projects are being produced the participation of each segment of society. It is fact that remedies to develop environmental awareness is strictly related to consumer consciousness. It is not possible to separate the consumer consciousness from environmental awareness no longer. The criteria for being responsible and conscious consumer in developed countries is not only “defending rights” or “to pay true price” no longer. In addition to this, purchased goods and services are discussed in the aspect of social cost. Conscious consumer is defined as the person who goods and services purchased, does not harm the environment, and does not waste natural resources. ([www.tupadem.hacettepe.edu.tr/evrensel tuketicihaklari.php](http://www.tupadem.hacettepe.edu.tr/evrensel tuketicihaklari.php))
3. -The right to a healthy environment has the following items:
4. - The right to have a physical environment which improves the quality of life
5. -Prevention of environmental hazards,
6. - The right to protect and guard the environment for today's generations, as well as for future generations. ([www.tuko-bir.org.tr/frame.asp?sayfa=haklar](http://www.tuko-bir.org.tr/frame.asp?sayfa=haklar))

### *1.3. Historical Development of Consumer Rights in Turkey*

History of consumer protection legislation in Turkey extends to the period of Ottoman Empire. The Ottoman Empire executed various mechanisms and established some Institutions and organizations to protect consumers, tried to balance of the rights of manufacturers, consumers and distributors by performing a triple system. The basic elements of this triple system were state, artisan representatives and consumers. (Aydoğdu, 1998:3). Shopkeepers in cities organized and established a chamber of artisans called “Ahi organizations” that is similar to today’s professional organizations. Ahilik Organizations (Özyılmaz, 2011:56-59) worked as consumer protection organizations.

In the first years of the Republican era, there was not any special law or regulation relating to consumer protection. During this period, some laws which had been put into force in order to protect public order used for aiming to protect the consumer rights. (Akipek, 1999:111; Arslan, 1996: 29).

In the 1970s, with the developments in Turkey's economy, the industrial sector and the service sector gained weight, production increased along with increased consumption. (Akipek, 2001:20) Increasing consumption brought the issue of protection of consumers in legal sense. As a result, the Ministry of Commerce took Consumer Issues Seminar on the agenda for the first time and consumer issues were discussed in this seminar: the necessity of legal regulations for the protection of the consumer like in developed countries discussed. After this date, this work has won speed and came to the present. (Tokol, 1977: 95).

The basis of the legislation in Turkey related to consumer rights are : Universal Declaration of Human Rights, Universal Declaration of Consumer Rights of U.N.A.s to article 172 of 1987 Constitution: "the State takes protective and enlightening measures for consumers, encourages consumers' preventive initiatives." Related laws are:

- 1982 Constitution's 172. item (direct), items 167 and 171 (indirect).
- The consumer protection Act 4077 " in 1995
- The Protection of Market Competition Law,
- Obligations code(in particular the new code of obligations).
- Turkish Commercial Code (especially The New Turkish Commercial Code).
- The Turkish Penal Code.
- Public Hygiene Law

Consumer protection law entered into force in 1995 in Turkey. The latest changes in this law were made in 2003. Nowadays, following governmental or non- governmental institutions work to protect consumer rights in Turkey: Turkey Consumer Organisations, Consumer Associations, Consumer Protection And Competition General Directorate, Ministry Of Industry and Commerce, Consumer Council, Consumer Issues Arbitration Committee, Advertising Board, Consumer Courts (www.tupadem.hacettepe.edu.tr.,www.mevzuat.adalet.gov.tr/html/862.html)

## 2. OBJECTIVES OF THE STUDY

This study was conducted in Konya in order to determine the knowledge and attitudes of university student as consumers about consumer rights. Also, to reveal whether they are conscious consumers or not as they purchasing goods and services was another aim. Target population of the study was the students in Alaaddin Keykubat Campus in Selcuk University in Konya. In this campus, there are Law, Economics, Business Administration, Public Administration and International Relations, Communication and Health Sciences Faculties. It was assumed that target population, namely the universe, had basic knowledge about "The consumer protection Act 4077 " since the Faculty of Law together with the mentioned faculties are being taught general law through lessons such as "Introduction to Law" , "Basic Concepts of Law" . The results of this research will also contribute to the planning of law education in the future.

## 3. LITERATURE RESEARCH

There are a lot of works to measure consumer awareness in the literature. The first scientific field study to decide awareness level of citizens about consumer rights was done by Borak in Turkey in 1984. Borak's study revealed that consumers did not know their rights and consciousness level of using these rights were low. (Borak, 1989: 80-98).

A study named "The importance of Consciousness Level in Consumer Protection, An application on Households" was done by Kaynakve Akan. Although the vast majority of consumers did not know the Consumer Protection Law; they did not believe the existence of enough consumer protection in the country as to the results of this study. The rate of becoming aware of the consumer protection law increased as to education level in this study. The rate of being aware of the consumer law was 100% in post graduate, while those who graduate from primary school was 62.7% . Although more than half of the respondents considered themselves as none-

conscious consumer, the rates of considered themselves as a conscious consumer were 65,8% (first place) at those who have postgraduate education, only 39.1% at primary school graduates.

In 2003, a field survey for revealing consumer awareness and levels about “The Consumer Protection Act4077” done by Mert. He found that:12.9% of attendants never know anything about, 48.8% of them know little, 28.3% of them good at, and 10% of them were not sure about their knowledge.(Mert, 2004: 315-324).

Babaoğlu’s survey on same subject says that:37.8% of consumers are not aware of their legal rights. 84.8% of them don’t know where she or he applies for a purchased defective good or service. 2.8% of consumers know 8 Fundamental Consumer Rights.77.3% of consumershave not heard “Arbitration Comitee for Consumer Issues”yet. 75,8% of consumers don’t know non-governmental organizations aimed at consumer protection. 90,4% of consumers do not know consumer advice phone number. 54.2% of them do not know “Consumer Protection Act, numbered 4077”. 42.1% of them don’t believe that they have properly protected rights. Only 0.5% of consumers are a member of consumer organisations.(www.tupadem.hacettepe.edu.tr/.../tuketicinin\_koronmasi\_bilinc\_duze)

Güler and his colleagues made a study at two high schools in Ankara to decide consumer rights knowledge and attitudes of teenagers. (Totallly 353 students, 58.6% of participats are men, 47,0% of them were 16 years old. 63.2% of students were in grade 9). As to the results of this study, “The right to the satisfaction of basic needs” is best known and “The right to redress” is the least known item of 8 items of Fundamental Consumer Rightsin students. Most of the students (85%) said that the seller of the product is the first reference for a purchased defective product. (Güler and his colleagues, 2007:16).

Dickinson and Shaver made a study in the United States in 1982 to decide the level of information related to consumer rights and to what extent they use this information when they have a problem. In this study, it was come out that consumers who had upper grades than high school were more conscious consumers than those who had high school or under grades (Dickinson and Shaver, 1982:241-260).

Singh K. and his colleagues made a study named Awareness of Consumer Protection Act (CPA) Among Doctors in Udaipur City in India in 2009. The survey was in a cross sectional study, a total of 448 professionals (253 males, 195 females) belonging to dental (222) and medical (226) categories were surveyed using a self administered structured questionnaire. Results: The awareness scores were significantly higher for medical professionals compared with those of dental professionals. Similarly, postgraduates showed more awareness in both the professions and it was found that private practitioners significantly have more awareness than the academic sector.

Conclusion: Though medical professionals have more awareness of CPA compared to dental professionals, considering the present scenario, better knowledge of CPA is necessary for both professionals in order to be on the safer side.

## **4. METHOD OF THE STUDY**

### *4.1. The Sample*

The survey was designed to measure and evaluate attitudesand information level of the university student to consumer rights, especially “The consumer protection Act4077 ” and it was performed with a questionnaire. The

data set of this study was collected by conducting the questionnaire to university students that were selected randomly. Frequency distribution and differences between groups were analyzed using chi-square test by SPSS.

Like similar studies, easy sampling method was used to collect data in this study because of providing quick access to a large amounts of data sampling (Cui vd., 2003; Zhou, 2004), (Nakip, 2003). The universe of the study was limited to the students of some faculties which have fundamental law lessons under any name. The number of the student in these faculties is 4934. Due to the number of the universe, the number of the elements of the sample was decided as 607. By taking into account the Sample Sizes Table ( $\alpha= 0.05$ ) prepared by Yazıcıoğlu and Erdoğan (2004), the minimum number of needed survey was determined as 240 with  $\pm 0.05$  sampling error. During the implementation of the application of the survey for two months, 607 questionnaires were achieved. Obtained questionnaire number exceeded targeted number. As a result of this, the survey recycle ratio can be thought of as an acceptable recycle ratio.

#### *4.2. The Hypothesis of the Survey*

Developed Hypothesis are as follows:

**Hypothesis 1:** There's a difference between the levels of awareness of consumer rights as to gender.

**Hypothesis 2:** There's a difference between the levels of awareness of consumer rights as to age groups.

**Hypothesis 3:** There's a difference between the levels of awareness of consumer rights as to marital status.

**Hypothesis 4:** There's a difference between the levels of awareness of consumer rights as to home city.

**Hypothesis 5:** There's a difference between the levels of awareness of consumer rights as to monthly income.

## 5. FINDINGS

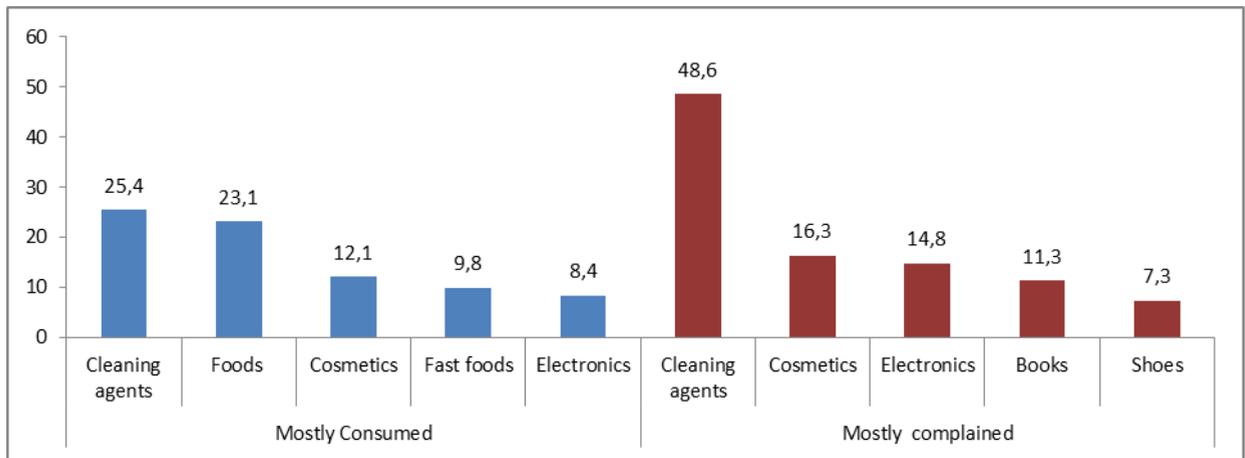


Figure 1: Mostly consumed and mostly complained product groups of the participants (%)

Complaints about cleaning agents were the top. Cosmetics were the second. Electronics were 5<sup>th</sup> in consume list but got the third in the most complained product groups list.

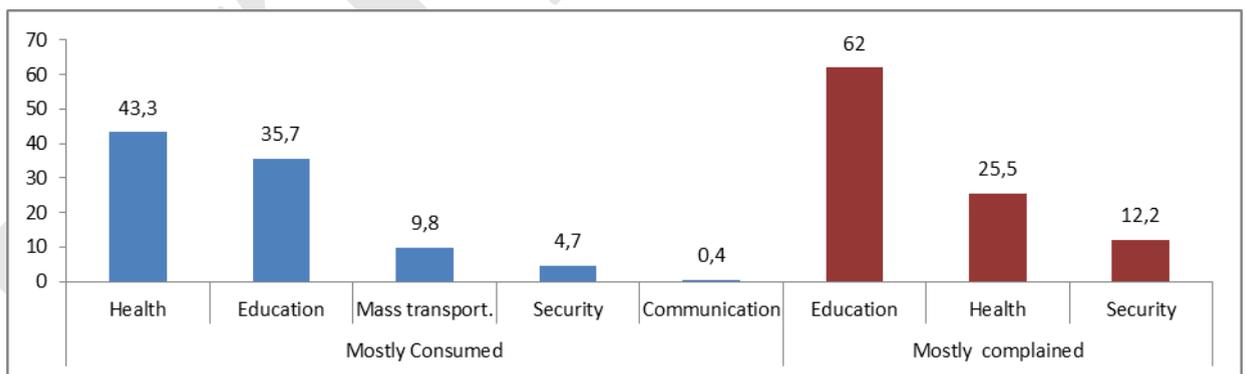


Figure 2: Mostly consumed and mostly complained service groups of the participants (%)

The most consumed service groups of the students were the most complained service groups at the same time with a change in order.

### 5.1. Reviews on the Hypothesis of the Survey

In order to determine the level of awareness about consumer rights, items in the figure 3 were asked to the participants in the form of a likert scale. As to the evaluation criteria, “certainly not agree” shows 0 point, “certainly agree” shows 5 point in the scale. The results are given below in the figure.

Items for measuring the awareness level of participants on consumer rights are listed from the most supported sentence to the least in figure 3. No item got half point as an average shows lower awareness level. Slight differences of standard deviations between items show that lower awareness level has a normal distribution between items.

Items	Men (n=214)		Women (n=376)		Mann Whitney U Test	
	Avg.	S.D.	Avg.	S.D.	z	P
Deceptive and misleading ads abuse children and the elders more than others.	1,93	0,80	1,98	0,76	-0,62	0,539
The idiom "No return for purchased goods." has lost importance nowadays.	2,07	0,75	2,01	0,75	1,08	0,281
Consumers can end subscription agreements by sending written notification to the seller unilaterally.	1,93	0,79	1,94	0,78	-0,24	0,809
If the consumer pays arrears of installment buying, he or she deserves a discount.	2,02	0,78	2,05	0,74	-0,53	0,599
If you apply for a defective goods or services to the seller within thirty days, the contract can be terminated.	1,80	0,80	1,82	0,79	-0,305	0,761
If a product fails within the warranty period, the dealer is obliged to repair the product without demanding labor costs, repair part cost or any cost under any name.	2,22	0,72	2,08	0,78	2,125	0,034
Creditors are obliged to notify the consumer in case of any increase in interest rate before 30 days.	2,06	0,83	2,00	0,82	0,898	0,37
If the marked price or the price at the price tariff is different from the cashier price, the price that is consumer's favor is valid.	1,55	0,76	1,56	0,73	-0,183	0,854
When purchasing goods or services with a credit card vendor or provider can't ask for an additional payment like commission or under any name.	2,00	0,78	1,98	0,76	0,171	0,864
Total	17,57	5,01	17,42	4,86	0,364	0,716

Figure 3: The awareness level of participants on consumer rights ( as to gender) Note: “ n” is the number of participants

It can be seen from the table that there are slight differences between total amount of averages and standard deviations as to gender. This shows similarity between two groups. Both groups have almost same awareness as to items too. ( $p_i > 0,05$ ) So, the rejection of an gender-based perception hypothesis is possible, because there is no difference in the levels.

Whether the awareness level of participants on consumer rights change as to age groups or not was also examined in the study. Although total amount of averages and standard deviations are slightly decreasing with respect to age groups, there is no meaningful difference as to Anova test as to age groups. ( $p_i > 0,05$ ) So, the rejection of an age group-based perception hypothesis is possible, because there is no difference in the levels.

Whether the awareness level of participants on consumer rights change as to marital status or not was also examined in the study. Although total amount of averages and standard deviations are slightly decreasing as to marital status, there is no meaningful difference as to Anova test. ( $p_i > 0,05$ ). The rejection of a marital status-based perception hypothesis is possible, because there is no difference in the levels.

Whether the awareness level of participants on consumer rights change as to home city or not was also examined in the study. As regard with home city, there is no meaningful difference as a result of Anova test. ( $p_i > 0,05$ ). The rejection of a home city-based perception hypothesis is possible, because there is no difference in the levels.

Whether the awareness level of participants on consumer rights change as to monthly income or not was also examined in the study. As to the statistics of the the study, monthly income has no effect on the awareness as a result of Anova test. ( $p > 0,05$ ). The rejection of a monthly income -based perception hypothesis is possible, because there is no difference in the levels.

## 6. CONCLUSION

As to the result of this study, the most consumed commodities of the students were cleaning agents, foods and cosmetics respectively. But almost half of the complaints of the students were about cleaning agents. Others were cosmetics and electronics. Various studies found cleaning agents as mostly complained commodity too. It seems a general problem. May be, extensive ads on mass media create fictive expectations about those product. As a result, consumers feel disappointment about those products. On the other hand, the most consumed service groups of the students were health, education and mass transportation. Education was the most complained service group of the students with 62 %, others were health and security services respectively.

The average knowledge level of the participants to the questions related to "The Consumer Rights Act 4077" was low. It can be found as 39 % by integrating the related questions among questions 1-17. Figure 4 shows this analysis.

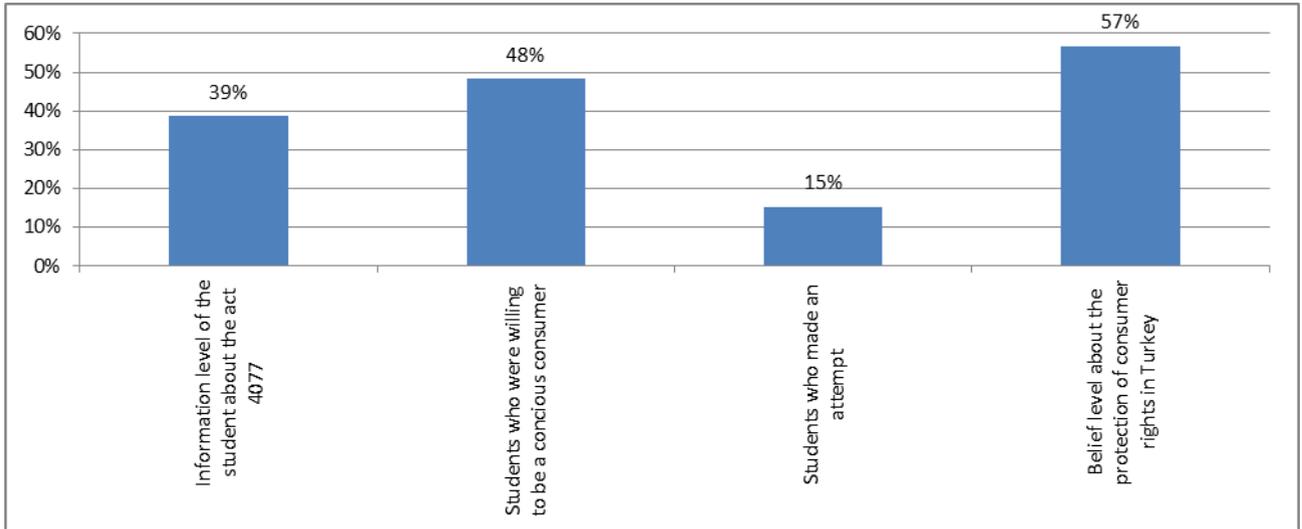


Figure 4: The analysis chart of the questions according to the relevant topics

It is clear that new methods and activities is necessary to increase the knowledge level of the university students about this act.

The rate of the students who were willing to be a conscious consumer or made a conscious consumer behavior was 48 %. The average percentage of the students who made a formal application to any consumer organization or called "ALO 175" was 15%. Depending on those statistics, it can be said that students prefer complaints rather than applications. In order to remove unwillingness for actions, some initiatives such as encouraging them to be a member of any consumer associations or assigning performance homeworks that includes a real consumer issue to them etc. On the other hand, questions on measuring the belief in the protection of consumer rights in Turkey got 57% totally, seemed hopeful.

Lastly, it can be seen from above graph that average awareness level of the university students on consumer rights was about 17 points. (Whole point was 45) and gender, age groups, marital status, home city or monthly income among university students has not got any extra effect on the awareness level about consumer rights. ( $p > 0.05$ ) This result may be due to the reducing effect of university education on the differences between individuals.

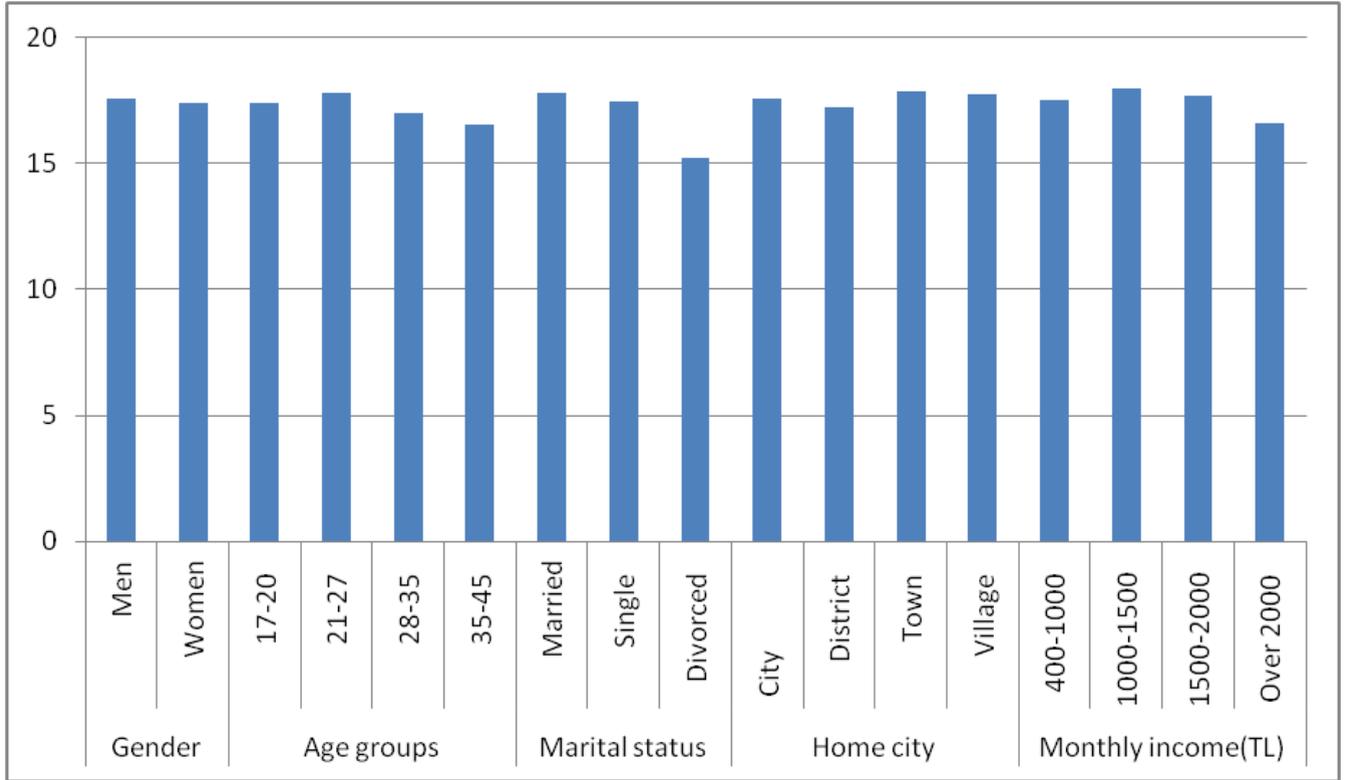


Figure 5: Average awareness level of the university students on consumer rights. (Whole point was 45)

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## L2 learning challenges and needs of university students: A preliminary study

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### Abstract

Technology demands individuals to be knowledgeable in another language, in particular the English language. Learning a second language (L2) is one of the significant experiences encountered by a student in an institution of higher learning. Some L2 acquirers would be more successful than others in acquiring another language. University students need a good knowledge of the English language to access the globalized world technologically. An investigation was conducted to examine the challenges, needs, attitudes and beliefs about English language learning held by university students in Malaysia. The subjects exhibited somewhat differing responses with respect to L2 learning perceptions of experiences. The paper also addressed the practical implications of the results.

*Keywords:* L2 learning; challenges; needs

### 1. Introduction

Technology demands individuals to be knowledgeable in another language, in particular the English language. Learning a second language (L2) is one of the significant experiences encountered by a student in an institution of higher learning. Being a complex process, it would take an individual a considerable period of time to acquire another language, other than his/her own native tongue. Some L2 acquirers would be more successful than others in acquiring a second language. University students all over the world need a good knowledge of the English language for various reasons. What are their reasons? Which aspects of the language that they need most and urgently? What are the challenges they encounter and how could they be assisted to produce a good command of the English language? Educationists seem to frequently contribute views and suggestions that could increase the rate of second language acquisition or design materials that would enhance second language learning and mastery. Nevertheless, seldom would educationists investigate and document learners' challenges, needs, attitudes and beliefs about their L2 learning and their learning experiences. Investigations on students' challenges, needs, attitudes and beliefs should be conducted for several reasons: (i) educators would be aware about language learning from the learners' perspectives, (ii) learners' needs and beliefs guide the way they behave and these can impact their learning outcomes, (iii) educational institutions can provide empowerment to the learners, (iv)

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learners' views could lead to an improvement in the system of education. The researchers believe that this study would provide a compelling contribution to the field of applied linguistics.

A study of learners' perceptions is would present a better understanding of students' performance. According to O'Shaughnessy (1992) "perception is an experience" (p. 226) that assists and provides physical actions. A study of learners' challenges, needs, attitudes and beliefs would enable researchers to gain access into the learners' worldview as well as into how they interpret their learning and learning experiences. The purpose of this investigation is to examine the challenges, needs, attitudes and beliefs about English language learning held by university students.

## 2. Literature Review

This section focuses This section focuses on two theoretical perspectives of second language learning and acquisition that form the basis of this research. The first one is Gardner's Socio-Educational Model and second, it is Cummin's Model of Academic Language. Previous studies related to this investigation were also discussed.

Gardner's Socio-Educational Model (1985) asserts that second language acquisition takes place in a social and cultural context. It proposes that the cultural beliefs and the community that the individuals are in, may influence the general language proficiency. For instance, if the cultural belief is that second language learning is difficult, then there would be low level of achievement. The model also indicates that there are four different kinds of individual differences, for instance intelligence, language aptitude, motivation and situational anxiety. Attitudes and personality would have their effect through one of these four components.

Cummin's Model of Academic Language (Cummins, 1992 cited in Short, 2002; Snow, Met & Genesee, 1992) considers the integration of language and content instruction. According to Snow, Met and Genesee (1992), Cummins posits a paradigm in which the language tasks may be characterized as context reduced or context embedded and in which the tasks addressed through language may be cognitively demanding or undemanding. This model is based on the basic interpersonal communication skills (BICS) and cognitive academic language (CALP) distinction. BICS refers to the language proficiency in everyday communication context while CALP concerns the manipulation of language in decontextualized academic situations (Cummins, 1992, 2003). Richards, Platt and Platt (1993) further clarify that BICS refers to the language proficiency needed to perform tasks which are not directly related to learning academic content and cognitively undemanding, while CALP concerns the proficiency needed to perform tasks that are cognitively demanding and often have to be solved independently by the learner without support from the context.

The research literature generally supports the belief that a measure of attitudes and needs toward learning a second language would relate to achievement in that language (Gardner, 1985). In general, positive attitudes towards the L2, its speakers, and its culture can be expected to improve and enhance learning. (Ellis, 1994; Gardner, 1985). An investigation conducted by Tremblay and Gardner (1995) on secondary school students at a francophone school in Canada revealed that positive language attitudes orient students toward developing specific learning goals and thus improved achievement in French courses. Among the findings found

in Shah's (1999) study was that lack of positive attitude exhibited by key informants and low motivational intensity and L2 learning needs due to minimal effort put on English language learning led to low ESL achievement and academic achievement.

Al-Tamimi and Shuib (2009) investigated on engineering students' attitudes and motivation towards English language learning at Hadhramout University of Sciences Technology in Yemen. It was found that most of students had positive attitude towards the social value and educational status of English, and a high number of the students showed their need and interest in the culture of the English speaking world as represented by English-language films. The data showed that students exhibited greater support of instrumental needs and reasons for learning the English language including utilitarian and academic reasons, and regarding the integrative reasons, the results provided evidence that learning English as a part of the culture of its people.

There is another study conducted by Shah and Ng (2005) which investigated on the reasons as to why international students from China and Indonesia did not perform well in the English Improvement Programme (EIP) available at Inti College, Malaysia. It addressed the students' attitudes towards Acrolect Malaysian English and their needs and motivation to learn the language. Survey questionnaires were utilized to gather the data from the EIP students. The findings revealed that the students showed negative attitudes towards Acrolect Malaysian English. The preferred models were the native English speaker models, for instance Standard American English and Standard British English. In terms of motivation and needs, the students were instrumentally motivated than integratively motivated.

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Japanese adolescent learners of English. The findings indicated that learners with the higher WTC scores seemed to exhibit more frequent communication in class. They also showed the tendency to interact with teachers outside the classroom and asked questions. It was also found that the learners who were interested in international activities were inclined to show willingness to communicate in the English language more frequently.

Littlewood (2001) addressed three perspectives which are of special potential relevance to language teaching; they are: (i) the distinction between collectivism and individualism; (ii) different perceptions of power and authority; and (iii) different types of achievement motivation. It was found that "most students in all countries question the traditional authority-based, transmission mode of learning. They wish to participate actively in exploring knowledge and have positive attitudes towards working purposefully, in groups, towards common goals" (p. 3).

Shah, Yusof, Al-Bataineh, Yusop, Haron, Ong and Ahmad (2007) addressed the L2 learning beliefs the Malay students in a Malaysian university. The study examined the subjects' beliefs in terms of the nature of second language learning, difficulty of second language learning, and second language learning aptitude. Survey questionnaires that were issued to the subjects were adapted from Horwitz's (1987) Language Learning Beliefs Inventory. One of the most important findings was that majority of the respondents felt that it is not necessary to know about the English-speaking culture in order to speak English. They just would like to learn the English language per se. Over two-third of the respondents judged that vocabulary and grammar to be the most important for language learning. The participants seemed to believe that producing utterances with accurate vocabulary and

correct grammar would enhance one's credibility. They did not seem to believe in experimenting with the second language at the initial stage of learning. Over half of the participants considered some languages are easier to learn than others, while 43% indicated that English is a difficult language. English language is far from similar to the subjects' first language (Malay language) in terms of language structures and rules. Majority of the respondents were not sure about having special language learning ability. This could impede their second language learning process and acquisition could be delayed.

In another related study Shah, Yusof, Sulaiman, Kudus, Yusof and Latiff (2009) compared the responses from the male and female subjects. One of the results revealed that both the males and females believed that learners who already acquired the L2 would face less difficulty in learning the third one. Both gender groups probably felt that these learners would inevitably employ the language learning strategies that they used to acquire the L2 in their attempt to acquire any subsequent languages. The subjects also resorted to translation throughout their learning process. Being in a climate where the Malay language was a dominant language, translating, word borrowing, code-switching and making associations between the two languages were the best options for the learners as they believed that these activities could hasten their pace of learning another language.

Shinbo (2004) addressed the heritage language students' weaknesses and needs, strengths, challenges in a foreign language classroom. The data were collected via questionnaires, interviews, observations and e-mails. The data showed that the subjects endorsed strongly the need to improve reading, writing, and oral skills. The language instructors felt that the students "need to improve their oral skills sophisticated enough for utilizing at the academic and professional levels" (p.87). The results revealed two types of challenges encountered in the learning process. The first one concerns the difficulty of learning Japanese as a foreign language, such as unfamiliar with terminology, lack of ability to master kanji, lack of linguistic skill especially the grammatical rules, tendency to mix discourses styles, and difficulty of employing formal register. The second type of challenge includes pressure to excel, pace of class and peers' negative perception.

### **3. Methodology**

The data were collected through issuing survey forms from a random sample of students taking English language courses at Centre of General Studies, National University of Malaysia (Universiti Kebangsaan Malaysia – UKM). The data were collected from 89 UKM students of various disciplines taking English language proficiency courses at the Centre.

A questionnaire was designed based on the works of Sparks, Ganschow and Javorsky (1993), Argaman and Abu-Rabia (2002), and Bell, McCallum, Kirk, Brown, Fuller and Scott (2008). The instrument consisted of Likert-scale items (a scale from 1-5) which used a forced-choice format in which subjects were asked to select from one of the following choices: (1) strongly agree, (2) agree, (3) neutral, (4) disagree, and (5) strongly disagree. In addition, the subjects were required to respond to question items pertaining to demographic information such as age, sex, ethnicity, hometown, program major, years in program, English courses taken, and length of exposure to English. The data will be processed using an SPSS program, in which frequency analysis was performed to examine the subjects' responses with respect to their challenges, needs, attitudes and beliefs about L2 learning.

#### 4. Findings of the Study

The aspects under L2 learning that were analyzed were attitude and needs, beliefs on attention, challenges on anxiety and challenges on self-confidence. Under attitude and needs, subjects responded to items such as “I need to be successful in the English language”, “I want to learn the English language,” “I need to study harder for my English language courses”, and “I feel I have spent too much time studying for my English language courses.” The students’ responses on L2 language learning attitude and needs are presented in Table 1.

**Table 1: L2 Learning Attitudes and Needs**

No.	Question Items	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
1.	I need to be successful in the English language.	28.1%	39.3%	15.7%	11.2%	5.6%
2.	I want to learn the English language.	16.9%	52.8%	15.7%	14.6%	0%
3.	I need to study harder for my English language courses.	12.4%	64%	21.3%	1.1%	1.1%
4.	I feel I have spent too much time studying for my English language courses.	3.4%	11.2%	28.1%	50.6%	6.7%

It was found that most of the subjects (67.4%, i.e. 28.1% strongly agreed and 39.3% agreed) defined being successful in an English language course as an ‘A’ scale, while 11.2% disagreed and 5.6% strongly disagreed with this notion. Majority of students wanted to learn the English language, of which 16.9% and 52.8% indicating “strongly agree” and “agree” responses respectively. More than 70% of the respondents expressed the need to study harder for their English language courses. The results also revealed that only 14.6% (3.4% strongly agreed and 11.2% agreed) of students felt the need to spend a lot of too time studying their English language courses. The results clearly showed that majority of the subjects wanted to learn L2, and yet not much time was spent in doing so.

With regard to beliefs on attention, the respondents were required to respond to statements such as “I feel my attention wanders more easily in my English language course than my other courses,” “I feel I fall asleep more easily in my English language course than my other courses,” and “I am more easily distracted when I study an English language course than my other courses.”

**Table 2: L2 Learning Beliefs on Attention**

No.	Question Items	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
1.	I feel my attention wanders more easily in my English language course than my other courses.	6.7%	18%	20.2%	50.6%	4.5%
2.	I feel I fall asleep more easily in my English language course than my other courses.	6.7%	18%	14.6%	49.4%	11.2%
3.	I am more easily distracted when I study an English language course than my other courses.	7.9%	23.6%	22.5%	32.6%	13.5%

As can be seen in Table 2, the data revealed that 55.1% of the subjects did not feel that their attention wanders more easily, with 50.6% disagreeing and 4.5% strongly disagreeing with the statement. More than half of the participants (60.6%) indicated that they did not easily fall asleep in an English language class, specifically 49.4% disagreed and 11.2% strongly disagreed with the item. Further, a somewhat similar response was obtained for the next item, of which there were 46.1% of the subjects who presented 32.6% disagree and 13.5% strongly disagree choices when answering question pertaining to being easily distracted when studying an English language. From the findings, it can be seen that more than half of the students indicated paying attention during their L2 learning, less than half revealed weak attention span, while the rest of the learners were not sure about their focus towards L2 learning.

With respect to challenges on anxiety, the subjects provided responses to items such as “I have not gotten nervous and tense when studying for my English language course,” “I do not worry about my English language course,” “I feel anxious about English language exams,” and “I feel nervous and afraid about participating in class discussion during my English language course.”

**Table 3: L2 Learning Challenges on Anxiety**

No.	Question Items	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
1.	I have not gotten nervous and tense when studying for my English language course.	7.9%	28.1%	14.6%	28.1%	36%
2.	I do not worry about my English language course	1.1%	23.6%	18%	43.8%	13.5%
3.	I feel anxious about my English language exams.	18%	38.2%	24.7%	16.9%	2.2%
4.	I feel nervous and afraid about participating in class discussion during my English language course.	24.7%	29.2%	20.2%	20.2%	5.6%

As shown in Table 3, the results showed that 36% (strongly agree = 7.9 % and agree = 28.1%) of the subjects indicated that they had not gotten nervous and tense when studying for the English language course. A dissimilar number of students (19.1%, of which 16.9% responded to disagreement and 2.2% chose strong disagreement) did not feel anxious about their English language exams. In addition to this, more than half (57.3%

= 43.8% chose disagree and 13.5% chose strongly disagree) were worried about their English language courses. It is probably due to this that again slightly more than half of the students, i.e. 53.9% (strongly agree = 24.7% and agree = 29.2%) felt nervous and afraid about participating in the English language class discussion. The fear of learning L2 could affect students' L2 attainment.

With respect to challenges on self-confidence, participants answered the following items: "I do not feel capable of studying for my English language course," "I feel that I am not in control of my grades in my English language course," and "I will never be successful in an English language course."

**Table 4: L2 Learning Challenges on Self-Confidence**

No.	Question Items	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
1.	I do not feel capable of studying my English language course.	5.6%	23.6%	12.4%	46.1%	12.4%
2.	I feel that I am not in control of my grades in my English language course.	5.6%	36%	29.2%	24.7%	4.5%
3.	I will never be successful in an English language course.	1.1%	7.9%	11.2%	31.5%	48.3%

The findings in Table 4 showed that 58.5% (46.1% selected "disagree" and 12.4% selected "strongly disagree") of the students felt that they were capable of studying an English language. About one-third i.e. 29.2% (24.7% and 4.5% showed disagreement and strong disagreement to the statement) felt that they were able to control their grades in the English language course. The data also revealed that 31.5% and 48.3% of the participants disagreed and strongly disagreed that they would never be successful in an English language course. This means that a great majority, specifically 79.8% believed that they were capable of achieving success. The data revealed that majority showed confidence in attaining success. However, despite this, their L2 general performance was about average.

## 5. Discussion and Implications

Given the participants' different language circumstances and target language learning setting, the data revealed different learners' responses and a variation of students' perceptions about English language learning. Among the important findings in the aspect of attitudes and needs were that majority of the participants needed to learn English and most indicated paying attention in class. Despite this, not much of their time was allocated outside class towards their target language learning. Almost half of the students were worried about L2 learning even though majority believed that they had the capability and would be successful. Quite a majority felt that they should have studied harder; this gave the indication that they had not been putting on a maximum effort in the learning of L2. The findings did not indicate that a great majority of the respondents giving maximum attention to L2 learning. This low motivational need indicated that the degree of attitude toward the learning of L2 exhibited by the subjects was not very high. One of Shah's (1999) findings revealed that low achievers showed lack of positive attitude and low motivational need towards L2 learning; similarly this study indicated

that these research subjects showed lack of positive attitude and also somewhat low motivational intensity towards the learning of the L2.

The results of this investigation provided useful insights on respondents' perceptions on English language learning. Most participants would like to learn another language, and hence implying that they were aware on the importance of being bilingual and the significant position of the English language in the global setting. But, there was lack of effort and energy put on target language learning; this effort should be increased and this means increasing the time of learning. The administrators from UKM should allocate more time and exposure to teaching of English, and a more formal and authentic English language situation should be created. The structures of a language should be emphasized and effective instruction of grammar should be employed.

The Ministry of Education, Malaysia could embark on, at the macro level is the introduction of a bilingual program, emulating the two-way bilingual program existing in the United States. The present language policy should perhaps be changed; a bilingual language policy would be more appropriate. More school subjects should be taught in the English language. Thirty to fifty per cent of the school hours should be reserved for the use of English in the teaching of some other subjects. To ensure that Malaysians could function effectively globally, this practice should be introduced; this could prevent the further decline in the target language competence and fluency among the Malaysian students.

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# Laboratory activities, science education and problem-solving skills

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## Abstract

Science education specialists, science teachers as well as Portuguese science curricula acknowledge lab activities as important educational tools, namely for students to learn how to do science. If doing science is conceptualized as solving problems, some kinds of lab activities may be more appropriate for students to attain that objective than others. This paper presents a categorization of lab activities based on both their main educational goal and the way they deal with phenomena and models. Afterwards, it discusses the extent to which each type of lab activities fosters the development of problem-solving skills.

*Keywords: laboratory activities, science education, problem-solving, problem-based learning*

## 1. The role of lab activities in science education

The Portuguese science curricula guidelines (DEB, 2001) as well science teachers (Abrahams, 2011; Leite & Dourado, 2007) and science education specialists (e.g., Hofstein, 2004; Millar, 2010; Wellington, 2002) acknowledge laboratory activities (also known as lab activities) as important educational tools. Over the years, several arguments have been put forwards for the use of lab activities in science education. One of them has to do with a particular interpretation of the following Chinese saying: tell me, I'll forget; show me, I'll remember; involve me, I'll understand. 'Involve me' has been understood in a restrict way, that is ask me to do things in the lab, with lab apparatus, reactants, and so on, ignoring or at least not valuing thinking about what happens in the lab. Of course people can forget what they listen to and they may remember what they watch but this raises a question: what do they remember from the scene? Is it the visual and/or spectacular part of the activity or is it its meaning? And when they do practical things themselves (so that they are immerse in the scene) based on a screenplay-like worksheet, then what guarantees do teachers have that they understand the scene they are playing? Is handling apparatus enough to yield understanding?

Another argument has to do with the idea that "science is practical". A belief in this argument leads to the idea that if scientists use research laboratories to develop theories, then students should use school science laboratories to learn them (Jenkins, 1999). It would also mean that students should rediscover the science content prescribed in the curriculum. The question is how long would it take and what guarantees would teachers have that they would discover the same as past scientists did?

Hodson (1988) argues that science education includes three major components that are worthwhile being conceptualized to be differentiated, as they require different teaching approaches, being some more lab based than other do. Those components are: learning science, learning how to do science and learning about science. According to Hodson, lab activities are not required for students to learn the science content that was discovered

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by past scientist neither to learn about the nature of science. In the former case, it should be emphasized that lab activities show what happens; they do not show why it happens (Woolnough & Alsop, 1985). Even if lab activities are used, teachers have to find effective ways of dealing with the ‘why’, that is of teaching science content without having students rediscovering what scientists have already discovered. As Einstein and Infeld (nd) have argued, concepts are free creations of the human mind, and are not uniquely determined by experiments, even though the opposite may seem to make more sense at first sight. These are the reasons why Millar (1998) argues that if we teach science because it is a practical subject, we also teach science because science is a theoretical subject. In fact, there is no previously known path that leads directly from an experiment to a new theory. Rather, there is a complex interplay between theory and practice (Leach, 1999), that is schematically represented in figure 1 (translated from Leite & Figueiroa, 2004). An implication of this interplay is that one observes what his/her theories ‘show’ him/her and one does the experiments that his/her theories allow him/her to do. This is so because empirical evidence serves as a basis for new ideas development and at the same time it depends on the ideas that yield it (Hodson, 1988; Ball, 1999). Therefore, not only creativity, imagination and insight, but also disappointment, difficulty, success and failure are typical steps of an explanation building process (Jenkins, 1999). Hence, students could conceptualize things differently from the way scientists do.

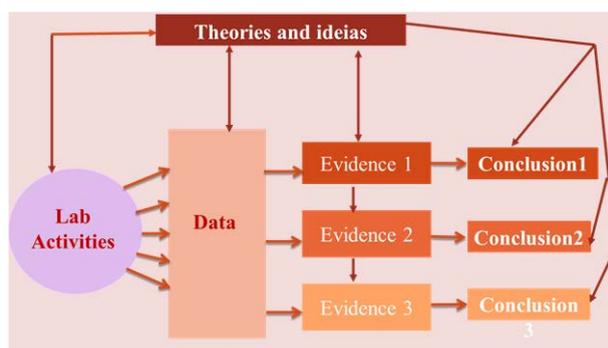


Figure 1: Interplay between theory and evidence

As far as learning about science is concerned, it is worth noticing that no science theory development path can be easily and rapidly replicated or modelled in a school science laboratory. Thus, Hodson (1994) believes that instead of having students working in the laboratory, it is worth having them doing an analysis of the history of some science ideas. This would lead students to perceive how science knowledge evolved as well as how its evolution was influenced by technological, historical, political, social, etc. factors and caused itself modifications in technology, society and environment.

However, Hodson (1994) also argues that lab activities are required if students are to learn how to do science. This science education component requires the mastery of some basic skills, processes and methods that need to be learned by doing (De Pro, 1998). However, learning them ‘one by one’ is not enough for learning how to do science. In addition, this is not consistent with the practice of receipt-like lab activities, which Hofstein and Lunetta (2004) found that have pervaded science teaching over the last decades. To some authors, the point is that learning how to do science requires students to acquire a flavour of what doing research means. Thus, although research results are not completely consistent (Sadler, Burgin, McKinney & Ponjuan, 2010), some authors argue (Bleicher, 1996; Ritchie & Rigano, 1996; Schwartz, Lederman & Crawford, 2004) that this component can be better developed in research laboratories. Nevertheless, it is worth mentioning that throughout decades several authors (e.g., Bennet, 2001; Caamaño, 1992; Kerr, 1963; Kirschner & Huisman, 1988; Woolnough, & Allsop, 1985) have put forwards lists of educational valuable objectives that may be attained through school lab activities.

Those objectives were summarized by Hodson (1994), as follows:

- To foster students' extrinsic motivation for learning science;
- To develop scientific attitudes, that is attitudes that scientists are supposed to have (e.g., critical thinking, probabilistic thinking, objectivity, persistence);
- To develop content knowledge, related to understanding and using science concepts, laws, theories;
- To develop lab skills, including mastering lab techniques and handling equipment as well as potentially harmful materials safely;
- To become familiar with science methods, including doing problem-solving and using data to build empirically based arguments.

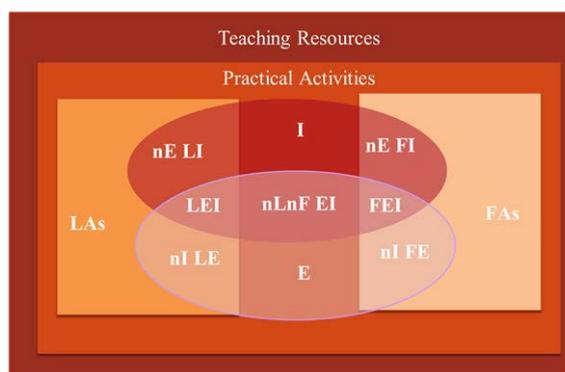
This list raises three different issues. One of them has to do with motivation. There is some evidence that lab activities may motivate students and develop students' attitudes towards science (Abrahams, 2011). However, the fact is that on one hand all activities' that are carried out in science classes should motivate students and, in the other hand, according to Ausubel, Novak and Hanesian (1980), extrinsic motivation is limited in terms of its educational value. Therefore, yielding motivation should not be the only motive why lab activities are carried out. The other one has to do with the fact that the development of scientific attitudes should be ever present, in lab as well as in non-lab classes. The third one has to do with the fact that lab activities performed in schools may hardly help students to attain those objectives. As a matter of fact, teachers and even some curriculum guiding documents hardly differentiate among some basics concepts associated with lab activities which may impair students from benefiting from lab activities as they should. In addition, it may lead teachers to think that as far as they have students doing lab activities, they have students learning how to do science. Unfortunately, this is not the case (Hofstein & Lunetta, 2004). Therefore, some conceptual clarification is needed in order to help making sense of the requirements that school lab activities may have in order to play a meaningful role in science education, namely with regard to doing science.

## **2. From practical work to lab activities**

Practical work, lab work, lab activities, lab experiments and investigations are some related but different concepts that are worthwhile defining so that lab activities are used in a more rational way. Hofstein and Mamlok-Naaman (2007) argue that to support science education knowledge development (by informing curriculum development, teaching and assessment practices, and education policy), "it is essential to define technical terms precisely to explicate knowledge in the field [and] to use those terms consistently in research reports and in scholarly writing." (p.106). Thus, differentiating among lab work related concepts is a necessary requirement for increasing the probability of having students to effectively attain the diversity of objectives referred to above.

Thus, practical work has to do with all the practical activities that require students to be actively engaged (Hodson, 1988), from a cognitive point of view. It may include lab activities (LAs) as well as paper and pencil activities, field activities (FAs) or other sort of activities. Lab work encompasses all the lab activities that students do. Lab activities have to do with things like the study of natural world from their indoor reproduction, the analysis and/or discovery of the underlying structure or material composition of some object or natural sample. They require that usual lab materials or alternative materials are available and used. They can take place in the school science laboratory or in a normal classroom (if no specific safety requirement has to be taken into account). Experiments (E) have to do with activities that require control and manipulation of variables. If, in addition, they involve lab activities, than they are a special part of lab activities and are encompassed by the lab work concept too. However, they can rather involve field activities, computer based activities, etc., and they can, therefore, be non-lab activities (nLAs). Finally, investigations (I) are problem-solving activities that are not supported by a worksheet. As a matter of fact, problem-solving activities face students with a dilemma that they

feel as worthwhile solving (Jonassen, 2004). This dilemma is associated with a felt need that is perceived as worth to be fulfilled. Thus, investigations may be lab-based investigation activities (LI) if they require the performance of lab activities, but there are other types of investigations, which can take place, for example, in the social or natural field, or in a computer. Figure 2, taken from Leite (2002a), shows how the different types of activities relate to each other.



The main purpose of lab activities is to help students to make links between the domain of real objects and the domain of ideas (Millar, Tiberghien & Le Maréchal, 2002). However, there is often a mismatch between intended and achieved students' learning outcomes (Psillos & Niedderer, 2002; Woolnough, 1998), as the latter depend on the very specific things students do and the way they do them. On the other hand, it is well known that teachers are highly dependent on school textbooks with regard to what they do in the classroom (Tobin, Tippins & Gallard, 1994; Morgado, 2004), namely in what concerns lab activities they use in their science classes (Leite & Dourado, 2007). The point is that school textbooks do not make such differentiation and therefore they do not facilitate teacher's job of providing students with a diversity of lab activities, selected according to the outstanding learning objective they want students to achieve. As a matter of fact, research has shown that a considerable amount of lab activities included in school science textbooks or laboratory guides (Bandiera, 2002; Galiana, 1999; Hofstein & Lunetta, 2004), namely in the Portuguese ones (e.g., Dourado, 2010; Figueiroa, 2007; Leite, 2002b; Leite, 2006; Sousa, 2009), have a low level of openness, provide data and their interpretation, aim at confirming previously introduced content knowledge or to obtaining the right answer, do not ask students to collect data that would be evidence of the required conclusion, do not use an appropriate control of variables, etc. This means that they miss relevant educational characteristics, namely at the epistemological level and in some cases they even suffer from a lack of internal consistency which prevents students from making sense of what they do or what they get from them.

### 3. Classifying lab activities

For a long time, several authors have classified lab activities. When they do it, they usually focus on conceptual and procedural issues. Some authors suggested a reduced number of types of lab activities (e.g., White & Gunstone, 1992; Woolnough & Allsop, 1985) and others used a lot of types (e.g., Caamaño, 1992; Wellington, 2002, Roberts, 2004). The classification criteria differ from study to study and in some cases they are not completely explicit. These ambiguities make it hard to make sense of the relative educational potential of lab activities, namely in terms of students' expected roles and learning outcomes. As a matter of fact, several criteria can be used to classify lab activities, each of them leading to a set of types of activities. However, criteria should

be intelligible, useful and relevant. The most relevant from an educational point of view are: responsibility of the performance of the lab procedure; object of study; and outstanding learning objective. An appropriate use of these criteria requires a previous analysis of the broad structure of a lab activity. Besides, it should be noticed that doing lab activities includes performing a procedure - the lab phase - but lab activities are not limited to that. In fact, two other phases should be considered: the pre-lab phase, devoted to the theoretical preparation of the laboratory phase, and the post-lab phase, that is targeted to the analysis and discussion of lab results. Nevertheless, the pre- and post-lab phase may be more important within the context of one type of activity than in the other, depending on factors like the outstanding objective of the lab activity, the way it is integrated in the teaching sequence and the expected engagement of the student in the data analyses and interpretation processes.

Thus, based on the criterion centred on who assumes the responsibility of performing the lab procedure, lab activities can be classified as lab demonstrations or as students' lab activities (Millar, Tiberghien, & Le Maréchal, 2002). In the former case, students just observe someone (usually the teacher) performing the lab procedure; in the second case students perform the lab procedure themselves, either individually or in small groups. It should be noticed that the performance of the procedure makes a difference in terms of procedural learning, but it does not mean that students learn less or worse than if they were performing the procedure themselves. In fact, there is some evidence that demonstrations may be effective (Gaspar & Monteiro, 2005; McKee, Williamson & Ruebush, 2007) or even more effective (Couto, 2000) than students' activities, at least with younger students, when learning science is at stake. These results may have to do with the fact that younger students have more difficulty in working and thinking systematically than their older counterparts. Besides, the pre- and post-lab phases may help student to make sense of the procedure they observe someone else performing. During the performance of the procedure they can also be cognitively engaged with what is going on, as far as teacher discusses with them what is being done.

With regard to the object of study, lab activities can focus on a phenomenon that is reproduced in the lab to be better understood or on the mechanical modelling of an entity, whether to understand how it is or how it works. As far as the outstanding objective is concerned, it has to do with the distinguishing learning outcomes that a given activity enables students to achieve when compared to the other lab activities. In fact, there are several competences that students can develop whatever the kind of lab activity but there are some that can be better developed from one type of lab activities than from the others. These two criteria can be combined so that activities can be classified according to both. Nevertheless, activities that focus on understanding reproduced phenomena have outstanding objectives that differ at least in part from the objectives of the modelling ones. Therefore, activities having one of these focuses will be categorized separately, based on previous work done by Leite (2002a) and Dourado and Leite (2008).

Table 1 (based on Leite, 2002a) shows the types of lab activities focusing on reproduced phenomena that result from the use of the outstanding objective criterion. The outstanding objectives focusing on conceptual knowledge indicate how and when the lab activities can be used. In fact, lab activities aiming at reinforcing conceptual knowledge require concept teaching to happen in advance that is before the lab procedure is put into practice; those targeted to knowledge construction require concepts to appear after the lab procedure is carried out; those aiming at knowledge reconstruction require students' ideas to be elicited during the pre-lab phase and the accepted ideas (if different from students' ideas) to be introduced in the post-lab phase. Even though lab skills and technics may be developed within other types of activities are carried out, mastering them with proficiency requires explicit learning and training (Woolnough & Allsop, 1985; De Pro, 1998). Therefore, lab skills and technics oriented activities are a sort of pre requisite for other activities. However, they should be included in a meaningful context that is they should be used when the technics or the skills are required for other purposes. Finally, it should be stressed that investigations are the only type of lab activities that has two broad outstanding and different objectives, namely conceptual and methodological objectives. In fact, they enable students to learn conceptual knowledge at the same time as they develop science methodology related competences. They are also integration promoting activities as they require students to use conceptual and procedural knowledge to draw and

put into practice a procedure that they find appropriate to solve the problem given in the activity statement.

Table 1. Types of lab activities that focus on phenomenon reproduction, based on their outstanding objective

Outstanding objective	Type of Lab Activities	Brief description of what students have to do
Lab skills and technics mastery	Exercises	Carry out a technique or use some equipment repeatedly in order to acquire training
	Activities for getting a feeling of the phenomena	Smell, listen, touch, watch just to get a feeling of how it looks like
Knowledge reinforcement	Illustrative activities	Get a confirmation of some idea that was already taught to make sure that it is like that
	Activities to find out what happens when...	Follow a receipt like worksheet in order to get “the right answer”, that is the only possible answer if everything works properly
Conceptual knowledge	Investigations*	Discover new knowledge on his/her own by solving a problem; no worksheet is available
	Preview-Observe- Explain-Reflect, procedure given	Follow a pre lab, lab and post lab procedure thought able to originate cognitive conflict and to foster a conceptual change process
Knowledge reconstruction	Preview-Observe- Explain-Reflect, procedure not given	Draw a procedure thought able to originate cognitive conflict and to foster a conceptual change process
	Investigations*	Draw a strategy to solve a problem, put it into practice and conclude; methodological and conceptual knowledge are developed

\* the same activity serves both objectives

Table 2 (adapted from Dourado & Leite, 2008) shows the types of lab activities dealing with mechanical modelling that result from the use of the outstanding objective criterion. Their outstanding objectives range from the less demanding ones, centred on visualizing models without interfering with them, to the most demanding ones, focusing on building up a model which is thought to correspond to a part of the world that is under study.

In fact, models are representations of reality that are thought to describe it (Gilbert, Boulter & Rutherford, 1998; Justi & Gilbert, 2002) but that cannot be taken as true, in absolute terms, because they are used when the entities to be studied through modelling are non-accessible (due to its large dimension, to the time they take or to the distance people are from them). Therefore a model cannot be directly compared to the reality it is supposed to describe. Of course as students may not have the chance of observing the reality, then they may feel it difficult to accept model-based lab activities (Sensevy, Tiberghien, Santini, Laubé & Griggs, 2008; Tiberghien, 1999).

It is worth emphasizing that most of the types of activities given in tables 1 and 2 may be either performed by students or demonstrated to them by the teacher. However, activities for getting a feeling of the phenomena (table 1) need to be performed by the students themselves so that they can get that feeling. Similarly, investigations (table 1) and development of a model activities (table 2) should to be performed by the students because they have procedural knowledge related outstanding objectives.

Table 2. Types of lab activities that focus on mechanical modelling, based on their outstanding objective

Outstanding objective	Type of activity	Brief description of what students have to do
Perceive underlying mechanical models	Visualization of a statics mechanical model	Students have to observe and describe a structure that does not change over time in order to find out how it is
	Visualization of a dynamic mechanical model	Students have to describe structure that changes over time in order to find out how it is. The modification conditions belong to the model and cannot be altered.
Understand underlying mechanical models	Exploration of a mechanical model	Students interacts with a model of a changing phenomenon in order to study how it behaves under different conditions
Discover an underlying mechanical model	Development of a mechanical model	Student has to discover and to build up a model of a phenomenon or structure based on an analogy with some familiar situations or without any support. It promotes knowledge integration as well as problem solving and modelling competences. It shows how it is, how it works and it behaves.

#### 4. Lab activities and problem solving for problem-based learning

Although there is no single way of doing science (Woolnough, 1998), science is about “solving problems, be that to create new knowledge, to answer empirical questions, to make something or to make that something work.” (Roberts, 2004, p.115). In addition, solving “problems with no easily recalled solutions, is the ‘ideal goal’ of practical work” (Roberts, 2004, p.119). Hence, Woolnough (1998) states that problem-solving activities should be included in the science curriculum in order:

- to enable students to develop and use personal knowledge;
- to enable them to experience doing authentic science;
- to provide students with the skills and attitudes that are useful to employees;
- to motivate students towards science and to learn science.

Taking these objectives as reference, an analysis of tables 1 and 2 shows that only a reduced part of lab activities have to do with problem-solving, as it was defined in section 2. As a matter of fact, only Investigations (table 1) and Development of a mechanical model (table 2) activities can give students the opportunity to use personal knowledge and to experience doing authentic science. Their holistic nature requires an integrated use and development of conceptual and procedural knowledge. If they are contextualised in everyday situations, then they may also promote both students’ intrinsic motivation to learn science and development of skills and attitudes. Everyday contextualization of these types of activities would favour transferability of competences and make them more useful in work contexts. Nevertheless, as Roberts (2004) puts it, investigations are in no sense in competition with other types of lab activities: “one type is no better than another. They complement each other” (p.119) in the sense that some specific competences developed through close lab activities (like exercises or visualization of mechanical models) may be needed by problem-solving activities while the latter give meaning to the former, as close activities are better conceptualized as a mean to a useful end.

Drawing appropriate problem-solving strategies requires conceptual and procedural competences (Roberts, 2004) that may either be mastered in advance or be learned at request for problem-solving to reach a successful end. However, “Contemporary research and theory on problem solving argue that problem solving skills are domain and context specific, that problem-solving activities are situated, embedded, and therefore dependent on the nature of the context or domain.” (Mukhopadhyay, 2013, p. 21). Therefore, problem-solving competences should not be expected to be easily transferred from one context or content to another one, different from that in which they were first developed. However, success on learning as well as on transferring acquired knowledge is also dependent on students’ prior knowledge as well as on affective factors (Toh, 1991).

Problem-solving is related *to* but different *from* problem based learning, as the latter requires the former but the opposite is not true. Problem solving can be done at different pedagogic moments (Leite & Esteves 2005). It is often done after teaching, as an opportunity of using previously acquired knowledge. For example, after studying about the structure of animal and vegetal cells students can be asked to identify the origin of a piece of live material, based on cell structure. Such an activity would not lead to new conceptual knowledge but it may reinforce and stimulate the integration of previously acquired knowledge. However, problem-solving can also happen during teaching, as a way of getting feedback about how learning is taking place and as a strategy to deepen some aspects of it. For example, after studying some separation techniques, students may be asked to identify the components of an aqueous mixture of substances in order to perceive that naked eye observation is not enough to be sure that all components were separated from water – it may happen that some colourless substance dissolved in the water is left. Solving this problem would give teacher feedback on whether or not they are able to use the recently learned separation techniques and would enable him/her to make students feel that those techniques have some limitations. Therefore, it can lead to further development of conceptual knowledge.

Finally, problems can be used as starting points for learning which is the most innovative way of using problems. It has to do with problem-based learning (Lambros, 2004) that is a student centred teaching approach that enables students to acquire new conceptual knowledge by solving problems. Hence, students can be asked to work on a problem as if they were scientists, and to try to solve it. To do so, students have to analyse the problems in order to find out what they have, what they need to know and what they need to do to find an answer for the problem (Lambros, 2004), assuming that at least one solution does exist. Then they have to look for conceptual information and/or for lab techniques in order to draw appropriate lab procedures to reach the solution. If this does not work, everything has to be revised so that a happy end is reached.

Investigations can be used for problem-based learning purposes given that they are organised around a dilemmatic issue (problem) that is felt as a need that is worth being fulfilled. A problem may be brought by the teacher or by the students or it may emerge from a scenario. In any case, to be consistent with PBL the problem has to be solved by the students, preferably in small groups. If problems or scenarios are brought by the students, then they may be harder to fit a prescribed curriculum than the teacher brought ones are. Mechanical model building activities (table 2) also fit the requirements of Problem-based learning even though they may be more demanding and time consuming than investigations are. In fact, they require a problem solving strategy to be drawn (being conceptual and procedural knowledge required for that) and technological knowledge to be used. In fact, students may have to conceptualize the model and afterwards they have to construct and test the mechanical model for its fit with the observed evidence. The model has to be improved so that the best fit is achieved. A good mechanical model would be the one that leads to observations that are similar to those observed in the real world, in the place modelled. Hence, differentiating among lab activities shows that some of them (investigations and development of a mechanical model) may be problem-solving activities. In addition, these activities may also be used as starting points for learning, within a problem-based learning framework. Distinguishing the conditions of implementation of the lab procedure from the overall structure of the activity enables to understanding that handling equipment does not necessarily means that students are doing investigations even though it does not make too much sense inhibiting students from handling equipment and carrying out the lab procedure when they asked to draw the procedure themselves within an investigation activity setting.

## 5. Final remarks

Science is about solving problems. Some problems can be solved in the lab but the school science lab has not been used as an appropriate context for students to learn how to do science. Problem-based learning has shown to be a promising approach for learning conceptual as well as procedural knowledge. It may also provide opportunities for students to learn how to investigate (Hofstein & Lunetta, 2004) in order to solve real world problems and, in doing so, to relate science to technology and society (Llorens-Molina, 2010). Solving a problem

in science requires a synthesis of two sets of understandings: a substantive understanding and a procedural understanding (Roberts, 2004, p.115). Using a problem as a starting point for learning a certain content may require more time than if the content was taught through a teacher-centred approach. Thus, it is obvious that pupils will not be able to do many problem solving activities in an overcrowded curriculum (Roberts, 2004). However, it is worth keeping in mind that when students solve a problem, they develop a lot of other competences besides the concepts required by the problem. In addition, students' difficulties with PBL decrease with experience (Ünal & Öxdemir, 2013). This means that teachers need to perceive that students need time to get acquainted with problem-based learning and to believe that students may learn without being told the content.

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4<sup>th</sup> International Conference on New Horizons in Education

# Laboratory Experiences in Software Engineering from a Constructivist Perspective

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## Abstract

In this paper we give a new interpretation, from a constructivist perspective, of two recent laboratory experiences in the context of a Software Engineering course at the University of Bologna. The two experiences were quite different both in the tools and in the modalities that were used: in one case a software product line was developed by following the rules of a role-playing game; in the second case students had to develop four software products using a process model chosen among Waterfall, Spiral, and Extreme Programming. Despite these differences, both cases can provide some evidences of the validity of the constructivist approach to teaching. In fact, from the results obtained and from the perceived experience of students emerged clearly the fact that, in both cases, the students working autonomously, in small groups and with a limited presence of a teacher, were able to build their own model of knowledge which resulted to be correct, as proved also by the good quality of the artifacts produced.

Keywords: Constructivism; Software Engineering; Computer Science

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## - Introduction

One of the basic ideas of constructivism is the specific meaning of knowledge: this understood as something which is not completely accessible and which remains constantly evolving. Knowledge in this context depends on the person who is representing and propagating it and can be considered as the set of conceptual structures that an agent, within her own culture, can consider well-founded and support.

Constructivism is mainly interested in the paths that allow to arrive at the knowledge, not just knowledge in itself. In his research Jean Piaget, one of the fathers of constructivism, has attempted to formulate a model for the generation of sustainable knowledge. According to Piaget, cognitive change and learning take place when a scheme rather than producing the expected result leads to a disturbance, which then leads to a new balance producing learning and new knowledge in two different ways: in the field of sensory perceptions and motory new knowledge allows to achieve specific goals in interaction with the world; at an abstract conceptual level, the operational schemes allow to achieve a coherent conceptual network, which reflects both the action and the thinking activity that the organism considers acceptable given the present experience.

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The distinction between constructivism and behaviorists is mainly in the way learning is perceived: the former is mainly interested in the process for building the knowledge, the latter to obtain specific behavior through teaching and training. The following citation from Ben Ari can clarify what constructivism is: "This theory claims that knowledge is actively constructed by the student, not passively absorbed from textbooks and lectures, since the construction builds recursively on knowledge that the student already has.

In this paper we give a new interpretation, from a constructivist perspective, of two recent laboratory experiences in the context of a Software Engineering course at the University of Bologna. The two experiences were quite different both in the tools and in the modalities that were used: in one case a software product line was developed by following the rules of a role-playing game; in the second case students had to develop four software products using a process model chosen among Waterfall, Spiral, and Extreme Programming. Despite these differences, both cases can provide some evidences of the validity of the constructivist approach to teaching. In fact, from the results obtained and from the perceived experience of students emerged clearly the fact that, in both cases, the students working autonomously, in small groups and with a limited presence of a teacher, were able to build their own model of knowledge which resulted to be correct, as proved also by the good quality of the artifacts produced. In the next Section we will present two laboratory activities. Hence in Section 3 we will discuss how constructivist principles have been implemented within two laboratories and how these two learning experiences can be reinterpreted in terms of the constructivist theory.

### **The two Laboratory projects**

The main goal of a Computer Science curriculum focusing on Software Engineering is to prepare students to practice, know, and apply engineering principles when they build software systems. This general principle has been adopted by the educational community in several ways, e.g. by moving from lecture-format courses to team projects, by involving directly students with actual development and by requiring students to exercise the ideas that they are learning. In order to achieve this educational objective in 2011 we have introduced into a Software Engineering course (taught to undergraduates in the third year of a conventional Computer Science degree) at the University of Bologna a laboratory experience where the students have participated in a roleplaying game having the goal of developing a Software Product Line (SPL). A SPL is a set of software systems sharing a common, managed set of features that satisfy specific needs of a particular market segment or mission and that are developed from a common set of core assets in a prescribed way.

Moving from a traditional software development process to developing family of applications in a SPL implies a shift of focus: one moves from an individual system developed by an ad hoc process to a product line consisting of similar products developed for some domain reusing some software assets. Students have followed a two-life cycles model: each student had two different roles, one for domain engineering and the other for application engineering. In the domain engineering life cycle students' activities consisted mainly of designing, developing, and testing the reusable assets sharable by all products in the family, useful to be reused in the application engineering developing a specific product of the family.

The second laboratory activity, done in 2012, had two objectives: the first one was aimed reproducing in the laboratory some experimental data, taken from the software engineering literature, concerning three different software development process models, namely Waterfall, Spiral, and Extreme Programming (XP): the second one was comparing "on the field" the different curricular competence of the students and their skills, especially with respect to the requirements of the different (software development) processes. The students in this activity

had first to build four software products by using the three development processes mentioned before. Then these artifacts and several quantitative and qualitative aspects related to their development had been analyzed in the class and became the subject of an empirical study for comparing the three different processes.

### **Our experience**

In this section we discuss our thesis: the teaching of laboratory activities in a Software Engineering course for the Bachelor and Master degrees in Computer Science can be a good candidate for applying successfully the principles of constructivism. This will be done starting from our experience at the University of Bologna previously described and considering several aspects of our laboratory activities. More precisely, in the following we will list several principles which are essential in the constructivist approach to teaching and we identify their (direct or indirect) application in our laboratory activities.

As previously mentioned, according to Piaget, cognitive change and learning happen when a scheme, a teaching action, rather than producing the expected results leads to a disturbance. Such a disturbance will eventually allow to reach a new balance. The learning and new knowledge produced are the result of such a new balance, even though with different aspects depending on the abstraction level we consider. Such a disturbance can be produced in several ways and using several strategies by the teacher.

First, a constructivist teacher is guide that does not offer the solution and the path to the solution, but invites students to reflect and to analyze their building of knowledge. She/he offers new tools that can help in this process, opens a dialogue on any aspect that may emerge in the building of knowledge and is open to students' opinions, assuming that each problem may have different solutions. This practice was followed in both our laboratory activities even though with different modalities: we defined several intermediate milestones in the projects for which we provided a direct feedback to students. We also provided a continuous feedback on their proposed solutions and technical difficulties, even though the teachers were essentially communicator enablers, which in case of discussions among different students did not support any specific position or idea. This was specially true in the Product Line project, where communication of groups was essential in order to reach a common solution.

A second important point in the constructivist approach is the team-work, as a mean to compare different experiences and to generate the perturbation which is a pre-requisite for learning. In our case, both the laboratory experiences were done by small groups of students (up to 4 for each group).

In constructivism communication is a very important feature. A student, choosing a specific language for communicating her results and achievements highlights how she has built from her personal experience the conceptual structures and the relationships between them.

Communication among students, in and outside each group, and with the teachers was strongly encouraged in our activity. In particular some deadlines were fixed for presenting proposals and solutions in the class, the management work of each group was formalized, integration with solution proposed by other groups was required (mainly in the PL projects)

Freedom of expression is also important in constructivism: if there exist no pre-defined solution, of there exist no right and wrong behavior, the students will feel more free to express their own opinions without the fear of being judged. Also this point was implemented in our activity, since students were encouraged to express their own opinions and the teachers never judged proposed solutions as completely wrong.

Finally concerning the evaluation and the assessment of learning it is important that these focus not only on the final product, but also on the process used to produce new knowledge. This was probably the point where the specificity of teaching Software Engineering emerged in its most significant way. Indeed in Software Engineering a great emphasis is placed on the "process", in general. In our specific case, the second laboratory activity considered explicitly different software development processes and the students were confronted not only with the problem of producing an artifact, but also with the more general problem of understanding in deep the process used to produce such a product. This helped in the evaluation of the process used by students to reach new knowledge, since it was easier to ask students them to formulate the solution of a problem and to support the decisions that led to that result. Of course, in order to reach an evaluation of the learning of software development processes, a meta-process was needed.

Concerning the teaching constructivist strategies, collaborative learning and cooperative learning are particularly important. Collaborative learning is a teaching method in which a group of students investigates a significant question or develop an interesting project. The interdependence between group members allows to create a sense of responsibility w.r.t. the group itself and its goals. Communication is essential for this modality of learning. Cooperative learning is a specific collaborative learning where small groups of students (3/4) work together with a structured activity. Each students is individually responsible for her own work, but it is also assessed the product of the whole group. In order for this technique to work, students should feel confident, even though the assigned task are not easy, and groups should be small enough so that each participant can contribute.

Both our projects involved collaborative and cooperative learning. The product line project, in particular, involved collaborative learning because all the groups collaborated to the domain engineering needed to develop the core part of the software product line, which was then used by each group for developing a specific application. Cooperative learning was then used within each single group. From the perspective of a student the experience with domain engineering has been particularly important to understand team work and the need of cooperation and coordination capabilities. In the development of the application the students experienced how collaborative systems which require an integration of the produced artifacts need an effective communication among team members, well defined common objectives, and relational capabilities.

The second project used mainly cooperative learning in each group for developing each specific application. Collaborative learning here was mainly in the comparison activity among the different software development processes used. From the data analysis activity performed in this comparison activity the students were able to deduct themselves the most important differences existing among different software development processes by using in practice suitable indicators. Some results of the processes comparison performed by the students confirmed those from the related studies existing in the literature. This was an important lesson for the students, who were made protagonists of the process comparison, and provides a clear constructivist indication.

It is worth noticing that Seymour Papert, who created the Logo programming language at MIT, worked together with Piaget and built his theory of constructionism up on the work of Piaget. Papert created Logo as a tool to improve the way that children think and solve the problems, insisting on the importance of developing tools to strengthen the ability to learn knowledge. Some aspects of UML, a specification language used in software engineering, are similar to the visualization of results of Logo. More generally, following Papert, we believe that the use of computers and the development of software engineering projects, as those we have considered in our laboratories, can be a useful tool to build new ideas and new knowledge.

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4<sup>th</sup> International Conference on New Horizons in Education

## Language awareness enhancing strategies for efl learners

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### **Abstract**

The main focus of the present paper is creative use of language in various texts, and potential language awareness strategies that English as a Foreign Language (EFL) teacher may employ in his/her classes. To this end, the paper dwells on the relevance of using representational material in EFL classes, and argues on the importance of the recognition that it takes imagination and an ability to be aware of language use to learn a foreign language. Throughout the paper, it is also emphasised that when creatively employed, representational materials can lead to a move beyond the traditional four skills of listening, speaking, reading and writing to the utilisation of the crucial but often ignored or taken for granted fifth skill: thinking.

Awareness; EFL Teaching; EFL Context; Teaching Strategies.

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## **Introduction**

The importance – and necessity – of a shift in English as a Foreign Language (EFL) teaching that results in less focus on teachers and teaching and greater emphasis on learners and learning has frequently been voiced by EFL practitioners. Effective language teaching and learning seems not just a matter of intelligence, but also a matter of making students to be active participants in the learning/teaching process and making them aware of the language use they are exposed to.

As Tomlinson (1994) noted dynamic and active language learners try to notice how language is used, how cognitive skills can be developed, and how they can be independent towards language and learning language.

The aim of the current paper can best be summarized as an attempt to discuss the importance of the notion of language awareness and relevance of utilizing teaching/learning materials that might help to raise EFL students' language awareness.

### **1. Language Awareness in EFL Context**

Despite the fact that, on its own, “awareness” is a broad term, in its simplest definition it can be defined as knowing that a certain entity exists and is important. This knowledge also leads to a state of being interested. To raise awareness, on the other hand, is to inform and educate people over a certain topic by intentionally influencing their attitudes, behaviours and beliefs to reach a previously decided purpose. For Vygotsky (cited in Akerblom et al., 2011), “awareness is an intentional activity of consciousness raising.

Language awareness first started to be the concern of the scholars in early 1980s. However, there is still an ambiguity on the conceptualization of language awareness. While language awareness is defined as “dynamic and intuitive” and developed internally by the learner by Tomlinson (1994, p.123), van Lier (2001, p.347) posits that language awareness is a “movement which might include explicit teaching of form, metalinguistic rules and terminology”. Tomlinson (1994) also states that dynamic and active language learners try to notice how language is used, how cognitive skills can be developed and how they can be independent

towards the mastery of a language. Carter (2003), on the other hand, defines language awareness as language learners' "consciousness and sensitivity to the forms and functions of language". It is of vital importance to emphasize at this point of the presentation that, throughout the activities which will shortly be shared, I heavily rely on Carter's (2003) definition of language awareness, and I would like to note that all related activities were designed to raise such a "consciousness" and "sensitivity".

Various studies concentrated on the value of language awareness in EFL context. Chan (1999), Hawkins (1999), Cots and Nussbaum (1999), Andrews (2006) have similarly investigated and elaborated on the pedagogical implications of awareness on the perception of the target language. Chan (1999) further pointed out that by the help of language awareness activities, learners could stand a better chance to reflect on their curriculum by focusing on what is learned, how is learned and why is learned. Bolitho (2003, p.257) argues that connecting language awareness with the theory of language learning and teaching requires an insight into the curriculum, EFL context, and awareness raising materials and activities.

### 1.1 *Representational language*

Appropriate text selection appear to be at the heart of language awareness activities. For the purpose of the current paper, I will extensively be using instance and pieces of representational materials instead of referential materials, which are commonly used in many EFL teaching/learning contexts. As is explained by McRae (1996, p.17), referential language and therefore referential materials, remain close to what they mean in a dictionary sense: one word has one meaning, one grammatical construction is right and another wrong, the words mean what they say, no more and no less. At this stage of language use, any text or communication is on one level only; purely informational, or at the level of basic interpersonal communication.

Representational language, on the other hand, stretches beyond the limits of sentence and it requires the analysis and interpretation of language use, not just as reference but also as representation. In other words, language is seen as a means of communication in which "words are used to refer to a concrete and common-sense world and it is also seen as a mode of communication in which a speaker's or writer's attitude and stance towards that world is represented in terms of how they are positioned within a discourse community. In

that process, common-sense understanding may be displaced or at least relativized and questioned (Carter, 1997, p.75). Where representational language teaching/learning differs from purely referential language teaching / learning is that rules are questioned, played around with, and put to different uses as part of that on going process of language acquisition.

### *1.2 Classroom activities*

At this phase of the presentation, some teaching/learning activities will be proposed to raise the language awareness of the EFL students. Although all the materials were chosen to be representational for obvious reasons, it must be emphasized that this paper does not claim that referential materials must be moved out from the class for good. Referential language is fundamental to any learner's knowledge about language and of a language system that rules, structures and grammar are acquired and that the way language operates is understood in an on going way. What is proposed by this paper can best be described as a "happy marriage" between referential and representational teaching/learning.

## **2. Conclusion**

The main focus the present paper has been to discuss the notion of language awareness, especially the importance of raising language awareness in English as a foreign language classes. Also some strategies and teaching/learning activities that may be employed to enhance language awareness were proposed. It is hoped that by the help of proposed activities the EFL teachers will stand a better chance to keep their prospective students engaged and active participants and, more importantly, make them enjoy and appreciate the fact language is richness and variety.

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# Language learner beliefs from an attributional perspective

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## Abstract

This qualitative study, aimed to analyze eight French-speaking learners' beliefs about English and English language learning. The data were obtained via semi-structured interviews. The study drew on Weiner's attribution theory of achievement motivation and Bandura's self-efficacy theory. The novelty about this research is the employment of an attributional analysis framework to study and explain the learners' stated beliefs about English and English language learning.

Keywords: L2 learner beliefs; attributions; self-beliefs; self-efficacy; foreign language beliefs

## 1. Introduction

Since the 1980s, with the developments of cognitive psychology, language learners' beliefs have received remarkable attention. So far, L2 learner belief studies have looked for possible relationships between learner belief systems and various aspects of L2 learning and other related psychological constructs. Research into L2 beliefs continues to dominate the Foreign Language Learning (FLL) literature and shows no sign of diminishing (see Bernat and Gvozdenko, 2005; Gabillon, 2005, 2007, 2012a, 2012b; Hawkey, 2006; Kalaja and Barcelos, 2003; Kormos et al., 2011; Levine, 2003; Loewen et al., 2009; Wenden, 1986a, 1986b, 1995 and so forth).

The present study reports on eight French-speaking university students' beliefs about English and English language learning. The learners' beliefs were examined by drawing on Weiner's attribution theory of achievement motivation (1985, 1986) and Bandura's self-efficacy theory (1986). The novelty about this study is the employment of an attributional analysis framework to study and explain the learners' stated beliefs about the English language and learning of this language.

## 1. Literature review

Heider (1958) claimed that people act on the basis of their beliefs and maintained that psychologists could learn a great deal from people's explanations and understandings of the events, and behaviors about them. He stressed the importance of taking ordinary people's beliefs seriously, whether these beliefs are valid or not, and suggested that beliefs must be taken into account when dealing with human behavior. The individual's explanations of his/her experiences and attributions s/he makes, therefore, are considered to be important because they are the individual's inferences (self-attributions) to understand and interpret the causes that s/he believes to be responsible for his/her own behavior, feelings, and attitudes (Ross 1976).

Weiner's (1985, 1986) attributional theory of achievement motivation provides a scheme for analyzing and understanding learner attributions in educational settings. In Weiner's attributional theory of achievement

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motivation, attributions play a significant role on people's behaviors. Attribution (causal ascription) is the key term in attribution theory and it refers to individuals' interpretations of the causes of events that happen to themselves and others (Weiner 1986). According to Weiner (1980), individuals use attributions to interpret and predict the possible consequences of their actions. Weiner's theory considers ability, effort, task difficulty, and luck as the key factors that influence attributions people ascribe for their achievements. Weiner (2000) proposed three properties of causes: locus (internal or external), stability (stable or unstable), and controllability (controllable or uncontrollable) (see Figure 1).

<u>Properties of Cause</u>			
<u>Types of Causal Ascriptions</u>	<u>Locus</u> Internal or External	<u>Stability</u> Stable or Unstable	<u>Controllability</u> Controllable or Uncontrollable
Ability	internal	stable	uncontrollable
Effort	internal	unstable	controllable
Task Difficulty	external	stable	uncontrollable
Luck	external	unstable	uncontrollable

Fig. 1. Attribution model based on Weiner's attributional theory of achievement motivation

Weiner asserted that these three properties play an important role in shaping two key determinants of motivation: a) expectancy of future success and b) value ('...emotional consequences of goal attainment or non-attainment.'--Weiner 2000: 5). Weiner (2000) explained that when the individual perceives the cause 'stable' s/he will anticipate the same outcomes in the future. For instance, if the individual believes that s/he lacks the ability (which is internal locus, stable, and uncontrollable) to perform an action that s/he has already experienced and failed, then s/he will expect failure again and will not be willing to perform the task. If, for example, the student attributes his/her failure to a teacher that s/he perceives as unfair (which is external locus, stable, and uncontrollable), then s/he will anticipate failure again if s/he takes the same course from the same teacher.

Bandura (1986) claimed that self-referent beliefs are better indicators of individuals' behaviors than what they are actually capable of doing. In educational research literature, self-referent beliefs became a real research interest with Bandura's sociocognitive theory (e.g. Zimmerman 1990; Schunk & Zimmerman 1997 etc.). Self-efficacy beliefs, which are considered to be the most important self-referent beliefs, are studied under self-efficacy theory--a sub-theory developed under the framework of social cognitive theory (Bandura 1986). Simply defined, self-efficacy beliefs refer to personal beliefs (judgments) about one's capabilities to engage in an activity or perform a task (Bandura 1986). "Self-efficacy beliefs revolve around the question of 'can'." (Pajares & Schunk 2002:20). Bandura (2006a) claimed that self-efficacy beliefs shape individuals' motivations, goals, outcome expectations (i.e. whether they expect their efforts to produce favorable or unfavorable outcomes), way of thinking, emotions, and their determination in front of difficulties. Bandura (2006a) acknowledged that the individual's successes help him/her develop strong sense of self-efficacy. On the other hand, the individual's repetitive failures weaken the individual's self-efficacy beliefs.

Bandura (1986) maintained that people choose to engage in tasks that they believe they have high efficacy and avoid the ones that they perceive beyond their capabilities. Learners who believe that they have difficulties often avoid or resist the subjects or activities for which their self-efficacy is weak (Margolis 2005). Bandura (2006b) asserted that self-efficacy beliefs play a significant role in the regulation of motivation. He maintained that people

feel motivated to undertake challenges on the basis of their outcome expectations. The likelihood that people will act depends highly on whether they believe they can produce the required performance. Self-efficacy influences the type of attributions individuals make about their performances (Bandura 2006a). When people perceive strong self-efficacy they exert more effort and are more persistent and resilient in face of failure. According to self-efficacy theory, an individual with low self-efficacy beliefs perceives tasks to be fulfilled more difficult than they actually are. Thus, this belief restrains him/her from performing his/her best. Individuals with high self-efficacy belief are assumed to attribute their failure to insufficient effort rather than lack of ability or luck. That is, people with high self-efficacy believe that success can be achieved by effort, and in case of failure, they exert more effort when they engage in a similar task next time. However, individuals who have low self-efficacy beliefs attribute their failure to the lack of necessary skills and ability. For instance, people with low self-efficacy beliefs avoid performing tasks that require the skills that they believe they lack.

The interactions between learners' actions, their beliefs (self-efficacy, self-concept etc.), prior experiences, and attributions have been a topic of interest for many SLA (Second Language Acquisition) and FLL (Foreign Language Learning) researchers. Dörnyei and Otto (1998) maintained that, learners are influenced by their belief systems when they evaluate task demands before engaging in a task. They emphasized the importance of prior experience and its psychological consequence. They maintained that influenced by their experiences learners might generalize a failure in one classroom task to the whole language learning. They argued that learners assess their task outcomes based on their self-efficacy beliefs, perceived goal difficulty, perceived L2 competence, and the causal attributions about their prior experiences (e.g. failure and success). Dörnyei (2007) asserted that failure that is ascribed to stable uncontrollable factors such as low ability hinders future achievement; whereas failure that is attributed to unstable and controllable factors such as effort can be regulated. He therefore suggested that teaching/learning environments should work towards promoting effort attributions and prevent ability, and other-related attributions as much as possible. Williams and Burden's study (1999) revealed that majority of the attributions that the learners made about their school achievement pointed mainly to external factors (e.g. teachers) rather than personal effort. Graham (2003) who studied an L2 learner's attitude towards learning French discovered that this learner's attributions were related to lower perceived self-beliefs. The data she obtained suggested that the learner's negative attitude towards French stemmed from low self-efficacy and a maladaptive attributional style.

Research findings have also demonstrated that beliefs that language learners hold about a target foreign language and its culture affect their attitudes towards that language (Csizér & Dörnyei 2005). Many other empirical investigations have also found statistically significant connections between positive beliefs towards the L2 and L2 culture and various aspects of L2 learning motivation (e.g. Gardner 2001).

## **2. Aim of the study**

This small-scale exploratory study reports on eight French students' stated beliefs about their like or dislike of English language learning and the English language. The study addresses attributions and self-referent beliefs such as self-efficacy beliefs and self-concept beliefs. The aim was: a) to elicit the causes the learners ascribed to their perceived like or dislike of English language learning; b) to examine the nature of these attributions; c) to look into the relationships between the learners' attributions, self-referent beliefs, perceived value of English language learning, and the marks they obtained in English.

## **3. Participants of the study**

The participants in the study were eight adult male French learners of English who were studying at a two-year university program. The learners had eight to ten years of English language learning experience. The

participants for this study were selected according to the scores they obtained in English. The score they obtained was the average of the marks obtained in all four skills (speaking, reading, writing, and listening).

#### 4. Methodology and Analysis

The study used semi-structured interviews as a research tool. The researcher prepared a set of questions (see below) but also allowed flexibility to ask other questions whenever it was necessary. The interviews were done in French and each individual learner's discourse items were transcribed and then translated into English. Weiner's (1985) attribution theory was applied to see the attributions each learner ascribed for their like or dislike concerning English and English language learning. The learner interviews were analyzed by focusing on whether the learners stated a like or a dislike towards learning English and the types of attributions they ascribed as causes. The researcher also attempted to establish links between the learners' beliefs and possible consequences of these stated beliefs on future learning. The main interview questions asked during the interviews were the following:

- 1) Do you like learning English?
- 2) Explain why/why not?
- 3) What is 'being good at English' for you?
- 4) Do you think you can get a better mark in your next English test?

Three students out of eight stated that they did not like the English language and/or English language learning (see *Student 1*, *Student 2*, and *Student 3*). Two out of eight were hesitant. These two students (*Student 4* and *Student 5*) referred to their past learning experiences as having negative effects on their foreign language learning. *Student 6*, *Student 7*, and *Student 8*, all expressed positive feelings towards both the English language and learning of this language.

##### 4.1. Participants' attributions for 'I don't like English'

*Student 1* revealed that he did not like learning English (see Table 1). He attributed his perceived dislike for English language learning—to his lower perceived L2 self-concept "I am not a good language learner" (an internal, stable and uncontrollable cause). The learner was convinced that he could not learn English because he perceived that he lacked the required L2 ability to learn English. He attributed his perceived L2 difficulty (or lower perceived L2 competence) as the consequence of his lack of ability to learn English. When the learner was asked what he meant by 'being good at English', he responded as: "Being able to speak and understand English". For this learner 'understanding and speaking English' represented a core belief, an implicit goal/expectation of learning English. The learner's discourse analysis indicated that the learner believed that he failed to achieve this goal because he perceived that he lacked the ability to learn this language. The reason for this learner's negative attitude towards learning English seemed to originate from his negative self-referent beliefs (i.e. lower perceived L2 competence and negative self-concept) which have internal, stable and uncontrollable causal properties.

Table 1. Analysis of *Student 1*'s discourse

*Student 2*, like *Student 1*, attributed the causes for his dislike of English language learning to his lower

(Do you like learning English?)	<i>Student 1</i> 's stated belief: ' I don't like learning English'	
<u>Causal ascription</u> Lower perceived ability in L2 learning (properties of cause: negative, present, internal, stable/uncontrollable )	"I am not a good language learner."	Attributes his dislike of English to his perceived lack of L2 ability and low L2 self-concept
<u>Causal ascription</u> Perceived task difficulty ( properties of cause : negative, present, internal, stable/uncontrollable)	"I find English difficult. I can understand when I read the texts given in the class, without much difficulty, but I cannot speak and understand English-speaking people well"	Attributes his perceived L2 difficulty to his lower perceived self-efficacy in English
<u>Goal/Expectation</u> (What is 'being good at English' for you?)	"Being able to speak and understand English-speaking people well"	
Outcome	English mark obtained:9/20	Fail
Expectancy of future success (Do you think you will get a better mark next time?)	"No, I don't think I can"	The student has low expectancy of success in his next English test

perceived L2 competence and his lower perceived L2 progress, which the learner believed to be beyond his control (see Table 2). *Student 2*, like *Student 1*, attributed his dislike to learning English to his lack of ability to learn this language. *Student 1*'s perception of the importance of listening and speaking skills was also shared by *Student 2*. In short, he as well perceived speaking and understanding as being the goal of language learning, and was convinced that he failed to achieve this goal.

Table 2. Analysis of *Student 2*'s discourse

(Do you like learning English?)	<i>Student 2</i> 's stated belief: ' I don't like learning English'	
<u>Causal ascription</u>  Lower perceived L2 competence (properties of cause: negative, present, internal, stable/uncontrollable)	"My English is not good."	Attributes his dislike of English to his lower perceived L2 competence
<u>Causal ascription</u>  Perceived repetitive failure (properties of cause: negative, past/present, internal, stable/uncontrollable)	"I have been learning English for more than eight years, yet I don't know much English."	Attributes his lower perceived L2 competence and his lack of progress as a cause for his non- achievement
<u>Goal/Expectation</u>  (What is 'being good at English' for you?)	"Having good speaking and listening competence"	
<u>Outcome</u>	English mark obtained:8/20	Fail
Expectancy of future success  (Do you think you will get a better mark next time?)	"I don't think I will"	The student does not expect to succeed in his next English test

Both *Student 2* and *Student 1*'s discourses showed that these learners did not expect to get a better mark in their next English test. Bandura (2006a) asserted that learners who perceive that they did not have the required competence would believe that they could not produce desired effects by their actions and would not be willing to participate in classroom activities. In the case of *Student 1* and *Student 2* their lower perceived L2 competence (because of their perceived lack of ability, perceived L2 difficulty and lower perceived L2 progress) was attributed as the major cause for their negative feelings towards L2 learning. These learners' negative beliefs might affect their future learning behaviors negatively.

The case of *Student 3* (see Table 3) appeared to be slightly different from the first two learners, whose beliefs were directly related to their lower perceived L2 competence and L2 self-concept. *Student 3* attributed his dislike of learning English to the nature of the English language. This learner expressed an explicit negative attitude towards the English language. His discourse also revealed that he did not perceive English as being relevant to his goals and future expectations. This learner stated that he could get a better mark in his next English test if the test was easy (external, uncontrollable causal ascription). The data obtained indicated that the behavioral consequence of *Student 3*'s L2 beliefs would probably be non-participation in the L2 learning activities.

Table 3. Analysis of *Student 3*'s discourse

(Do you like learning English?)	<i>Student 3</i> 's stated belief: 'I don't like learning English.'	
<u>Causal ascription</u> Perceived dislike for English and English language learning (properties of cause: negative, present, internal, stable)	"I don't like English because It sounds strange."	Attributes his dislike of learning English to his dislike of this language
<u>Causal ascription</u> Perceived value for another foreign language (properties of cause: positive, present, internal, stable)	"I prefer learning Spanish."	Ascribes his lack of interest in learning English to his preference for Spanish
<u>Causal ascription</u> Perceived insignificance of English course (properties of cause: negative, present, internal, stable)	"...and also I really don't think that I'll need English after I finish school. I already have a lot of other important school subjects to worry about."	Attributes his lack of interest in learning English to his perceived insignificance of learning English
<u>Expectation/Goal</u> (What is 'being good at English' for you?)	(Not relevant)	
<u>Outcome</u>	English mark obtained:10/20	Pass
Expectancy of future success (Do you think you will get a better mark next time?)	"Perhaps, I will. I don't know. It depends on the test."	The student has some expectancy of success. He expresses that the test (task difficulty) will determine whether he will be successful or not

#### 4.2. Participants' attributions for 'I like English but...'

*Student 4* and *Student 5* expressed dual feelings about English and English language learning and attributed their non-achievement to an external cause. They both referred to their past L2 learning situations as unfavorable and ascribed their prior L2 experiences as a cause for their lower perceived L2 competence and at the same time as a cause for their dislike for learning English.

*Student 4*'s discourse revealed that he perceived English language learning as instrumental to achieving his goals. He believed that learning English would be useful for getting a good job and for his school achievement (see Table 4). *Student 4* believed that his L2 learning experience at high school was the major reason for his dislike for English classes (past, external, uncontrollable cause). He stated that at high school his teachers focused mainly on the teaching of grammar, which he did not find useful and enjoyable to learn. In short, he attributed his teachers' language teaching approach at high school as a cause for his low L2 competence.

Although previously he attributed his teachers' emphasis on grammar teaching as a cause for his non-attainment, when the learner was asked what he considered as 'being good at English', he explained that for him knowing English meant 'being good at grammar and speaking'. When he was pointed out that he considered emphasis on grammar learning/teaching as one of the causes for his dislike of English, he responded as follows:

‘I don’t like doing grammar exercises. I never felt that I learnt English when we did grammar lessons. But I know that I need to know grammar well to speak and understand English. Now we speak a lot and the teacher corrects our grammar mistakes after. It’s better.’

Table 4. Analysis of *Student 4*’s discourse

(Do you like learning English?)	<i>Student 4</i> ’s stated belief: ‘(I think) I like English but...’	
<u>Causal ascription</u> Perceived L2 value (properties of cause: positive, present, internal/external, stable)	“I believe English is an important language ...for my future career, for my studies etc.”	Perceives English as a significant language to learn (for his studies/ future career) and attributes this as a cause for his interest in English
<u>Causal ascription</u> Previous L2 situation (properties of cause: negative, past, external, unstable/ uncontrollable)	“But, I didn’t have good teachers at lyc�ee (high school)”. I have problems with English. “They mostly taught grammar...not useful...not enjoyable”	Attributes his low L2 competence in English to his teachers’ teaching in his past L2 learning situation (i.e. not having good teachers)
<u>Goal/Expectation</u> (What is ‘being good at English’ for you?)	“knowing grammar and speaking well”	
Outcome	English mark obtained:12/20	Satisfactory
Expectancy of future success (Do you think you will get a better mark next time?)	“I don’t know. Well! I don’t think. I have never learnt English well. Perhaps it’s a little late now.”	The student has low expectancy of getting a better mark. He attributes it to his lower perceived L2 self-concept.

*Student 5* ascribed internal self-referent causes for his lower perceived L2 achievement (see Table 5). He explained that he was not interested in learning English when he was a high school student. He recognized his previous lack of interest to be the major reason for his lower perceived L2 competence. However, he added that he perceived English learning as being important for his future career and his studies.

Table 5. Analysis of *Student 5*'s discourse

(Do you like learning English?)	<i>Student 5</i> 's stated belief: 'I like English but...'	
<p><u>Causal ascription</u></p> <p>Lack of interest (properties of cause: negative, past, internal, stable/uncontrollable)</p>	"I was not interested in English when I was at the secondary/high school."	Attributes his perceived lack of interest in his previous English classes as a cause for his lower perceived L2 competence.
<p><u>Causal ascription</u></p> <p>Perceived L2 significance(properties of cause: positive, present, external/internal)</p>	"I know that learning English is important.	Perceives English as a significant language to learn .
<p><u>Causal ascription</u></p> <p>Lower perceived L2 competence (properties of cause: negative, present, internal)</p>	"But my English is not good. My speaking is not good, at all."	Attributes his lower perceived L2 competence to his previous lack of interest
<p><u>Causal ascription</u></p> <p>Intrinsic interest in L2 activities (dimension: positive, present, external/internal)</p>	But I like the activities we do in class now. I even feel that my English is getting better	Attributes his appreciation of English and his progress in English classes to the nature of the classroom activities used in his present L2 classes
<p><u>Goal/Expectation</u></p> <p>(What is 'being good at English' for you?)</p>	"Speaking with English people fluently"	
Outcome	English mark obtained:12/20	Satisfactory
<p>Expectancy of future success)</p> <p>(Do you think you will get a better mark next time?)</p>	I don't know...It is possible	Low expectancy of getting a better mark

*Student 5*, as well as *Student 1*, *Student 2* and *Student 4*, equated 'being good at English' to being able to speak this language. Like the other participants, this learner also considered his lower perceived L2 competence as an obstacle for his L2 enjoyment. However, this particular learner, despite his lower perceived L2 competence, expressed a positive attitude towards his present L2 situation. He stated that he liked the activities he did in his current English classes. He also maintained that he made progress with his English. This change in *Student 5*'s learning conditions, therefore, led him to conciliate his attitude towards learning English more positively. However, his speech was still cautious and uncertain.

### 4.3. Participants' attributions for 'I like English'

*Student 6, Student 7, and Student 8* expressed positive attitudes towards English language learning. *Student 8* expressed high intrinsic interest in the English language itself, as well as English language learning. *Student 6* and *Student 7*'s discourses followed more or less the same thematic pattern (see Tables 6 & 7). Their opening remarks acknowledged their positive perceptions of English language learning. They both expressed positive views about their present L2 learning situation and attributed their like for learning English to their L2 task enjoyment in their current English classes.

Table 6. Analysis of *Student 6*'s discourse

(Do you like learning English?)	<i>Student 6</i> 's stated belief: I like English	
<u>Causal ascription</u> Perceived intrinsic interest in L2 learning. (properties of cause: positive, present, internal)	"I think I like learning English."	Attributes his interest in this language to his liking for learning this language
<u>Causal ascription</u> Favorable L2 conditions. (properties of cause: positive, present, external)	"English classes are different from other classes. We are active. We talk, we do things."	Attributes his liking for learning English to his active involvement in class activities
<u>Causal ascription</u> Favorable L2 conditions. (properties of cause: positive, present, external)	"I like the listening and speaking activities that we do. They are mostly fun."	Attributes his liking for learning English to doing listening and speaking activities in his L2 class
<u>Goal/Expectation</u> (What is 'being good at English' for you?)	Understanding people when they talk and speaking well	
Outcome	English mark obtained: 14/20	Good
Expectancy of future success (Do you think you will get a better mark next time?)	Ohm... I hope.	The student has expectancy of a better achievement in English.

Table 7. Analysis of *Student 7*'s discourse

(Do you like learning English?)	<i>Student 7</i> 's stated belief: 'I like English'	
<u>Causal ascription</u> Perceived intrinsic interest in L2 learning (properties of cause: positive, present, internal, stable, uncontrollable)	"I enjoy English classes a lot."	Attributes his interest in this language to enjoying L2 classes.
<u>Causal ascription</u> Favorable L2 situation (properties of cause: positive, present, external, unstable, uncontrollable)	"We use computers... for example we listen using the internet, we use the internet dictionaries ... we do other activities, for example we record our voices if we want and listen..."	Attributes his liking for learning English to his liking for the learning activities in his present L2 learning situation.
<u>Causal ascription</u> Favorable L2 situation (properties of cause: positive, present, external, unstable, uncontrollable)	"I love talking in English ... we have the opportunity to talk in our English classes. We did not do such things at lycée."	Attributes his liking for learning English to having opportunities to talk in L2 classes.
Goal/Expectation (What is 'being good at English' for you?)	Speaking without an accent	
Outcome	English mark obtained:15/20	Good
Expectancy of future success (Do you think you will get a better mark next time?)	I think with our new teacher I will.	The student has expectancy of a better achievement in English.

The data revealed that both *Student 6* and *Student 7*, like all the other learners, recognized language learning primarily for oral communication. The data obtained from *Student 6* and *Student 7* indicated that external factors such as the activities used in their English classes had an influence on these learners' motivations and consequently on their interest in the L2 tasks used in their English classes. The interview data also indicated that the learning activities used in their present English classes correlated with their expectations and goals.

*Student 8*, among all the participants, was the one with the highest positive attitude towards the L2. The student expressed a wholesome intrinsic interest in both the English language and English language learning (see Table 8). He attributed his interest in this language to his strong liking of this language. He maintained that he especially enjoyed talking in English. He also revealed that he perceived English as a language with a high international status and he expressed willingness to participate in any kind of classroom tasks in his English classes. *Student 8*, like the other participants equated knowing English to the ability to communicate in this language well. However, differently from rest of the participants, this learner's goals and expectations concerning the learning of English indicated much higher standards. The learner's discourse indicated that his higher perceived incentive value for this foreign language motivated him towards achieving a native speaker level of

English. This learner had the highest mark from the English course and his discourse suggested that he was also the one with the highest intrinsic (and integrative) motivation.

Table 8. Analysis of *Student 8*'s discourse

(Do you like learning English?) English	<i>Student 8</i> 's stated belief: 'I like English (I like the English language)'	
<u>Causal ascription</u>  Perceived value of English (properties of cause : positive, present, internal, stable, uncontrollable )	"English is a nice language."	Attributes his interest in this language to a higher perceived value for this language (high intrinsic interest in the L2)
<u>Causal ascription</u>  Perceived intrinsic interest in L2 (properties of cause : positive, present, internal, unstable, uncontrollable)	"I like talking in English. I sometimes chat on the net (internet) when I play games. I like learning English."	Attributes his willingness to communicate in English to his liking for this language (high intrinsic interest in the L2)
<u>Causal ascription</u>  Intrinsic interest in L2 learning (properties of cause : positive, present/past, internal, stable, uncontrollable)	"Yes, I enjoyed learning English when I was at lycée, as well."	Ascribes his enjoyment of learning English to his liking for this language
<u>Causal ascription</u>  Perceived L2 significance (properties of cause : positive, present, internal/external)	"Learning English is a must for everybody. It's an international language."	Perceives English as a language with high incentive value
Goal/Expectation  (What is 'being good at English' for you?)	Being able to communicate well in English	
Outcome	English mark obtained: 17/20	Very Good
Expectancy of future success  (Do you think you will get a better mark next time?)	"I don't know... I already have a good mark. Well, it's possible I think."	The student has expectancy of a better achievement in English.

## 5. Overall

The learners' attributions indicated that these learners' perceived 'like' or 'dislike' of English language learning was influenced by their beliefs about: a) L2 competence and self; b) L2 learning situation and L2 goals and expectations; and d) the perceived value of the English language. These learners in general had the tendency to attribute failure either to external uncontrollable factors such as teachers or teaching/learning situations or internal uncontrollable factors such as low ability and low self-efficacy. The learners' interview data suggested that lower perceived self-concept and lower perceived L2 competence were ascribed as principal causes for their lack of interest in learning English. The students' grades also correlated with their perceived L2 competence, self-concept beliefs and their likes or dislikes for learning English.

Favorable L2 learning situation was one of the main factors, which the learners attributed as a cause for their enjoyment in learning English and their attainment in English classes. During the interviews, the students expressed that they liked English classes mainly because of their present favorable L2 learning situation. They attributed this positive feeling to external factors such as relevant, interesting, and useful L2 activities their present English classes offered (e.g. the use of the Internet, speaking activities, variety of activities which encourage student participation etc.). The activities that corresponded to their expectations and goals seemed to have significant influence on their interest in learning. *Student 4, Student 5, Student 6, and Student 7* all referred to their learning situations indicating how the L2 situation influenced their feelings towards learning English. This study also suggested that belief and attitude change could be possible with the change of conditions and methods used in language learning settings: “Now we speak a lot and the teacher corrects our grammar mistakes after. It’s better”; “...but I like the activities we do in class now...I feel that my English is getting better.”

## 6. Discussion

The research on student learning has demonstrated that learners’ perception of their learning situation has a significant impact on their attitudes towards the L2 they are learning (Williams & Burden 1999). Pajares and Schunk (2002) suggested that research should focus on student beliefs in order to understand why students choose to do certain activities and avoid others, why they achieve and why they fail to achieve. Zeldin and Pajares (2000) asserted that learners who believe that they do not have the required skills will not engage in tasks in which those skills are required and these beliefs about their competencies will affect “the choices they make, the effort they put forth, their inclinations to persist at certain tasks, and their resiliency in the face of failure.” (Zeldin & Pajares 2000: 215). Although a number of the above-mentioned issues concerning learner beliefs have been explored and verified through research done in the field of educational psychology, there is still need for more research in the area of L2 learner attributions to have better understanding of learners’ perceptions and interpretations of their learning situations.

Providing ways through which learners can exercise some control over their learning environment is highly recommended in order to enhance both self-efficacy beliefs and intrinsic interest in learning (Bandura 2006b). Educationalist have also asserted that providing learning environments where learners work collaboratively, and creating natural environments in which real communication takes place, would enhance learners’ self-concept beliefs. They also recommend that teachers should consider individual differences and use variety of task types that appeal to different individuals’ needs and interests to improve learners’ self-efficacy beliefs. However, we have not yet had substantial research on the types of classroom tasks that enhance self-beliefs and learning. Thus, applied linguistic research should continue to look into the factors that influence L2 learners’ task and learning preferences and investigate how these are related to learners’ self-belief systems. I believe that researching the nature of the relationship between prior classroom experiences, learners’ task preferences, self-beliefs and learner attributions is a promising path of inquiry.

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# Language Learning Strategies: A general Overview

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## Abstract

The paper is mainly about the concept of language learning strategies discussing its definitions, types and classifications. It will also discuss the use of language learning strategies among English language learners and the role of these strategies in promoting the process of language learning. The progress of language learning strategies over the time is explored precisely in this paper. The paper will also provide information regarding the use of language learning strategies which will lead researchers to better understanding and to guide them to the righteous way when making research in this field. At the end, this paper defines the notion of Good Language Learner explaining the relationship between Good Language Learner and the use of the appropriate strategies.

*Keywords: Language Learning Strategies; Learning Strategies; Good Language Learner*

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## 1. Introduction

The significance of language learning strategies is increasing in the current year with the increasing importance of language learning all over the world. This paper is talking about language learning strategies providing a complete description of the field starting from the different definitions and classifications given by different scholars ending to the point of describing the good language learner according to the frequency of the use of these strategies. At the very beginning the researcher provides definitions and description of learning strategies as every learning process requires a manner to be adopted to achieve the main purpose. The next section will be devoted to the definitions of LLS as different researchers have defined LLS in different ways. The definitions of LLS are introduced and discussed here. Relevant studies and classifications of LLS by many researchers are addressed in this study in a section dedicated for the historical background of the research in this field. Rebecca Oxford's work (1990) will be specially discussed as she introduced the Strategy Inventory for Language learning (SILL). Rebecca's inventory is mostly adopted in the studies undertaken in the field of LLS.

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Finally, the notion of good language learner is defined and discussed in a specific section to clarify the relationship between the good language learner and the choice and frequency of learning strategies.

## 2. Learning Strategies

Every learning process requires a manner or a strategy to be adapted in order to achieve the main purpose of learning. Among the important things in the process of learning are "what" to use for learning and "how" to use it. However human beings are involved with many and different strategies while they are learning a language, some of these strategies are giving the ultimate benefit, yet some others are not effective. The term 'learning strategies' means different things and researchers have defined it in many ways. The modest definition provided by (Brown, 1980) who talked about learning strategies as processes that may contribute directly to learning. Chamot (1987, cited in Hismanoglu, 2000) went further when he attempted to define the term as processes, techniques, approaches, and actions that students take to facilitate the learning and recall of both linguistic and content areas of information.

Most of the research on learning strategies is related to the notion of successful learner(s). Researching in learning strategies, Rubin (1975) started doing research focusing on the strategies of successful learners and stated that once identified such strategies could be made available to less successful learners. He classified strategies in terms of processes contributing directly or indirectly to language learning. What exactly is meant by the term "learning strategy"? As Wenden (1987a:7-8) says "Learning strategies are the various operations that learners use in order to make sense of their learning". Also, Williams & Burden (1997) indicated that when students are involved in a learning task, they have several resources which they use in different ways to finish or solve the task, so this can be termed process of learning strategy. This explanation might be too abstract to understand, so it may be easier to say that learning strategy is learning skills, learning-to-learn skills, thinking skills, problem skills or, in other words the methods which learners use to intake, store, and retrieve during the learning process. Oxford (1990) defines learning strategies as "specific actions taken by the learner to make learning easier, faster, more enjoyable, more self-directed, more effective, and more transferable to new situations" (p.8). They do not only aid language learning, but also the learning of other subjects such as maths, chemistry, etc. In other words, when learners start to learn something, they have the ability to respond to the particular learning situation and to manage their learning in an appropriate way. Thus, learning strategy is like footballers who use tactics in order to win a game, when they are in the stadium. Learners use learning strategies in order to learn something more successfully.

O'Malley and Chamot (1990:43) went beyond the previous definitions to give a more focused definition. They defined Learning strategies as "techniques and devices used by second language learners for remembering and organizing samples of the second language. One of the ways learners become actively involved in controlling their own learning is by using strategies. Strategies are the thoughts and behaviours that learners use to help them comprehend, learn, or retain information". For O'Malley and Chamot (1990) learning strategies may include focusing on selected aspects of new information, analyzing and monitoring information during acquisition, and organizing or elaborating on new information during the encoding process, and evaluating the learning when it is completed or assuring oneself, that the learning will be successful as a way to allay anxiety.

Additionally, Ellis (1994:558) writes that "The study of learning strategies holds considerable promise, both for language pedagogy and for explaining individual differences in second language learning. It is probably true to say, however, that it is still in its infancy. For this reason, perhaps, discussions of learning strategies typically conclude with the problems that have surfaced and that need to be addressed before progress can be made". Meanwhile Ghani (2003) gives a new dimension to the definition of the learning strategies describing them as a facilitator in successful learning process. She stated that learning strategies are procedures, employed by the learners; in order to make their own language learning as successful as possible.

A very important part of learning strategies is the language learning strategies. Language learning strategies play an important role in learning process. In language research recently, 'Learning Strategies' as a term is gaining importance. It refers to 'techniques' and 'tactics'; it basically refers to the process that the learner employs in practicing language activities.

As we have seen in this section learning strategies are related to tactics and techniques used in the process of learning; learning of a language in particular. Therefore, there is an increasing research in the field of language learning strategies attempting to determine which of the language learning strategies mostly used by students. The next section will discuss and explain the definitions of language learning strategies in more details.

### 3. Definitions of Language Learning Strategies

Language learning strategies have received a considerable amount of significance since early 1970s for the crucial role they are playing in language learning. Many scholars defined language learning strategies differently focusing on the way used by learners to deal with the information they receive and what the kind of strategies they use. Language learning strategies are defined differently by many researchers. An early definition given by Riggeny (1978) who defines language learning strategies as the often-conscious steps or behaviours used by language learners to enhance the acquisition, storage, retention, recall, and use of new information. Oxford, Lavine, and Crookall (1989) have the same idea as Riggeny (1978) about language learning strategies. They stated that language learning strategies are used to enhance and to facilitate language acquisition. They referred to language learning strategies as “actions, behaviors, steps, or techniques—such as seeking out target language conversation partners, or giving oneself encouragement to tackle a difficult language task—used by learners to enhance learning (1989: 29). As further noted by these authors, such strategies facilitate the acquisition, storage, retrieval, and use of information.

According to Wenden (1987a), language learning strategies can be defined from the aspect of language learning behaviours, such as learning and regulating the meaning of a second or foreign language, cognitive theory, such as learners’ strategic knowledge of language learning, and the affective view, such as learners’ motivation, attitude, etc. It is argued that three points of views can improve language learning.

Rubin (1987) defined language learning strategies as behaviours, steps, or techniques that language learners apply to facilitate language learning. Moreover, the definition by Oxford (1990) also included cognitive, emotional, and social aspects of language learning strategies that enhance learners’ language learning proficiency and self confidence (Oxford, 1990; Ehrman & Oxford, 1990). Next, Ghani (2003) defined language learning strategies as specific actions, behaviours, steps, or techniques that students frequently use to improve their progress in L2 developing skills; these can facilitate the internalization, storage, retrieval, or use of new language.

Language learners use language learning strategies as a means to facilitate the acquisition of language and the use of information they receive, store, and recall. However many researchers accomplished many studies in the field of language learning strategies as it will be discussed in the next section.

#### 4. Research Background in Language learning strategies

The early research in language learning strategies was originated in 1970s when Rubin and Naiman (1975) tried to recognize the strategies used by good language learners when learning a second language. Rubin (1975) identified that there are certain strategies employed by the learner to enhance learning. Meanwhile Naiman and Frohlich (1975) made a list of strategies used by successful language learners, adding that they learn to think in the language and address the affective aspects of language acquisition. In (1976) Naiman et al. agreed with previous researchers on the importance of the kind of the strategies involved in learning process. They differentiate between 'Good' and 'Poor' language learners and they noted that "good" language learners appeared to use a larger number and range of strategies than "poor" language learners.

Language learning strategies vary widely and they are divided into distinct categories. O'Malley and Chamot (1990) described language learning strategies in more detail. They classify the strategies under three main headings: cognitive (applying a specific technique to a particular task, for example repeating, reasoning and analyzing), metacognitive (related to the learning process, for example organizing, planning and monitoring) and socio-affective (involving oneself and others, for example co-operating with peers and seeking clarification).

O'Malley and Chamot (1990) give special emphasis to those classed as metacognitive, maintaining that "students without metacognitive approaches are essentially learners without direction or opportunity to plan their learning, monitor their progress, or review their accomplishments and future learning directions" (1990: 8). They concluded that the best strategy is the cognitive one, repeating words and phrases out loud "repetition as the most frequently used strategy" (1990: 80)

Later in 1993, O'Malley and Chamot stated "individuals who take a more strategic approach learn more rapidly and effectively than individuals who do not" (1993: 105). Strategies of learning a foreign or second language as defined by Oxford (1990b) includes: specific actions, behaviors, steps, or techniques students use -- often consciously -- to improve their progress in apprehending, internalizing, and using the second language.

Research has repeatedly shown that the conscious, tailored use of such strategies is related to language achievement and proficiency.

Going beyond O'Malley and Chamot (1990) and in more detail, (Oxford, 1990) also classified language learning strategies, she divided these strategies into six categories arguing that many different strategies can be used by language learners: metacognitive techniques for organizing, focusing, and evaluating one's own learning; affective strategies for handling emotions or attitudes; social strategies for cooperating with others in the learning process; cognitive strategies for linking new information with existing schemata and for analyzing and classifying it; memory strategies for entering new information into memory storage and for retrieving it when needed; and compensation strategies (such as guessing or using gestures) to overcome deficiencies and gaps in one's current language knowledge.

Having more advanced idea about strategies of second language learning Andrew (1998) argued that the term strategies in the second-language-learning sense, has come to be applied to the conscious moves made by second-language speakers intended to be useful in either learning or using the second language. According to Andrew (1998) strategies can be very different in nature, ranging from planning the organization of one's learning (a metacognitive learning strategy) through using mnemonic devices to learn vocabulary (cognitive learning strategies) and rehearsing what one expects to say (a performance strategy) to enhance one's self-confidence for a language task by means of "self-talk" (affective strategy).

Recently, there has been a prominent shift within the field of language learning and teaching over the last twenty years with greater emphasis being put on learners and learning rather than on teachers and teaching. Parallel to this new shift of interest, how learners process new information and what kinds of strategies they employ to understand, learn or remember the information has been the primary concern of the researchers dealing with the area of foreign language learning (Murat, 2000). Murat's (2002) hypothesis supports what is really going on recently in the field of language research as the main concern of this field has turned to focus on the process of learning, including the learners, the strategies they used to use, and the context in which the process of learning takes place.

Ghani (2003) had an extensive study on the area of language learning strategies, she defined these strategies as: specific actions, behaviours, steps, or techniques that students (often intentionally) use to improve their progress in developing second language skills. According to her, these strategies can facilitate the internalization, storage, retrieval, or use of the new language. Ghani (2003) studied in more details the learners in terms of their use of strategies for learning. She states that learners have been found to vary considerably in both the overall frequency with which they employ strategies and also the particular types of strategies they use. Different students adopt different behaviors or strategies to learn a new language. Learners used to use strategies which are helpful for them according to their learning styles. This is confirmed by (Ghani, 2003) when she said that “These learners use different kinds of language learning strategies, or specific actions and behaviors to help them learn. Their strategies differ greatly, at least in part because their general learning styles are so varied. Some students learn words by breaking them down into their components and some of them consciously use guessing when they read.

Yet another study on language leaning strategies focused on students of foreign language by Andrew (2006) agrees with (Ghani, 2003) which states that learners are being encouraged to learn and use a broad range of language learning strategies that can be tapped throughout the learning process. This approach is based on the belief that learning will be facilitated by making students aware of the range of strategies from which they can choose during language learning and use.

Eventually, research on strategies for effective language learning has focused on (1) the identification, description, and classification of strategies; (2) their frequency of use and the learner’s success at using them; (3) differences in language proficiency level, age, gender, and cultural background that might affect their successful use of strategies; and (4) the impact of language strategy training on student performance in language learning and language use.

## **5. Taxonomy Of Language Learning Strategies**

Language Learning Strategies have been classified by many scholars. However, most of their attempts to classify language learning strategies reflect more or less the same categorizations of language learning

strategies without any radical changes. In what follows, Rubin's (1987), Oxford's (1990), O'Malley's (1985), and Stern's (1992) taxonomies of language learning strategies will be handled:

O'Malley (1985) divided language learning strategies into three main subcategories: Metacognitive Strategies, Cognitive Strategies and Socioaffective Strategies. Metacognitive Strategies is a term to express executive function, strategies which require planning for learning, thinking about the learning process as it is taking place, monitoring of one's production or comprehension, and evaluating learning after an activity is completed. Cognitive strategies are more limited to specific learning tasks and they involve more direct manipulation of the learning material itself. Repetition, resourcing, translation, grouping, note taking, deduction, recombination, imagery, auditory representation, key word, contextualization, elaboration, transfer, inferenceing are among the most important cognitive strategies. Socioaffective Strategies can be stated that they are related with social-mediating activity and transacting with others. Cooperation and question for clarification are the main socioaffective strategies (Brown 1987).

Rubin (1987), who is pioneered in the field of strategies, makes the distinction between strategies contributing directly to learning and those contributing indirectly to learning. According to Rubin, there are three types of strategies used by learners that contribute directly or indirectly to language learning. These strategies are:

- Learning Strategies
- Communication Strategies
- Social Strategies

Learning Strategies are of two main types, being the strategies contributing directly to the development of the language system constructed by the learner:

- Cognitive Learning Strategies
- Metacognitive Learning Strategies

Cognitive Learning Strategies refer to the steps or operations used in learning or problem-solving that requires direct analysis, transformation, or synthesis of learning materials. Rubin identified 6 main cognitive learning strategies contributing directly to language learning:

- Clarification / Verification

- Guessing / Inductive Inferencing
- Deductive Reasoning
- Practice
- Memorization
- Monitoring

Metacognitive Learning Strategies, these strategies are used to oversee, regulate or self-direct language learning. They involve various processes as planning, prioritizing, setting goals, and self-management. Communication Strategies are less directly related to language learning since their focus is on the process of participating in a conversation and getting meaning across or clarifying what the speaker intended. Communication strategies are used by speakers when faced with some difficulty due to the fact that their communication ends outrun their communication means or when confronted with misunderstanding by a co-speaker. Social strategies are those activities learners engage in which afford them opportunities to be exposed to and practice their knowledge. Although these strategies provide exposure to the target language, they contribute indirectly to learning since they do not lead directly to the obtaining, storing, retrieving, and using of language (Rubin and Wenden 1987:23-27).

Oxford (1990:9) sees the aim of language learning strategies as being oriented towards the development of communicative competence. Oxford divides language learning strategies into two main classes, direct and indirect, which are further subdivided into 6 groups. In Oxford's system, metacognitive strategies help learners to regulate their learning. Affective strategies are concerned with the learner's emotional requirements such as confidence, while social strategies lead to increased interaction with the target language. Cognitive strategies are the mental strategies learners use to make sense of their learning, memory strategies are those used for storage of information, and compensation strategies help learners to overcome knowledge gaps to continue the communication. Oxford's (1990:17) taxonomy of language learning strategies is shown in the following:

- **DIRECT STRATEGIES**

- I. Memory

- A. Creating mental linkages
    - B. Applying images and sounds
    - C. Reviewing well

## D. Employing action

## II. Cognitive

- A. Practicing
- B. Receiving and sending messages strategies
- C. Analyzing and reasoning
- D. Creating structure for input and output

## III. Compensation strategies

- A. Guessing intelligently
- B. Overcoming limitations in speaking and writing

- INDIRECT STRATEGIES

## I. Metacognitive Strategies

- A. Centering your learning
- B. Arranging and planning your learning
- C. Evaluating your learning

## II. Affective Strategies

- A. Lowering your anxiety
- B. Encouraging yourself
- C. Taking your emotional temperature

## III. Social Strategies

- A. Asking questions
- B. Cooperating with others
- C. Empathizing with others

According to Stern (1992), there are five main language learning strategies. These are as follows:

- Management and Planning Strategies
- Cognitive Strategies
- Communicative - Experiential Strategies
- Interpersonal Strategies
- Affective Strategies

Management and Planning Strategies are related with the learner's intention to direct his own learning. A learner can take charge of the development of his own program when he is helped by a teacher whose role is that of an adviser and resource person. That is to say that the learner must:

1. decide what commitment to make to language learning
2. set himself reasonable goals
3. decide on an appropriate methodology, select appropriate resources, and monitor progress,
4. Evaluate his achievement in the light of previously determined goals and expectations

Cognitive Strategies are steps or operations used in learning or problem solving that require direct analysis, transformation, or synthesis of learning materials. In the following, some of the cognitive strategies are exhibited:

- Clarification / Verification
- Guessing / Inductive inferencing
- Deductive Reasoning
- Practice
- Memorization
- Monitoring

Communicative-Experiential Strategies, Communication strategies, such as circumlocution, gesturing, paraphrase, or asking for repetition and explanation are techniques used by learners so as to keep a conversation going. The purpose of using these techniques is to avoid interrupting the flow of communication. According to interpersonal strategies learners should monitor their own development and evaluate their own performance. Learners should contact with native speakers and cooperate with them. Learners must become acquainted with the target culture. For Affective Strategies it is evident that good language learners employ distinct affective strategies. Language learning can be frustrating in some cases. In some cases, the feeling of strangeness can be evoked by the foreign language. In some other cases, second language learners may have negative feelings about native speakers of second language. Good language learners are more or less conscious of these emotional problems. Good language learners try to create associations of positive affect towards the foreign language and its speakers as well as towards the learning activities involved. Learning training can help students to face up to the emotional difficulties and to overcome them by drawing attention to the potential frustrations or pointing them out as they arise.

It can be seen that much of the recent work in this area has been underpinned by a broad concept of language learning strategies that goes beyond cognitive processes to include social and communicative strategies. In 1990, Rebecca L Oxford introduced strategies inventory for language learning (SILL). This inventory describing the various types of language learning strategies that learner employs to help him/her to learn a new language. These LLS can be classified under six types, Memorization, Cognitive, Compensation, Metacognitive, Affective and Social strategies. Below is a detailed description of them:

- **Memorization Strategies:** Memorization strategies are techniques used to remember more effectively, to retrieve and transfer information needed for future language use. Memorization helps students to store in memory important information gathered from their learning. When the information is needed for use in the future, these strategies help the student to get the information back. For example, the semantic map of a group of nouns or verbs that shows the relationship between the words.
- **Cognitive Strategies:** Cognitive strategies used to help the students to manipulate the target language or task correctly by using all their processes. They include reasoning, analysis, and drawing conclusions. For example, the use of drills to practice the language and the use of dictionary to find difficult words.
- **Compensation Strategies:** Compensation strategies are employed by the students to compensate the missing knowledge in the target language due to lack of vocabulary. The strategies help to allow the students to use the language to speak and write in the target language even when their vocabulary is limited. For example, the use of linguistic clues to guess the meanings or by inventing words to the use of linguistic clues to guess compensates their lack of vocabulary.
- **Metacognitive Strategies:** Metacognitive strategies are employed by the students to help them coordinate the learning process by centering, arranging, planning, and evaluating their learning, this help learner to control their own learning. Students will also be able to plan what their learning strategies should be and change them if they are not suitable. For example, overviewing with already known material and deciding in advance on what to pay attention to.
- **Affective Strategies:** Affective strategies are techniques to help the students control their emotions, attitudes, motivations and values. These strategies have a powerful influence on language learning because they allow the students to manage their feelings. For example, students may use laughter to relax and praise to reward themselves for their achievements.

- **Social Strategies:** social strategies are activities that students engage in to seek opportunities to be exposed to an environment where practice is possible. These strategies are important because language learning always involves other people; it is a form of social behaviour. For example, questioning for understanding or facts and work together with peers or speakers of the target language including native and native like speakers in order to upgrade their language skills.

Oxford's (1990) taxonomy of language learning strategies divides these strategies into two main classes, direct and indirect strategies according to their contribution in the process of language learning. The first class is direct strategies employed by language learners. Direct strategies include memorization, cognitive and compensation strategies.

## 6. Good Language Learner

For many people, learning a second language is one of the most important and demanding tasks they will need to accomplish. This is particularly true in some countries where a student's English abilities are often more important for their career success than their university marks. For these reasons, an awareness of how to learn a language, not just what to learn, is very important. Knowledge of the characteristics of a good language learner can help students increase their language learning efficiency (Sewell, 2003). According to Sewell (2003) the interest in language learning strategies originated from a desire to understand the characteristics of the good language learner. The concept emphasizes the active role of the learner in the learning process. The use of proper strategies for language learning plays a very effective role in the learning process. The good learner represents the use of good and proper strategies that lead to accurate acquisition. For this reason the study of characteristics of good language learner is a crucial need to achieve successful learning which results in successful acquisition.

Early researchers tended to make lists of strategies and other features presumed to be essential for all "good L2 learners." (Rubin, 1975) suggested that good L2 learners are willing and accurate guessers; have a strong drive to communicate; are often uninhibited; are willing to make mistakes; focus on form by looking for patterns and analyzing; take advantage of all practice opportunities; monitor their speech as well as that of others; and pay attention to meaning.

Rubin (1975) observed in her study the strategies used by the good or successful language learner. In her observation of the language learning process of good language learners, she identified that there are certain strategies employed by the learner to enhance learning. She identified the following strategies used by good language learners:

Αππενδix B. Making reasoned guesses when not sure.

- Making an effort to communicate and to learn through communication.
- Finding strategies for overcoming inhibitions in target language interaction.
- Practicing the language whenever possible.
- Monitoring their speech and that of others.
- Attending to form (i.e., grammar)
- Paying attention to meaning.

Naiman, Frohlich, and Todesco (1975) went beyond (Rubin, 1975), they made a list of strategies used by successful L2 learners, adding that they learn to think in the language and address the affective aspects of language acquisition. They state that self-Directed learners need to identify the strategies that make them more effective language learners. These strategies will vary according to the goals and objectives of the learner. They described a language strategy as a conscious thought or behaviour used by a learner to improve understanding of the target language.

Naiman et al. (1976) differentiate between 'Good' and 'Poor' language learners and they noted that "good" language learners appeared to use a larger number and range of strategies than "poor" language learners, the implications of understanding strategy use have seemed increasingly important. Naiman et al. (1976) concluded there are still many questions to answer. Does strategy use actually aid language learning, or is it just something that good learners do? Are some strategies better than others, or is it the number and range of strategies used that counts? Are there "bad" strategies that actually making learning or performance worse? Can "poor" language learners' benefit from being taught the strategies that "good" learners use, or do you need to be a good learner already to use some of the strategies? Does strategy training affect language learning?

In 1978, Naiman et al found six types of strategies, which were common in good language learners (cited in Cook, 1996) as to find a language learning style that suits you, involves yourself in the language learning process, develop an awareness of language both as system and as communication, pay constant attention to expanding your language, develop the L2 as a separate system and take into account the demands that L2 Learning.

In most of the research on language learning strategies, the primary concern has been on “identifying what good language learners report they do to learn a second or foreign language, or, in some cases, are observed doing while learning a second or foreign language.” Rubin and Wenden (1987:19)

Oxford (1994) agreed with Rubin and Wenden (1987) that the study of good language learners’ characteristics got primary concern in the field of studying language learning strategies. He argued that a number of good language learners’ characteristics have been validated by subsequent research. The "uninhibited" aspect has not been confirmed as part of all or most good language learners. Because of language anxiety, many potentially excellent L2 learners are naturally inhibited; they combat inhibition by using positive self-talk, by extensive use of practicing in private, and by putting themselves in situations where they have to participate communicatively.

Claus Gnutzmann (2005) states, “Most researchers have rejected the notion of a single profile of the “good language learner” because over the years research studies have shown that there can be remarkable differences among equally successful language learners. Rather than limiting the description of the good language learner to one that is prescriptive and ignores learner differences, the more recent and inclusive view is that there are various ways that language learners can be successful. For the most part, these learners are strategic in their learning”.

## 7. Conclusion

This paper has discussed the concept of language learning strategies in a general overview. It presents definitions of the concept by different scholars who are giving various definitions yet they are mostly agreed that language learning strategies are steps, behaviours and techniques used by learners to enhance and facilitate the language acquisition. The concept of language learning strategies has received a considerable amount of significance since early 1970s for the crucial role they are playing in the processes of language learning and acquisition. When scholars defined language learning strategies differently they were focusing on the way used by learners to deal with the information they receive and the kind of the strategy they use.

Language learning strategies vary widely and they are divided into different categories. O'Malley and Chamot (1990) classified LLS into three headings: cognitive, metacognitive and socio-affective. Oxford (1990) also classified LLS; she divided these strategies into two main classes direct and indirect strategies which are further subdivided into 6 groups. Direct strategies include memorization, cognitive, and compensation strategies and indirect strategies include metacognitive, affective and social strategies. In relation to the concept of language learning strategies the paper defined the notion of good language learner who represents the use of proper strategies that lead to accurate acquisition.

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# Latvian music teachers' survey on the assessment criteria of mastering improvisation

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## Abstract

Improvisation has been used in music practice for ages, but at present it is a component of several subjects on music. The research aim is to study the attitude of Latvian music teachers to the criteria developed for assessing the level of mastering improvisation. For this purpose, a questionnaire survey was carried out, with music teachers of different schools and higher education institutions from all regions of Latvia (N=187) participating in it. A paired comparison method was applied: the respondents were supposed to compare each assessment criterion of mastering improvisation with respect to each other assessment criterion of mastering improvisation. The SPSS software was used for the analysis of statistic data and presentation of the research results. The research outcomes show that the respondents' opinions on the assessment criteria of mastering improvisation differ depending on their gender, work place, involvement in improvisation, concert activities, self-identification and length of service. Therefore the assessment made by different music teachers may also be different and equal attention should be paid to all assessment criteria.

**Key words:** acquisition of improvisation; assessment criteria; survey; music teachers; statistics.

## Introduction

Several investigators consider improvisation really necessary for music teachers and acknowledge that it is also an important competence for their profession (Ferand, 1956, 1957; Короутек, 1976; Pressing, 1984; Regineld, 1987; Глущенко, 1990; Мальцев, 1991; Blauzde, 2001; Ustinskovs, 1995; Martin, 2005; Zariņš, 2005; Lehmann, Sloboda, Woody, 2007; Birzkops, 2008; Stefanuk, 2008; Кинус, 2008; Спигин, 2008; Hickey, 2009; Petrauskas, 2009; Kingscott & Durrant 2010; Столяр, 2010; McGhee, 2011; Spigins, 2012).

Currently, the course on improvisation is included in the curricula of music secondary schools, but there is no integrated approach to teaching it, and no theoretical foundations and methodological techniques for the assessment of the acquisition of improvisation by prospective music teachers have been developed, because the problems concerning the assessment of the level of mastering improvisation have not been sufficiently studied as yet. T. S. Brofi (Brophy, 2000) recommends using several levels and criteria for assessing improvisation. The scholar thinks that a music teacher has to be able to evaluate learner's improvisation activity and has to know assessment criteria of mastering improvisation.

A report by J. Spigins (Spigins, 2010) on the evaluation of the acquisition of the basics of improvisation is one of those investigations which have been conducted in this field. The study done by J. Ustinskovs is concerned with assessing the skills of improvisation of music secondary school learners (Ustinskovs, 2011).

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As the acquisition of improvisation is a field that has been little studied, the aim of this research is to investigate what attitude to the assessment criteria of mastering improvisation Latvian music teachers take.

### Method and Procedure

Latvian music teachers' survey took place in the autumn of 2012. The respondents were supposed to compare the assessment criteria of mastering improvisation (Ustinskova, 2011). A pairwise comparison method was applied: each criterion of assessing the acquisition of improvisation was examined as to its relative importance with respect to each other. This method is widely applied in pedagogy and in other sciences as well (Albrehta, 1998).

187 music teachers of different schools and higher education establishments from all regions of Latvia participated in the survey: 54 (28.9%) from Riga, 42 (22.5%) from Latgale, 29 (15.5%) from Vidzeme, 33 (17.6%) from Kurzeme, 29 (15.5%) from Zemgale.

By gender they were: 128 (68.4%) – female, 59 (31.6%) – male.

Music teachers were differentiated by their work place: schools of general education – 48 (25.7%); children music schools and schools providing in-depth music studies – 52 (27.8%); music secondary schools and higher education institutions – 87 (46.5%).

In the procedure of data collecting the researcher himself and three of his colleagues from regions of Latvia were involved.

The SPSS software package “Statistical Package for the social Sciences”, Windows 19.0 version was used for the statistic data analysis and presentation of the research results.

The use of the verbal-numerical scale increases the objectivity of the assessment, contributes to the attraction of this field's specialists for assessment and ensures comparability.

At substantiating the criteria of relative importance of coefficients, each i-criterion is given a positive number  $F_i$  which reflects its relative importance.

The coefficients of relative importance of the criteria are given according to the law:  $0 < F_i < 1$ ; where  $n$  – is the quantum of the criteria.

The numerical values of this type are called values in the relationship scale scale, but the task itself, at giving numerical values to non-numerical objects that meet the given requirements, is called a scale task in the relationship scale. The most widely applied method for solving such tasks is Saaty value method.

By applying the above mentioned method, during the first stage the pairwise comparison of values was made. Such comparison is the simplest form of reflecting one's own preferences, minimizing the complications for the respondents.

Making use of the verbal-numerical scale, the respondents filled in the matrix of paired comparison:  $A_{ij} = I$  and  $j$  are the outcomes obtained from comparing the criteria. Values are determined according to a verbal-numerical scale  $a_{ij} =$

0 – criterion  $j$  is more significant than criterion  $i$ ;

1 – criteria  $j$  and  $i$  are equally significant;

2 – criterion  $i$  is more significant than criterion  $j$

The elements of the matrix of the  $a_{ij}$  paired comparison are viewed as the real criteria values of the relationships between the relative importance of the unknown coefficients:

$$a_{jk} = V_j / V_k$$

In an ideal case, using the logic at determining the value in a paired comparison, the condition  $a_{ik} = a_{ij} * a_{jk}$  should be observed. The matrix where such conditions are observed is called super transitive. In this case the equation  $A * V = V * n$  is satisfied, where  $V$  is a vector of real criteria values of relative importance of the unknown coefficients.

The value of the criteria of relative importance of the unknown coefficients is the calculation done according to the

$$\text{formula } V_i = \frac{1}{\sum_{j=1}^n a_{ij}},$$

with further standardizing of the obtained data. To make the interpretation of the data easier, the relative importance of criteria is expressed in percentage. To better understand and further to interpret the values of importance coefficient criteria it is worth while standardizing them. Standard values are divided according to the law of normal distribution with the null mean and the dispersion which is equal to one. This is very convenient when a comparative analysis of standard values of different indicators or the same indicators of different respondent groups is made. Standardized values of factors provide the opportunity to classify the respondents by each factor depending on whether the indicators are higher or lower than the mean.

## Results

Table 1. Matrix of paired comparison

Assessment criteria	Content of improvisation and its revealing, the sense of style	Time and agogics	Dynamics	Phrasing and form	Originality of the music	Reproduction of rhythm	Reproduction of the pitch	Use of the techniques of composition and improvisation	Use and development of a texture
Content of improvisation and its revealing, the sense of style	a11	a12	a13	a14	a15	a16	a17	a18	a19
Time and agogics	a21	a22	a23	a24	a25	a26	a27	a28	a29
Dynamics	a31	a31	a33	a34	a35	a36	a37	a38	a39
Phrasing and form	a41	a42	a43	a44	a45	a46	a47	a48	a49
Originality of the music material	a51	a52	a53	a54	a55	a56	a57	a58	a59
Reproduction of rhythm	a61	a62	a63	a64	a65	a66	a67	a68	a69
Reproduction of the pitch	a71	a72	a73	a74	a75	a76	a77	a78	a79
Use of the techniques of composition and improvisation	a81	a82	a83	a84	a85	a86	a87	a88	a89
Use and development of a texture	a91	a92	a93	a94	a95	a96	a97	a98	a99

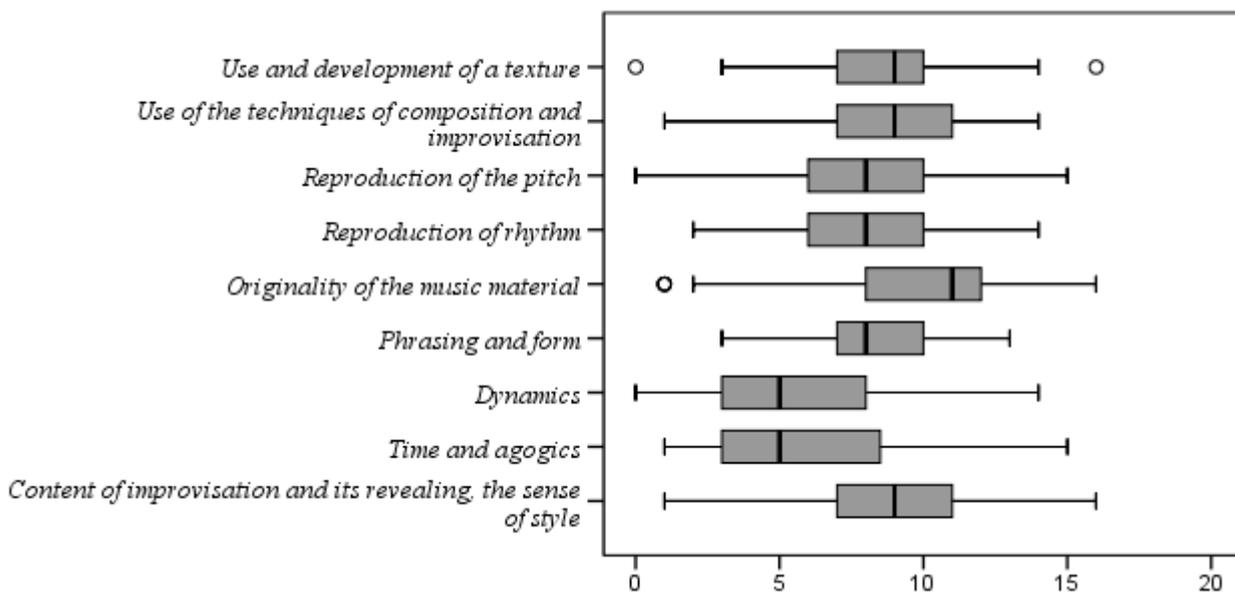


Figure 1. Diagram of the relative importance of criteria

Table 2. The descriptive statistics of the relative importance of criteria

	Content of improvisation and its revealing, the sense of style	Time and agogics	Dynamics	Phrasing and form	Originality of the music material	Reproduction of rhythm	Reproduction of the pitch	Use of the techniques of composition and improvisation	Use and development of the texture	
Mean	12,60	8,18	7,78	11,76	13,74	10,96	10,64	12,31	12,02	
Median	12,50	6,94	6,94	11,11	15,28	11,11	11,11	12,50	12,50	
Mode	13	6	10	11	15	13	10 <sup>a</sup>	11	13	
Std. Deviation	4,097	4,398	3,953	2,699	4,066	3,837	3,933	4,119	3,221	
Range	21	19	19	14	21	17	21	18	22	
Minimum	1	1	0	4	1	3	0	1	0	
Maximum	22	21	19	18	22	19	21	19	22	
Percentiles	25	9,72	4,17	4,17	9,72	11,11	8,33	8,33	9,72	9,72
	50	12,50	6,94	6,94	11,11	15,28	11,11	11,11	12,50	12,50
	75	15,28	12,50	11,11	13,89	16,67	13,89	13,89	15,28	13,89

The paired comparison matrix (Table1) indicates that the indicators having the greatest importance are *Content of improvisation and its revealing, the sense of style; Originality of the music material; Use of the techniques of composition and improvisation; Use and development of the texture*, while the smallest importance is attached to the criteria *Dynamics; Time and agogics*.

The greatest amplitude of dispersion of assessment is that of the criteria *Time and agogics; Content of improvisation and its revealing, the sense of style; Use of the techniques of composition and improvisation; Originality of the music material*, but the smallest one is that of the criterion *Phrasing and form* (Figure 1, Table 2).

Table 3. Assessment of the correlation between the relative importance of the criteria and respondents' professional characterizations: the results of the use of one factor dispersion analysis

Assessment criteria	Content of improvisation and its revealing, the sense of style	Time and agogics	Dynamics	Phrasing and form	Originality of the music material	Reproduction of rhythm	Reproduction of the pitch	Use of the techniques of composition and improvisation	Use and development of the texture
Workplace	0,008	0,008	0,093	0,959	0,008	0,001	0,012	0,551	0,185
Involvement in improvisation	0,849	0,221	0,001	0,060	0,193	0,720	0,011	0,207	0,017
Concert activities	0,615	0,242	0,001	0,179	0,134	0,178	0,003	0,942	0,072
I perceive myself more as	0,951	0,470	0,010	0,188	0,117	0,815	0,191	0,771	0,298

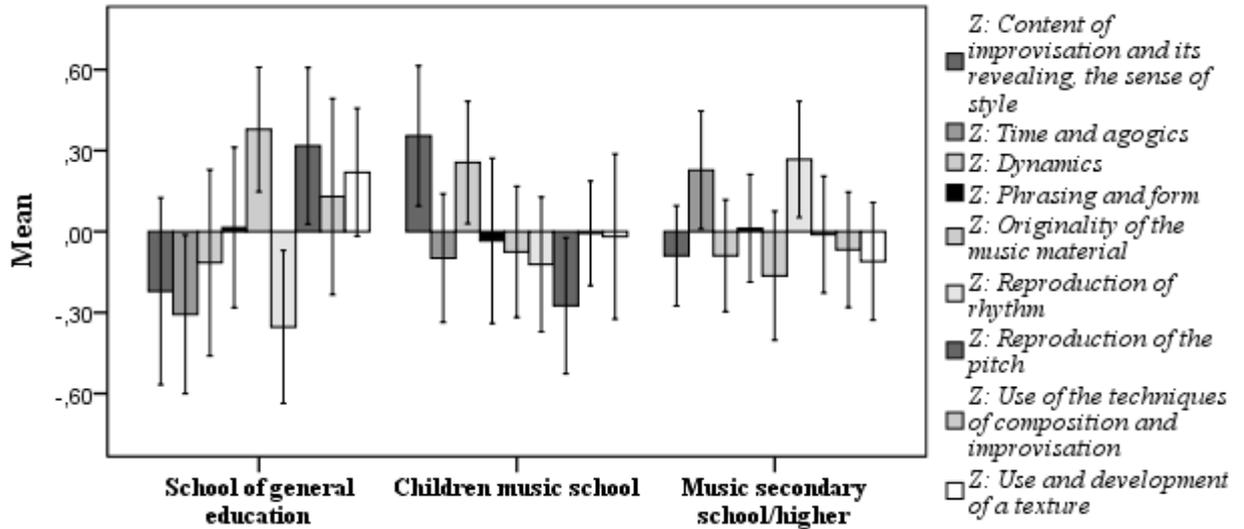


Figure 2. Mean importance of the assessments of the criteria by the respondents' workplaces

Respondents' workplace has a great influence on the assessment of several criteria, except the criteria *Phrasing and form*; *Use of the techniques of composition and improvisation*; *Use and development of the texture*. On the whole, all respondents assess these criteria close to the mean level of the respondent group. Respondents, whose workplace is school of general education, assess the criteria *Originality of the music material*; *Reproduction of the pitch* higher than the mean respondent group, while the criterion *Reproduction of rhythm* - lower than the mean respondent group. Respondents, whose workplace is children music school, assess the criteria *Content of improvisation and its revealing, the sense of style*; *Dynamics* higher, while the criterion *Reproduction of the pitch* is assessed by these respondents lower than the mean respondent group. Respondents from music secondary schools and higher education establishments typically give higher assessment to the criteria *Reproduction of rhythm and Time and agogics*.

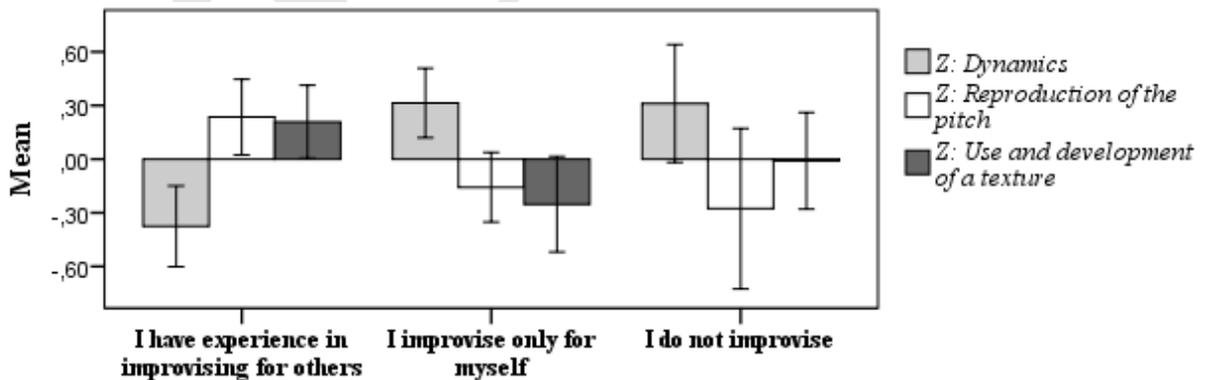


Figure 3. Mean importance of the assessments of the criteria by respondents' involvement in improvisation

Respondents' involvement in improvisation influences the assessment of such criteria as *Dynamics*; *Reproduction of the pitch*; *Use and development of the texture*. The respondents with the experience to improvise for others assess the criteria *Reproduction of the pitch*; *Use and development of the texture* higher than the respondents group on average. But the respondents who do not improvise or improvise only for themselves typically assess the criterion *Dynamic* higher than the mean group of the respondents.

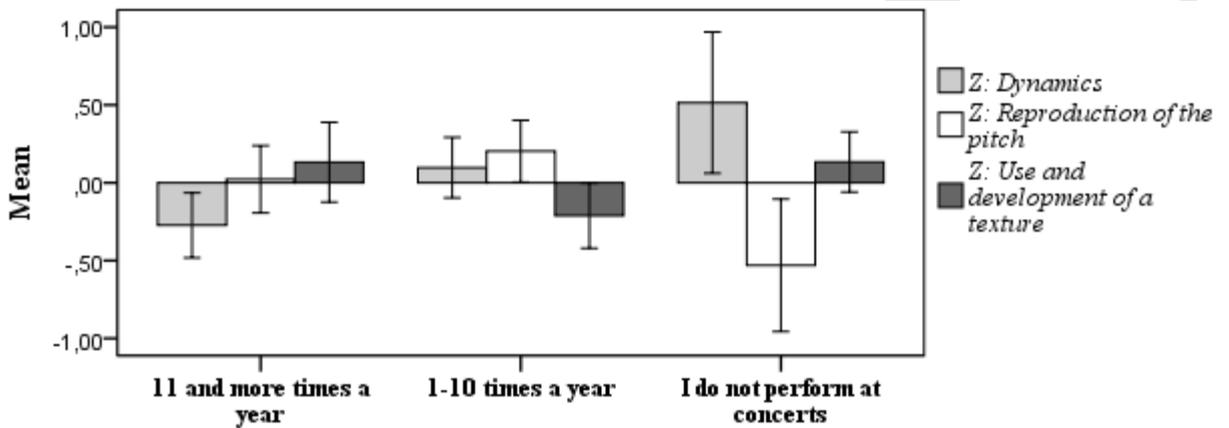


Figure 4. Mean importance of the assessment of the criteria by respondents' concert activities

The frequency of respondents' concert activities influences the assessment of the criteria *Dynamics*; *Reproduction of the pitch*; *Use and development of the texture*.

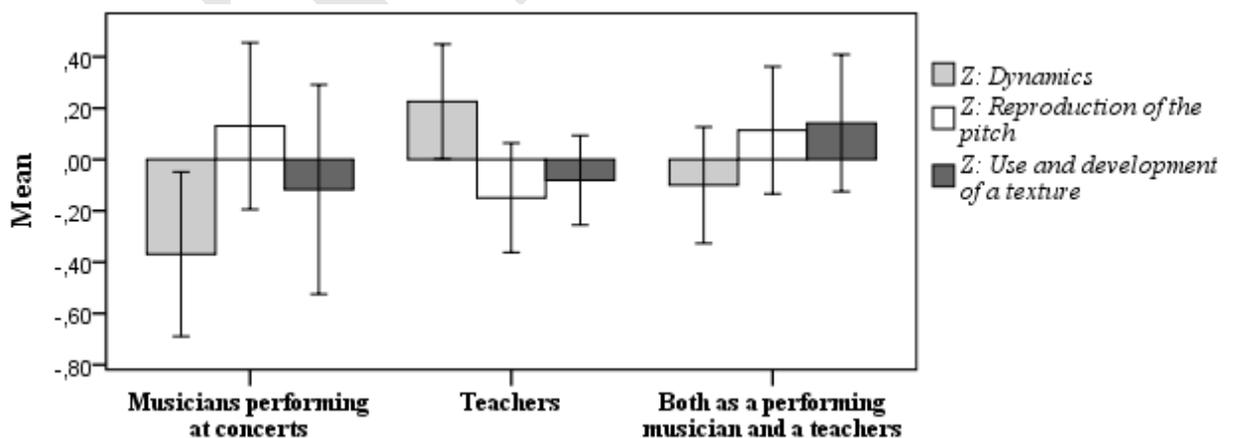


Figure 5. Mean importance of the assessment of the criteria by respondents' involvement in improvisation

The age range of the respondents is from 21 to 72, and half of them are older than 44. The respondents' length of service is from one year to 47 years, and for half of them it is longer than 21 years. There is a direct, significant and strong correlation between the respondents' age and their length of service, the correlation coefficient being 0.978.

The correlation between the assessment of the relative importance of the criteria *Time and agogics*; *Reproduction of the rhythm* and respondents' length of service is non-linear. The correlation approaches the squared curve with the convex point close to the age 21. To assess the observed correlations by means of Pearson correlation coefficient is possible only within the age ranges from 1 to 21 years and from 21 to 47 years.

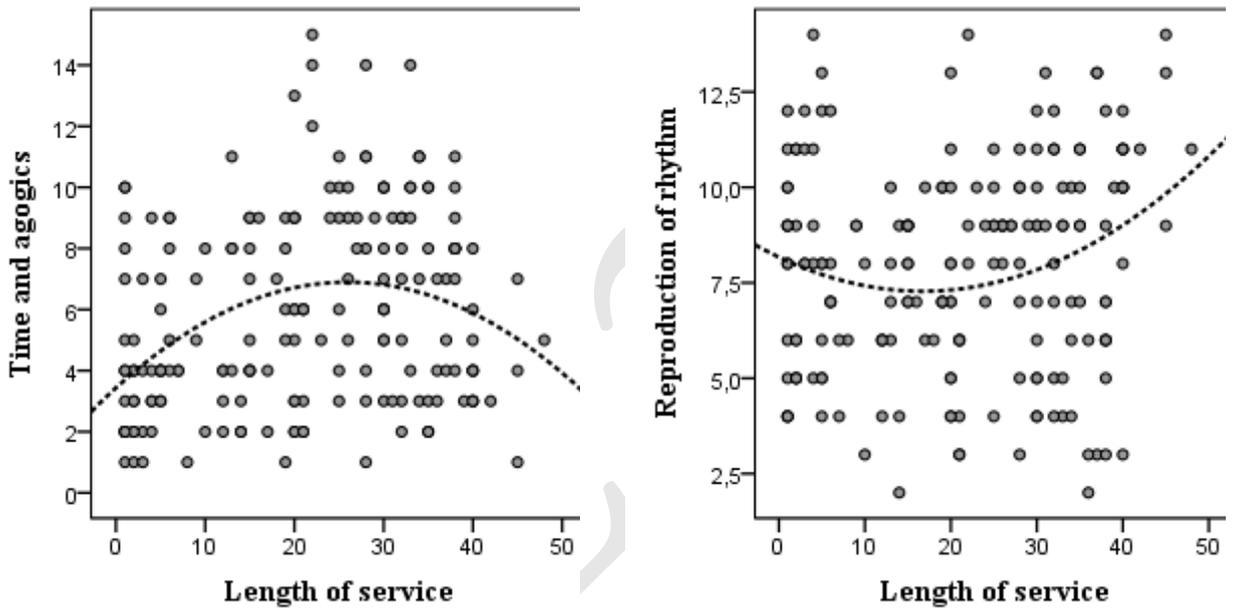


Figure 6. Scatter diagrams with a squared curve in planes: Length of Service and Time and Agogics; Length of Service and Reproduction of Rhythm

Table 4. Coefficients of correlation between the relative assessment of the criteria and respondents' length of service

Length of service	Content of improvisation and its revealing, the sense of style	Time and agogics	Dynamics	Phrasing and form	Originality of the music material	Reproduction of rhythm	Reproduction of the pitch	Use of the techniques of composition and improvisation	Use and development of the texture
1-20	0,426	0,234	0,148	0,094	-0,214	-0,083	-0,364	-0,013	-0,339
21-47	-0,261	-0,242	-0,133	-0,117	0,181	0,208	-0,075	0,285	0,155

Respondents with the length of service to 21 years show direct significant correlations between the *Length of service* and *Content of improvisation and its revealing, the sense of style* as well as between *Length of service* and *Time and agogics*. For respondents, whose length of service is more than 21 years, the character of these correlations is inverse. For respondents having the length of service more than 21 years direct correlations can be observed also between the length of service and the assessment of the criteria *Reproduction of rhythm*; *Use of the techniques of composition and improvisation*.

Table 5. Correlation coefficients between the assessments of the relative importance of the criteria

	Time and agogics	Dynamics	Phrasing and form	Originality of the music material	Reproduction of rhythm	Reproduction of the pitch	Use of the techniques of composition and improvisation	Use and development of the texture
Content of improvisation and its revealing, the sense of style	-0,134	-0,074	0,035	-0,049	-0,431**	-0,451**	0,100	-0,010
Time and agogics	1,000	0,613**	-0,130	-0,665**	0,148*	-0,062	-0,605**	-0,331**
Dynamics		1,000	-0,024	-0,478**	-0,008	-0,146*	-0,460**	-0,483**
Phrasing and form			1,000	-0,136	-0,150*	-0,177*	-0,090	0,136
Originality of the music material				1,000	-0,254**	0,020	0,515**	0,080
Reproduction of rhythm					1,000	0,087	-0,282**	-0,164*
Reproduction of the pitch						1,000	-0,175*	-0,018
Use of the techniques of composition and improvisation							1,000	0,075

The analysis of correlations shows direct significant correlations between the criteria:

- *Time and agogics and Dynamics;*
- *Originality of the music material and Use of the techniques of composition and improvisation;*
- *Time and agogics and Reproduction of rhythm.*

However, several other correlations have a contrary character, for instance, *Time and agogics and Originality of the music material;* *Time and agogics and Use of the techniques of composition and improvisation* and others (See table 5).

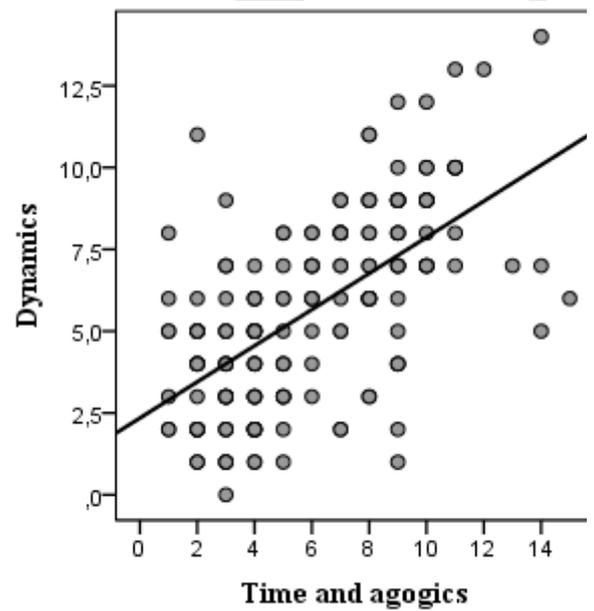
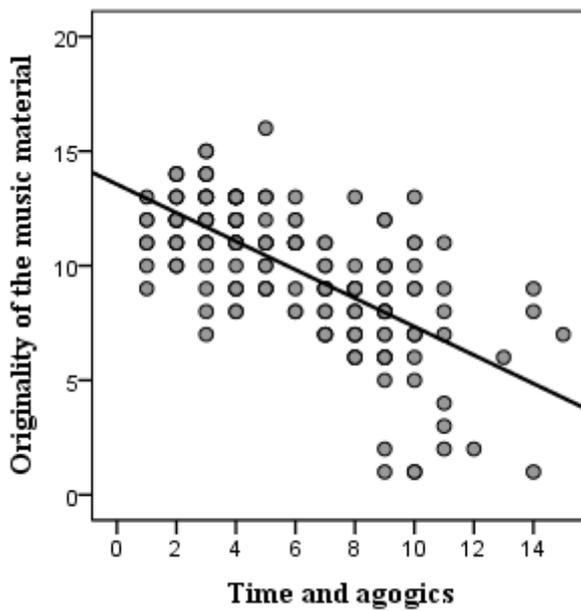


Figure 7. Scatter diagrams with a straight linear regression in planes: *Time and agogics* and *Originality of the music material*; *Time and agogics* and *Dynamics*

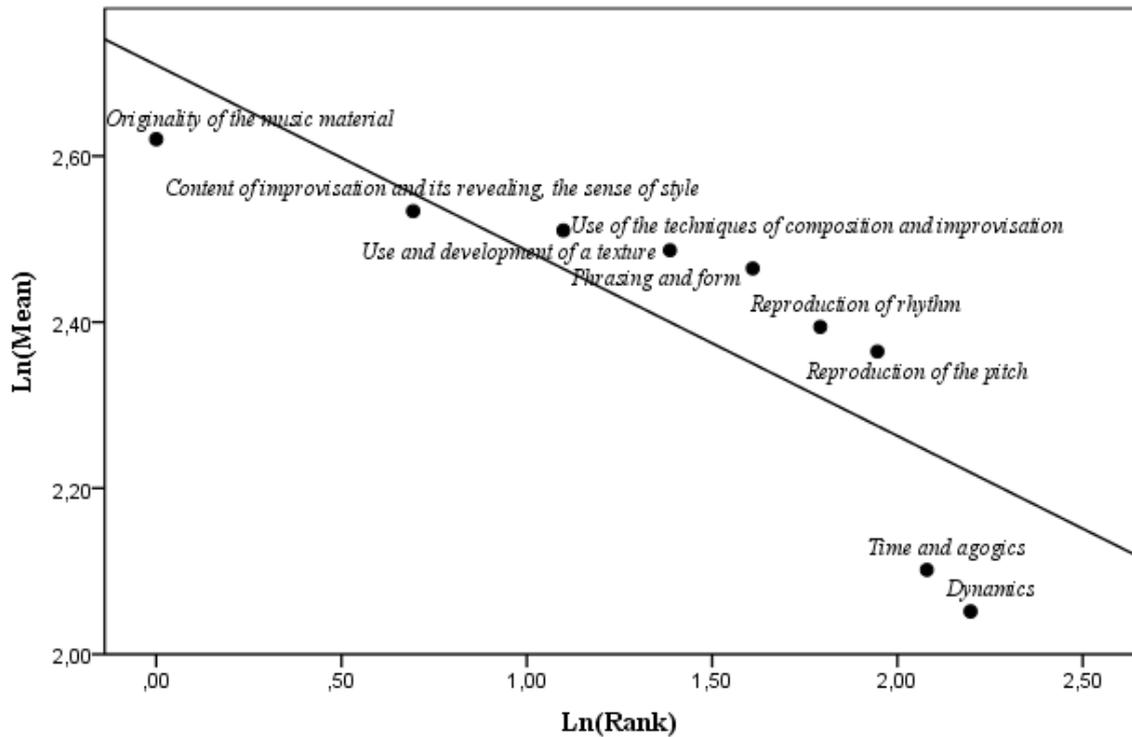
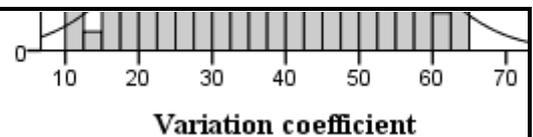


Figure 8. Scatter diagram with a straight log-linear regression in the plane of relative importance of the criteria and the mean value

Table 6. Variation coefficient

Mean		38,63
95% Confidence Interval for Mean	Lower Bound	36,74
	Upper Bound	40,51
5% Trimmed Mean		38,75
Median		39,53
Std. Deviation		13,085
Minimum		11
Maximum		65
Range		54
Interquartile Range		19



The variation of relative importance of the whole set of criteria can be assessed by applying variation coefficient:

$$\text{Variation coefficient} = \frac{\text{mean squared deviation of the criteria}}{\text{mean value of the criteria set}} * 100\%$$

The variation coefficient calculated in this way varies within the range of 11% -65% in relation to the mean value of 38.63% and for half of the respondents exceeds 39.53%. According to Kolmogorov-Smirnov criterion, the variation coefficient has a normal distribution ( $p=0.640$ ).

If variation coefficient is smaller than 33%, the assessment may be considered homogenous. Only 59 (31.6%) respondents demonstrate homogeneity in the criteria use, while variation coefficient of 128 (68.4%) respondents exceeds 33%.

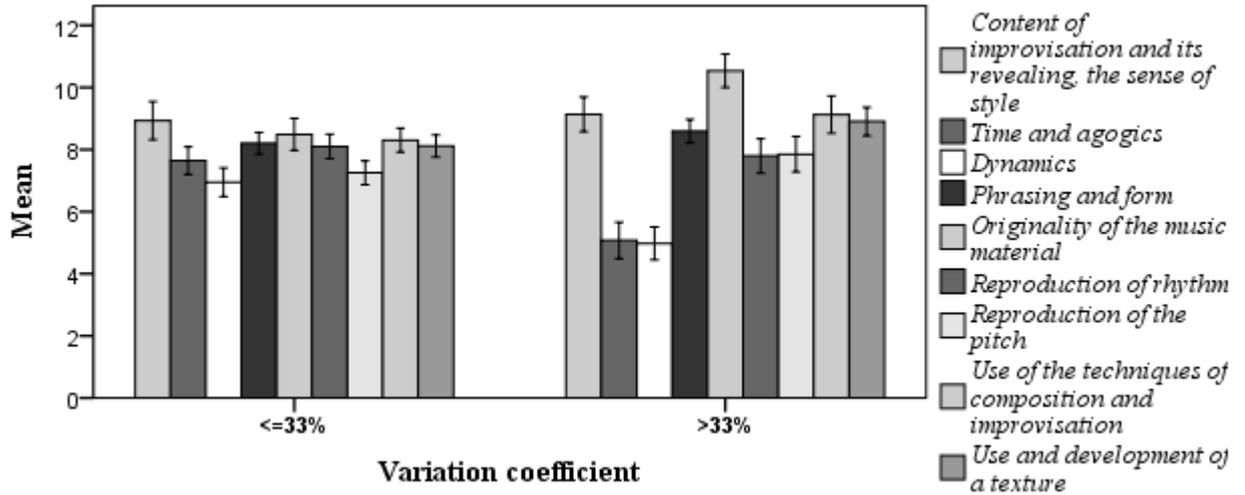


Figure 9. Mean values of the relative importance of the criteria in groups where the assessment is homogenous and unhomogenous

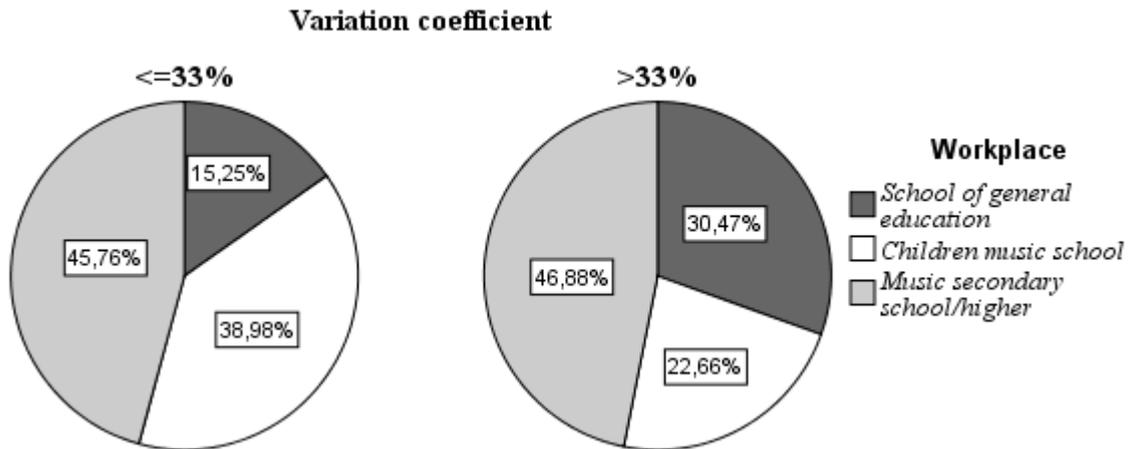


Figure 10. Distribution of respondents with different workplaces by groups with a different level of homogeneity of criteria assessment

There is a statistically significant correlation between the homogeneity level of criteria assessment and respondents' workplace (Chi-Square Test,  $p=0.023$ ).

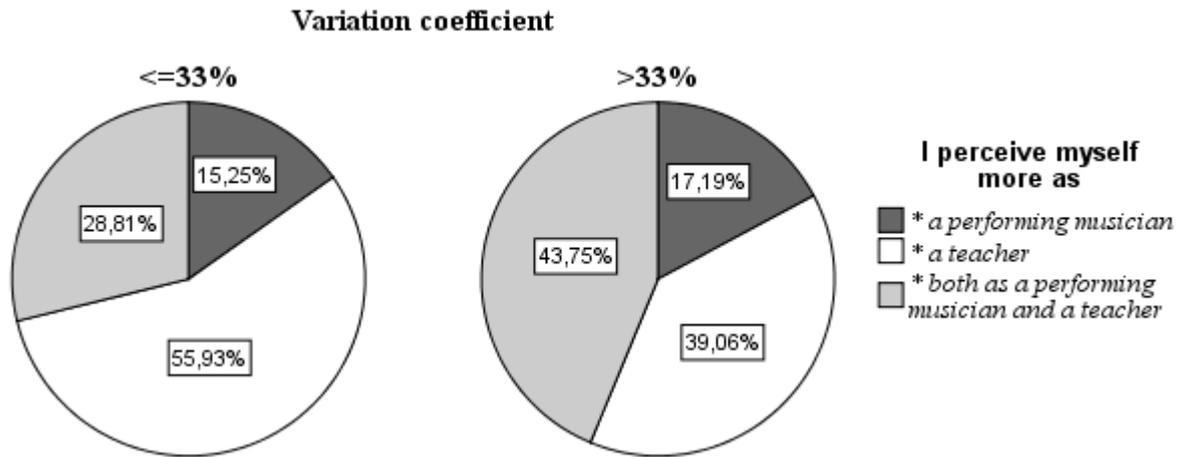


Figure 11. Respondents having a different distribution of self-identification by groups with a different homogeneity level of the criteria assessment

Statistic significance (Chi-Square Test,  $p>0.083$ ) is shown in the correlation between the respondents' self-identification and the homogeneity level of the criteria assessment. But there is no statistically significant correlation between the homogeneity level of the criteria assessment and respondents' involvement in improvisation, as well as between the homogeneity level of the criteria assessment and respondents' concert activities (Chi-Square Test,  $p>0.1$ ).

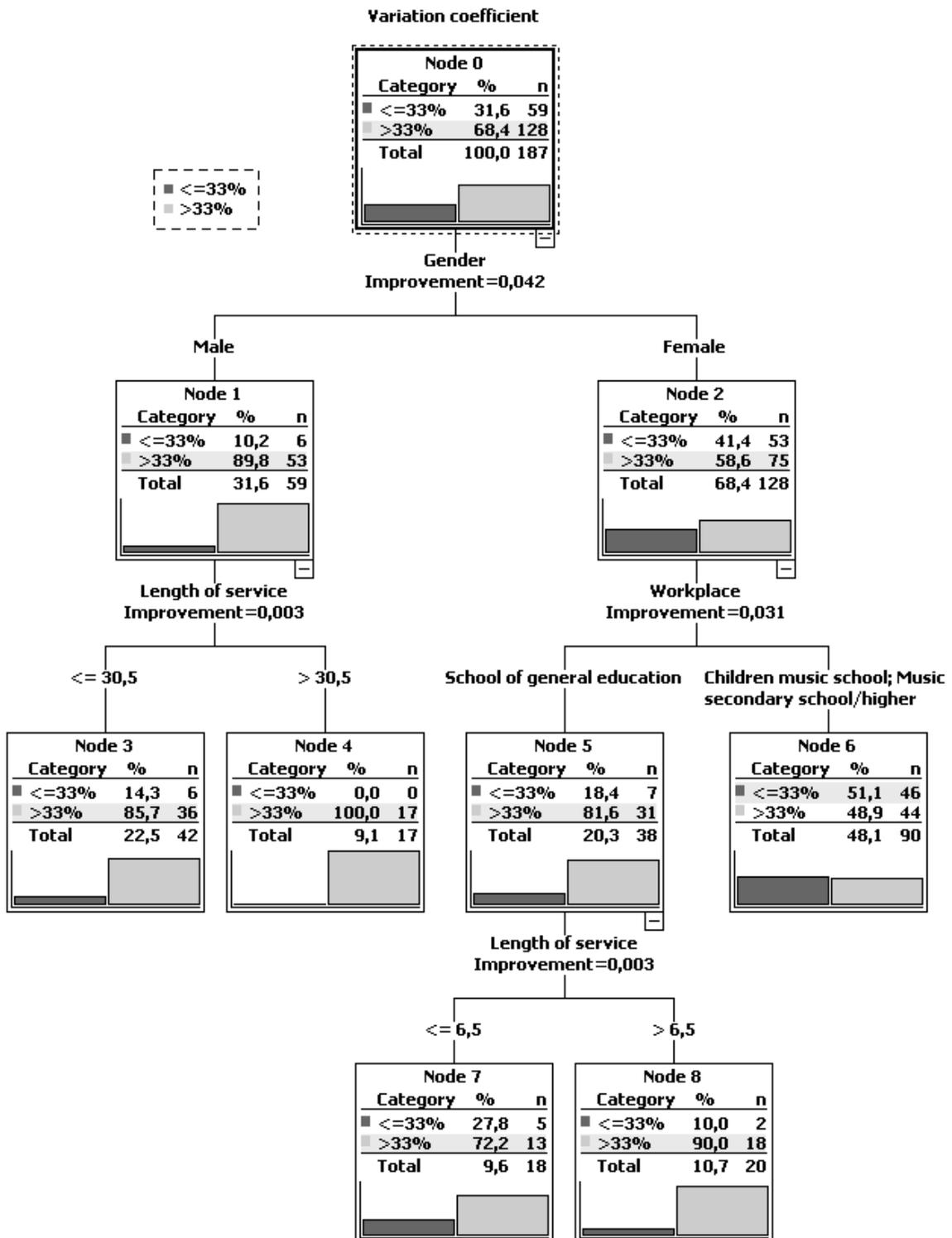


Figure 12. Classification tree by groups with a different homogeneity level of the assessment of criteria importance

The analysis of the classification tree by groups with a different homogeneity level of the assessment of criteria importance (Fig. 13) allows formulating such regularities:

- at classifying into groups with a different homogeneity level of assessment, the greatest discreteness is observed in Gender, for 89.8% of males a variation coefficient of criteria is greater than 33%, while the coefficient of females with the same non-homogeneity level of assessment is 58.6%;
- 81.6% of women working in schools of general education are in the group with a high non-homogeneity level of the assessment of criteria importance;
- 100% of women working in children music schools, music secondary schools and higher education establishments whose length of service is more than 38 years showed a high non-homogeneity level of the assessment of criteria importance.

## Conclusions

The research results indicate that music teachers of Latvia have different views on the importance of the assessment criteria of the acquisition of improvisation. Therefore the assessment of the process of mastering improvisation may be assessed differently by different teachers.

Only 59 (31.6%) respondents demonstrate homogeneity of the use of criteria, but for 128 (68.4%) respondents the variation coefficient exceeds 33%. This implies that the group with a high variation coefficient of the criteria of mastering improvisation put a different weight on the assessment criteria. The smallest dispersion amplitude of the assessment was observed for the criterion *Phrasing and form*, but the greatest – for the criteria:

- *Time and agogics;*
- *Content of improvisation and its revealing, the sense of style;*
- *Use of the techniques of composition and improvisation;*
- *Originality of the music material.*

The views of music teachers of Latvia on the importance of these improvisation assessment criteria differ.

The results of the research testify to the fact that the respondents' opinions on the importance of these improvisation assessment criteria differ depending on their gender and workplace, involvement in improvisation, concert activities, self-identification and length of service.

On the whole, the research results show that non-homogeneity in the use of these criteria is characteristic of:

- music teachers – men;
- music teachers – women working in children music schools, music secondary schools and higher education establishments with the length of service more than 38 years;
- music teachers – women working in schools of general education.

The analysis of the research results has produced such recommendations: at assessing the acquisition of improvisation equal attention should be paid to all assessment criteria.



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# Learning and Growing in Indigenous Amazon: the Education System of French Guiana Wayana-Apalaï communities

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## Abstract

This paper presents the first results obtained from an exploratory study conducted with a Wayana-Apalaï indigenous community living in the High Maroni region in French Guiana. The study is situated within an ecological and interactionist approach and attempts (1) to understand educational family practices and community logic of the training of children and (2) to describe parents' expectations vis-à-vis their children as a postmodern dynamic. The ethnographic corpus was gathered during a period of five years with the aim to link observed behaviors with contextual and cultural variables. Following the analysis of the data, the authors propose a diagram of a) the micro-systems structuring the Wayana-Apalaï kinship system; b) a description of parental roles and educational functions; and c) an overview of parental expectations in terms of "traditional success"/ "school success".

Keywords: parenting, cultural minority, traditional success, school success, French Guiana Wayana.

## 1. INTRODUCTION

At the present time, French Guiana hosts a growing Wayana-Apalaï indigenous community. Nomads started to occupy the Guyana shield less than two centuries ago as an effect of the pressure of colonization. Their ancestors were known as Roucouyennes - because of the habit of painting their bodies in red with the fruit of *achiote or roucou (Bixa orellana)* - and Oupouloui, as described by the paradigmatic works of French geographer Jean-Marcel Hurault (1968, 1972). Nowadays, the Wayana and Apalaï of French Guiana have abandoned the nomad lifestyle and established their homes in the indigenous villages of the Haut Maroni region (the southern sector of the Maroni river): Elahé, Cayodé, Twenké, Taluwen, Antecume Pata and Pidima on the French side; and Anapaiké, Alawa and Koumakapan on the Surinamese side.

A new sedentary lifestyle for the indigenous communities of Guiana has been facilitating interactions between traditional and modern ways of life, with the school playing the role of main vector (Grenand, 2000; Grenand and Lescure, 1990). In fact, from a postcolonial point of view, the school has acted as a balance in a dynamic of encounters and disagreements between different values, models of social organization and communication systems, with an obvious inclination towards the "development" of native people, their "modernization", and, last but not least, their "education": in a few words, their behavioral change. In the last decades, some transformation has been put into operation to develop pedagogical tools and practices to improve quality and to make the organization of primary education easier in this Department/Region of France (Maurel, 2010, 2012). Nevertheless, some scholars complain about the need to increase awareness between French elementary teachers

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working with indigenous children in a remote duty station, with no anthropological or linguistic training (Alby and Launey, 2007). If the linguistic field has been catching the attention of a greater part of scholars working in this field, studies on family education practices of minority groups are limited and insufficient. This is the reason why we hereby try to focus on it and why we hope our work could be a contribution to this domain.

## 2. Systemic interaction and social ecology: a theoretical framework

Our work is based both on an interactionist-symbolic approach (Mead, 1928, 1930; Blumer, 1969) and on an ecological approach (Bronfenbrenner, 1979, 1986). The first one is focused on giving a sense to interpersonal performances: interpretation will take into consideration the interactive situation and the sense will be attributed to gestural and language symbols shared by a community (Blumer, 1969). Following this option, we considered presenting the results of our observations underlining the role played by family, as well as the meanings and values attributed to parents' behavior. As described by Garfinkel (1967), this approach rally also an ethno-methodological vision because the researcher has to be involved in the meaning - construction process with the other actors during their everyday lives in order to understand the « common sense » as assumed by community members. The second one has to be considered as a ground model: animating a large number of scholars, it has been declined in countless explanatory and comprehensive models (Levine, 1967; Berry, 1971; Bronfenbrenner, 1979; Ogbu 1985; Super & Harkness, 1986; Valsiner, 1987). Three of them in particular have inspired our research.

- The eco-cultural framework fashioned by Berry (1971, 1976, and 1995) considers that individuals and their environment develop in mutual influences: culture is the functional adaptation of behavior of the ecological and socio-political context. Individual and collective diversity is the result of a series of mutual adaptations. According to its creator and from a macro-environmental point of view, this model is above all a general paradigm, useful to comparative studies and to show both cultural diversity and the cultural pressure applied on behavior by transmission and acculturation.
- The developmental model of Bronfenbrenner (1979) suggests that a set of systems, interlinked and interlocked, act on cognitive child development. A micro-system (the nearest environment) is included into a meso-system (the set of micro-systems), which is included into an exo-system (the external forces – policies, economics, law enforcement - with an effect on micro-systems). All are held in a macro-system (remote forces with a long term influence, like culture and values). Bronfenbrenner's theory of the ecological system tries to understand the global context where children evolve, considering systems to be in a constant, interactive dynamic with the internal structure: the child. Bronfenbrenner's macro-approach has been completed by a bio-ecological model (Bronfenbrenner & Ceci 1994; Bronfenbrenner, 1995, 2005), more focused on the micro-system role and on the positive development of children.
- The cultural-ecological model shaped by Ogbu is based on a macro-sociological theory and it draws the micro and macro approaches closer. His model is more "holistic", integrating economic, political, cognitive and behavioral structures. In addition, Ogbu underlined in his work the difference between the « volunteer minorities » (and the immigrants' children) and the « unwitting minorities », incorporated by the majority society against their will, as an effect of imperialism or slavery: Afro-American, Indigenous and Chicanos people in the United States by way of example (Ogbu, 1978, 1985, 1987). To understand the different rates of school success between unwitting minorities, the author suggests the hypothesis that they build a peculiar and very own cultural system. He also proposes four items for analyzing them: (1) a common sense theory about social success, (2) a fluctuating identity of language and culture, (3) a self-contradictory cultural framework and, finally, (4) a lack of confidence on the dominant elite (Ogbu, 1992). This conceptualization of the unwitting minorities' notion is very useful for understanding the present condition of the Wayana-Apalã people.

### 3. Doing research in French Amazonia: the case and the method

According to the theoretical framework that leads our work, we have developed qualitative research, favoring the ethnographic observation and completed by informal interviews. We consider that deep fieldwork within the Wayana-Apalai community was an honest way to observe family practices during the daily, monthly and annual cycles. Due to the context of research (living the indigenous family life in the Amazonian jungle), note-taking was sometimes impossible during the observation, nevertheless a journal of the experience was recorded at every possible time.

Both authors of this article developed fieldwork in Antecume Pata. One of us carried out a punctual observation during various stays of at least one week: the immersion was granted by the status of guest within a Wayana family and by the opacity of observations (our observer status was not announced with the aim of perturbing the natural development of events and practices). The other author moved to the village as a long-term resident, working as a substitute teacher at the local elementary school between 2011 and 2013. Our position was intentional and motivated by a double form of objectification:

- An external position of strangeness for the first observer which needed a gradual appropriation and understanding of the Wayana-Apalai social environment, through direct observation (not as a participant) and a comprehensive approach: the problem was « to make familiar what is stranger » ;
- An internal position of participant observation for the second observer, needing to remain aloof with the aim of « grasping » the native point of view: here the problem was « to make stranger what is familiar ».

Our comprehensive option combined our representations with the parents' representations. This combination gave us the opportunity to link the researcher's point of view (which would translate scientific objectivity by a « natural » description of the context) with the parents' point of view (which represents subjectivity linked to declared practices).

The communities where we worked at comprised Wayana and Apalai host families, with some Tiriyo and Wayapi individuals. A high number of people were born in Brazil or Suriname, but most of the young and adult people were born in French Guiana and they hold a French passport. Their villages are settled on the riverbanks or on islands surrounded by the Maroni River, all along the border with Suriname. Our research extends to the villages of Antecume Pata, Twenke, Talwen and Cayode. Those isolated communities, located at a distance of more than 300 km from Cayenne, the capital of the Department, in what is also known as the « indigenous country », all dispose of primary schools (we have to note here that the notion of « indigenous country » is, obviously, a colonial category, referent to the nostalgic image of a savage Amazon, a green hell filled by red Indians, far away from any source of civilization). The first school in this sector of the French Amazon was established at Antecume Pata in a peculiar way. This little indigenous village was founded in 1965 by André Cognat, a former worker from Lyon who had left his western life to live in the Amazon. He became part of the Wayana community in 1961 and was renamed as Antecume. Four years later, he founded his own village (translated as pata in the Wayanan language), Antecume Pata, located on the French side of the Maroni River (Cognat, 1967, 1977). Observing the top-down (still colonial) relationships between the indigenous community and the local administration, Antecume decided to give to villagers of all ages a basic scholar training. It was, in fact, the first school experience for the indigenous people of the Haut Maroni region. The first goal to achieve was the learning of writing competences: a team of local trainers was trained and, over twenty years, some generations of indigenous people learned at school outside of institutional education but, as explained by some of Antecume's ancient pupils, « our school gave us the opportunity to understand better the French institutions and bureaucracy. We learned how to survive in town, in Maripasoula, Cayenne or Saint-Laurent du Maroni! ». This sense of surviving was a factor that other villagers consider to be a link to the demographic boom of Wayana people during the last twenty years. Did Antecume's school give them the inspiration for reflection on their ethnic identity? Or did it create a hybrid community of practices, a postcolonial effect of the ethnic

transfiguration imagined by Brazilian anthropologist Darcy Ribeiro (1971)? For a wider discussion on ethnic transfiguration, see also Ali, 2010). It is possible, but not very certain. What is certain however is that, in the villagers' representation, it served as a propeller for more balanced dialogue with the French Republic. The experiment achieved (and advanced) its goals: in 1986 the school was integrated into the public departmental apparatus and became the Antecume Pata Public Elementary School. Entrance was limited to school age children with adults excluded. Planning and educational targets were changed to apply to the national syllabus. For Antecume Pata people, it was like a revolution: we consider that as the starting point of their "unwitting minority" condition.

Antecume dealt with local education officials to preserve the training in the written Wayana language. Until 2008 it represented the entrance door for the writing training, as well as an experimental specificity. Teachers worked with the support of an ILM, a Mother Tongue Assistant (*Intervenant en Langue Maternelle*) and in the first year of school, the preparatory class (*Classe Préparatoire*) was doubled: one year in Wayana and the other one in the French language (see also Maurel, 2012). The Antecume Pata experience was an isolated case for the indigenous people of French Guyana. Other communities were not able to follow that example and so had to accept the imposed republican schooling. The establishment of schools into the «indigenous country», especially on the Maroni side, is recent: Twenke opened its school in 1972, Elahe in 1985 and Cayode in 1990. They represent the privileged vehicle of contact with the western world: for their artifacts, the knowledge they dispense, but also the norms, the style of work, the economic and power relationships that this conveys and obviously, for the people working within: for more than fifty years, teachers in indigenous schools were European and they carried with them their lifestyle, also living in the jungle. In 2012, the first indigenous teacher of French Guiana started working at the Antecume Pata Elementary School. He and his current colleagues of the Haut Maroni region inherit a system where all school age children are sent to school and where most of parents are persuaded that this school is a key social-elevation factor.

We therefore worked with families where most parents took elementary classes. Even if our first goal was to describe the Wayana family style, we also observed the evolution of parents' expectations within the systemic interactive dynamic context: a school is visibly a key factor to generating syncretic forms of values, beliefs and ambitions (in the sense of Ogbu, 1992).

#### 4. Microsystems and indigenous family life

The education and training of young Wayana-Apalaï was, before the advent of school, a family process. At the present day, two micro-systems participate, more than others, to build up their education: family and school. They also feel educated by other micro-systems: religious missions, television, internet and other media. However the family resists as a bastion of the essential Wayana-Apalaï *Weltanschauung*. In fact, the indigenous of French Guiana share a common vision of the family as an extended micro-system enlarged to parents' siblings' families (which also includes none-biologically-linked members). A child will therefore consider all of their mother's sisters as mothers and all of their father's brothers as fathers. On the other side, all of his mother's brothers and all of his father's sisters (*idest*, the opposite sex siblings of their parents) will be considered as parents-in-law, since their descendants are potential husbands/spouses for the child in question. It is a classical classificatory distinction based on sex and generation applied to kinship. The English language, with a similar classificatory option, gathers together the parents' siblings of the same sex and designates them, respectively, as uncles and aunts. We observed also that the family system in Antecume Pata involves both biological and acquired parents. As a case in point, a child will recognize authority and the educational role of both his biological father and his father-in-law equally.

For a Wayana-Apalaï child, there are as many family micro-systems as there are uncles and aunts. In one way or another, all community members are connected by a family link, so every community member could be classified into the kinship pattern of every other member. The family link crosses borders, so the Wayana-Apalaï

people of French Guiana have relatives living in Suriname or Brazil: all of them share a common perception of family community. It is an identity concern based more on family than on ethnicity. What do we mean? We are talking about the fact that, as we observed, the linking factor connecting them is kinship and not a western (and ethnocentric) concept as “ethnicity”. Thus, if we refer to the Bronfenbrenner model, the micro-systems influencing the child life correspond to all families where there is someone who the child considers as their father or mother. This set of micro-systems, to which we have to add the school micro-system, forms the Wayana-Apalai meso-system.

## 5. Parental performances and personal development

The ethnographic approach gave us the opportunity to observe directly during everyday life how the local (traditional) knowledge and the capabilities and skills linked to the Amazonian environment are transmitted. In short, we could classify Wayana-Apalai learning into three fields: every field will be transmitted above all by a care-giving, family micro-system (even though there are other micro-systems in the village that form part of the child’s training, as shamans, musicians or artisans).

- Cultural knowledge (the knowledge, *strictu sensu*), incorporated in cosmology, shamanism, music, graphical arts, oral history and immaterial heritage (tales, legends, rituals, territorial representation, geographical and astronomical references);
- Technical capabilities (the know-how), that we could consider as the concrete response of Wayana-Apalai people to distinctive features of their environment. We are talking about the hunting and fishing “art”, gastronomy and brewing of *cachiri* (a beer of fermented cassava, *Manihot esculenta*), as well as weaving cotton, basketry in *arouman* (*Ischnosiphon arouma*), the manufacture of pirogues and building of huts;
- Social skills (manners and life management competences), represented by their ecosophical *Weltanschauung* (their world-vision based on the natural environment they occupy) and their way to act in the social landscape that they live at: management of resources, cycle of life, rhythms of work, prevention and resolution of community disputes.

The dynamic of education in a Wayana-Apalai house assigns to every family member very specific roles and responsibilities. During the fieldwork, we observed a large number of family interactions linked to child training. For the purposes of this article, we will only describe the most representative.

We could start with the Wayana-Apalai mothers who literally carry their babies in their arms all day long with the aid of a shoulder bag, the *bandoulière*: it is a little cotton hammock where children can sit or stretch out, maintaining skin-to-skin contact with their mothers. As you can imagine, breastfeeding is much easier and the possible stress or pain experienced by the child are quickly overcome due to its proximity with the mother. A significant number of mothers keep on carrying their children in a *bandoulière* until they are three years old. Normally, after the “plunge”, the children keep on suckling up to the age of three or four years. The mother is in charge of the child’s language training: she will teach them “how to” talk and how to distinguish the words (and to conceptualize them) linked with everyday family life. Indeed, between Wayana-Apalai people, “children are never alone [...]. Someone will try to understand the baby talk because all issues concerning children need an answer. Someone else will decrypt the future personality of the child by paying close attention to their behavior: those almost ethological (sic!) observations can determine the name the child will receive when they are able to walk without any aid [...]. Crying is considered as a serious threat for the child’s development, so parents do all they can to avoid such a crisis: less talented women for this type of conciliation fall short on their reputation” (Hurault et al. 1998:140, translated by the authors). When children reach a certain autonomy at about three years of age, the mother’s role will be to train her daughters on household chores and home life: the tools and timings for cooking, settlement and spaces of the orchards (*abattis*), how to spin cotton to transform it and weave shoulder bags or hammocks and, above all, the basic social competences that, in short, we can define as being respect for the other members of community and the availability to be ready at every moment to properly receive

and welcome every possible guest of the family. The sons will be trained on skills that, as resumed by an Antecume Pata villager, consist in “knowing how to take care of themselves”. Children will learn the dangers hidden in the house, the village, the orchard: the fire that burns, the caterpillar that bites, the river that drowns.

The educative role of the father is strictly linked to landscapes and spaces under the competence of the Wayana-Apalaï men: the river and the forest. He will train his daughters to “understand” the ecosystem where they live so that when they grow up, they will be able to recognize the different noises and sounds of the forest, the different species of animals and how to prepare them for cooking. Fathers take back home a good choice of prey, representing a model to show to his daughters what a good hunter has to take back to nourish the family: a warning message too, so that the daughters can understand that the husbands they choose must be able to do the same thing (or better, if possible). The boys will be trained in the art of living in a forest and a river environment, to become “a good father”: hunting (with a bow and arrow for the younger ones and with a shotgun for teenagers), fishing (and its different techniques: archery; poisoning river water with the juice of rotenone extracted from lianas of *Lonchocarpus spp.* gender; lines and hooks; nets or traps in form of creels, for carnivorous predators such as aimara, *Hoplais aimara*); weaving baskets with *arouman* fibers and manufacturing of farming tools; fabrication and driving of pirogues (starting with a paddle and, when a teenager, learning with an outboard motor) and finally, assembling a cabin. It is a slow and progressive learning process, a training path where the child “carried out everything according to his rhythm: eating, sleeping, fishing with his short line. He has probably bothered an adult with his movements, his noises; or he has probably scared a fish away. Even, no order will be proffered, no menace, and the child will not be reprimanded” (Hurault et al. 1998: 142, translated by the authors).

We have to underline that this pattern of family training (vertical and asymmetric) works until adolescence. After that, the teenagers will start a path of horizontal training (symmetric) where the role of parents diminishes in order to leave more space to other actors: friends, associates and same generation family members. For boys, more than girls, adolescence is the age of autonomy “when they form gangs, when the oldest ones serve as a model more than the father himself, whose influence is now more discrete. It is the age of risk, the age when they start hunting in little groups and even alone, and when they get lost during one or two long days in the jungle” (Hurault et al. 1998: 144, translated by the authors).

Grandparents are in charge of the child’s training in the field of hygiene and health, thanks to their knowledge of traditional remedies. They are also the keystone of oral literature and oral heritage transmission (Chapuis and Rivière, 2003). As demonstrated by Suzy Platiel’s ethno-linguistic works, such tales are genuine educative institutions for oral tradition societies, as in the Wayana-Apalaï case (Platiel, 1993). Indeed, the grandparents’ work contributes to developing listening, attention, hearing and memory skills, as well as the skills related to language (lexical and syntactical), to determine logical relations (and not only at the cause-effect level), to construct hypotheses and arguments and to solve everyday issues. It is interesting to note the position of children “offered” to grandparents: a customary opportunity to grant them with an already weaned child, although not the firstborn. According to the principle of uxorilocal residence (even if we observe some anomalies to the principle), children are not separated from their parents since the adoptive family house is the same as (or very close to) the natural family house. Grandparents will act as real parents: for them, the only condition to the offering is to have suitable space, time and resources to nourish and train the child. They are social parents and the child will recognize them as “parallel parents” along with their biological parents, even with their parents-in-law. In the Wayana-Apalaï culture, lineages do not erase each other: they are cumulative (so every community member can embody different degrees of kinship for every other community member) and they form a complex net of relationships that some functionalist could interpret as an inclusive pattern, where every community member could be considered also as a family member.

Other family members have very concrete responsibilities for children. Elder brothers and sisters will be in charge of helping the same-sex younger ones to discover the world: they represent a model for closer (and easier) action in view of the adult’s one (and, above all, less demanding in case of failure). Uncles and aunts will treat

their fictive filiations exactly as they would their natural children, with the same care, same discipline, same rigor... and same love.

Finally, other community members also interact with children's education, even if they are not directly linked with their lineage. Among all of them, shamans play very important roles, not limited to native (and syncretistic) therapies and ethno-biology knowledge, but rather as a manager of the *marake*: a ritual practiced less and less that most of younger people have never seen. *Marake* is the essential ritual of the Wayana-Apalai culture: a celebration spread over several months which brings *tepiem* (the initiated people) into a new stage of their life. The ceremonies include a series of force and courage trials, *kalau* (cosmological and mythological) chant and traditional dance rehearsals. The final, and culminant point, is the application (really a soft touch) on the *tepiem* bodies of a *kunana*, a basket holding a large number of ants and wasps that will bite the *tepiem*, giving them the power to be reborn – after days of starvation - as real (and authentic) Wayana-Apalai people. *Marake* could not be interpreted as a ritual passage because traditionally every community member has the opportunity to pass their trials seven times in the course of their life. We prefer to consider it as a restarting point to underline, in a performing way, the entering to a new stage of life. It is a contact point between the state of Nature (represented by *kunana*) and the state of Culture (the rebirth as Wayana-Apalai social people). In addition, exactly as previewed by Lévi-Strauss for other similar “anthropological contact points” (1969), it is universal and normative, running up the *tepiem* (and the entire community) into a transcendent stage where they act “beyond nature and culture”. Besides their concrete functions (in the field of medicine and social therapy, as Masters of the Spirits), shamans are respected by the community as being sage, savant and discreet: they assure peace and justice into the villages, they establish agreement for villagers and, above all, they guarantee the harmony between humans and nature (as in the case of disregarding an interdiction), as well as with spirits and dead souls (see also Ailincal et al., 2012). For a Wayana-Apalai child, a shaman is a reference point and an example of spiritual heroism.

According to the traditional outlook, for a young Wayana-Apalai, success derivates from the internalization of the three domains of knowledge to which we referred earlier. For a boy, the main goal is to be strong and courageous; to become a man capable of building his home and to respond to the natural household needs (hunting, fishing, maintenance of working tools, caring for infants); briefly, a devoted husband and an attentive father. For a girl, the main goal is to be able to manage her house opportunely, to brew a good quality *cachiri*, to attend a community celebration and, obviously, to be a devoted wife and an attentive mother. To successfully perform in their lives, a young Wayana-Apalai has to grow up with a tough discipline of learning (also individually): thanks to that, he will acquire the skills needed to be considered as a real human being. *Marake* is a symbolic expression of this *Weltanschauung*.

Our observation according to what was observed before by other scholars in ethno-linguistic and anthropology studies (Hurault, 1968, 1972; Léna, 2000; Camargo, 2007; Dupuy, 2007): traditional educative practices are already conserved and the customary roles attributed to the transmission/acquisition of knowledge are respected. It is one of the few domains that has resisted to the progress of the western way of life. Other domains did not resist this shock: for example, the traditional outfit - a little red loincloth called *camisa* or *kalimbe* - is already abandoned by most people. Only in Antecume Pata has the local school preserved the use of *camisa* and *kalimbe* as a form of “school uniform”, according to the wishes of the students' parents.

## 6. Interactive dynamics between tradition and modernity

Even if the educative model that we presented, resulting from our fieldwork observations, seems to remain constant and loyal to the Wayana culture and heritage, parents' declarations (and representation) during the interviews highlight a “progressive” dynamic related to their expectations focused, above all, on the children's success. We use the term “progressive” from a postcolonial point of view: progress, in this case, is intended as a uni-linear (top-down imposed) way, a teleological path separating savagery from civilization.

We especially investigated parental representations during a series of seventeen interviews performed in Antecume Pata. Fifteen of them were able to speak fluent French, the other two were not French speaking at all (the exchange was facilitated by the ATSEM (*Agent Territorial Spécialisé des Ecoles Maternelles*), the primary school assistant, who assists the primary teacher in managing the daily work). Twelve of them were women and five were men; fifteen were 18 to 30 years old, two from 30 to 40 years old; one had only one child, three had two or three children and eleven have four or more children; four out of seventeen had a job (and a wage). By sampling the medium statistical data, our sample result representing a majority of women, was aged between 18 and 30, French-speaking, with more than three children and primarily in charge of the housework.

As remarked before, interviews were not structured; instead six questions served as a common thread with the aim to gather their opinions towards children's success at school: (1) Why do you take your children to school? (2) Do you notice any differences between children who have gone to school and those who have never been to school (or stopped early)? Which ones? (3) What would you include into the school programs? (4) Do you prefer for the teacher to speak in Wayana-Apalai or in French when at school? (5) Do you think it would be a good opportunity to have an open school for adult people during the afternoon, two or three times every week? (6) If so, do you think you would participate?

The data analysis showed how people are significantly still in agreement with traditional Wayana-Apalai learning, but also how they give the same (or, sometimes, a bigger) significance to the school, even if the evoked reasons are substantially different ("to learn French", "to learn something", "to find work", etc.): in all 17 interviews, parents underlined the importance of school, but only six parents agreed with the idea that their children had to go away to attend school. Eleven of them preferred their children to grow up and live their life in the village. The success is generally associated to the traditional idea of "being a good Wayana-Apalai" (*idest*, good fathers and mothers), but a high number of parents preferred the "modern" – economic - ideal of a wage-earning job, possibly as a public officer (in the local police, the local school, the local hospital) or as carpenters, oarsmen or gold washers. Their answers fulfilled the proposition of Ti'iwán Couchili (representative coordinator at the FOAG - *Fédération des Organisations Autochtones de Guyane*, the Federation of French Guiana Native Organizations): "Elder Wayana-Apalai knew how their children would be amputated of part of the knowledge they received. In exchange of this painful (but reflective) decision, which implies the abandonment of the semi-nomadic life, they hope that a little part of us would be able to reach those public territorial jobs: nuns, teachers... We believe this curiosity is linked to this availability to dialogue characterize, also today, the totality of southern French Guiana indigenous communities" (Couchili, 2010, p. 58). We interpret those newborn expectations as the umpteenth effect of an ethnic transfiguration transforming not only behaviors and practices, but also, and above all, their faith, representations and dreams.

Other works carried out between 2007 and 2011 corroborate the same conclusion about the parental representation of school significance into the village as a "cultural landscape". In 2011, Garnier published the results of his 2010 survey with Wayana families registered in the Junior Secondary School of Maripasoula (the only town in the High Maroni region) and when he asked "Do you want your sons and daughters to leave their home village to go to Secondary School?", 14 families out of 16 answered affirmatively, expressing the desire to keep their children going to school to be integrated into French national society (in a wide sense, knowing that Wayana-Apalai have to travel to Cayenne, Kourou, Saint-Laurent du Maroni –in French Guiana - or further away to Paris, Lyon, Bordeaux or Toulouse to attend secondary school or university). Garnier's study highlights the parents' desire to see their children continue going to school, not only for junior secondary studies, but also for secondary and university studies, which is confirmed by the personal experience of Ti'iwán Couchili. She affirms that "Our generation is now in charge of evaluating the effects of the [national] educative system considering the expectations that led our parents to send us to school [...]. Well, if we do not have a successful model, it is difficult to abandon this decadent imaginary that has been shown to us for more than fifty years, since the opening in Camopi of the first primary school of the southern part of the country. French Guiana remains the last South American territory to have never promoted a local elite emanating from the regions considered as

remote and to have always resisted intercultural education principles” (Couchili, 2010: 58). For that matter, in 2010 the French Guiana Board of Education created a Boarding School, the *Internat d'Excellence*, in Maripasoula with the aim of solving the problem of hosting all indigenous students of the local secondary schools. In addition, as remarked by Garnier, it is focused on building an appropriate environment, participating to success at school of children (Garnier, 2011). It is complicated to evaluate the *Internat d'Excellence* from our position (above all, due to the fact that it is too recent a creation), but ongoing research shows not only that it is creating social and psychological stress for students and their parents, but also that it has not achieved its objective to “train the students to excellence” (C. Sune, personal communication, March 15 2013).

The survey led in 2005 by Gourg (2010) showed the open-mindedness (and pragmatism) of young Wayana who have faced foreign language learning. Living on Haut Maroni, a multicultural river net, they are used to speaking not only their native language (Wayana or Apalaï), but also the Sranan and the Aluku Tongo (Creole languages used by afro-descendants' communities all along the Maroni River) with some basic notions of Portuguese (due to the presence of Brazilian diaspora), Dutch (because of the proximity with Suriname) and Chinese Mandarin (thanks to the local Chinese community that owns all the region's low-cost general stores. Some speak other indigenous languages and all those who have gone to school speak, more or less timidly, French. The survey revealed that they would be more skilled in Portuguese and Spanish, even if they had to study English at school. Why do they “have” to study English though? The answer is because the parents themselves feel less concerned about the secondary schooling of their children. Due to these issues, they prefer to follow local teachers' advice and preference is usually given to English.

## 7. Conclusions

Our concern to describe and understand the educative dynamic of the typical Wayana-Apalaï family is limited, in this article, to the presentation of the social organization of the community and to the description of the educational “facts and occurrences” observed during fieldwork. An interaction-focused theoretical framework and an ecological model of interpretation have given us a double opportunity to present, on the one hand, family educational practices and, on the other, to show the dynamic generated by the interaction of the different micro-systems.

The results of our observations present an educative system based on non-coercive performances, an imitative learning with a limited number of interdictions (all linked to real, evident and concrete dangers), where knowledge is transmitted orally and contextualized in a systemic approach. As such, children are trained to create relational niches linked to the visible –tangible - world, as well as cosmological buildings based on myths and legends involving the supernatural (and invisible) world (Ailincai et al., 2012). It is an education without competition or discredit, a training aimed at empowering children and giving them an extremely precocious maturity.

Not so long ago, success for younger Wayana-Apalaï people had more to do with the management of local knowledge related to the habitat. Our research has however highlighted the emergence of new parental expectations, linked to schooling and the labor market. We are at the front of a typical transfigurative dynamic generated by systemic interactions: a post-colonial context where most of the micro, meso, exo and macro-systems represent western values and practices. Only family interactions have withstood. Yet the artillery of modernity is apparently inextinguishable and the Wayana-Apalaï parental representations are being modelled by this generational gap, where there is less place for traditional knowledge and lifestyle.

Finally, we consider that in order to create an adequate balance between the family micro-system (representing the Wayana-Apalaï education system) and the school micro-system (French National Education System), there must be mutual knowledge and understanding of the traditional/local and institutional/national vision of the concept of “success”. What is more, the fact that school success is normally conceptualized by the actors of the French national education system from the angle of school failure, could testify about their ignorance of the gap

existing between the two (world) visions. Our hope is that our research could contribute to showing the pattern of Wayana-Apalai education as a way of living (and not only of surviving) in a peculiar environment: a pattern that the National Education System has to consider in order to build an inclusive school, in agreement with local customs and conditions.

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4<sup>th</sup> International Conference on New Horizons in Education

# A sample program offer “the music in pre-school teaching” in post graduate programs in music education

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## Abstract

Human's indicating variety in terms of source, type or function causes him to comprehend and analyse main requirements and to convert them into some expression styles. The one with the aesthetics basis of these styles is art. Music, which is an important branch of art, has played a great role in human's effort to shape himself and, it has been an indicator of the societies' development level by gaining importance in individual's education and adapting himself to his society . Music is an aspect in which the child interacts with his natural environment. Since the ancient age theorists, doctors, psychologists and educators have indicated the importance of music in individual's development . The children's musical sensitivity starts in pre-school period. The children react to the sound from their babyhood onwards and express this reaction with their gestures. The children respond to music from the moment they were born, and they encounter lullabies and rhythmic movements in the first months of their lives. By means of music education, not only child's musical but also non-musical(tuneless) skills can be developed .

Keywords: Pre-school education, music education, post graduate music education

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## 1. INTRODUCTION

Pre-school period is the time when children respond kinetically to acoustic sense and their learning is transformed into behaviour, and it is the basis of the other parts of the individual's life. As the education is a process in this period, it has to be spent with good and proper experiences. The quality and style of livings depends on the variety of the opportunities which adult provides child with.(Oktay, 2004)

## 2.PRE SCHOOL EDUCATION AND MUSIC IN PRE SCHOOL EDUCATION

Music Education is a process to make the individual gain specific musical behaviours purposefully through his own living or form specific musical changes purposefully in the individual's (musical) behaviours through his own living (Uçan, 1996). Music supports the child's cognitive and psychomotor, language, social, emotional improvement, communication and awareness skills, aesthetics and creativeness (Ömeroğlu, 2006). Pre-school

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education has undertaken a very respectable mission to lead, encourage and develop those characteristics of the child who wonders about his environment and is willing to learn (Otacıoğlu, 2008). Pre-school education institutions' achieving their goals is possible with their education programs and music is of great importance to the main objectives of their programs coming true. Therefore, pre-school teachers must use music activities effectively supporting the child's development areas.

## 2.1.BASIC PRINCIPLES ABOUT CHILD'S MUSICAL DEVELOPMENT

The general and main objective of pre-school education is to prepare 0-6-year-old children to school for their caring, housing, protection; their somatic, mental, intellectual and social development, health and nutrition by taking all measures and by pursuing these activities in a planned and programmed way continuously and systematically (Göncü, 2010).

Musical development requires the individual's musical abilities coming from heritage-environment interaction to be discovered and to be able to develop and the individual's interaction with musical experiences. When genetic-musical ability of the individual doesn't interact with musical environment, it won't be transformed into musical behaviours. Therefore, the quality of pre-school education which is provided to children and the code of practice is of importance (Oktay, 2004).

The musical development of the child in pre-school period is parallel to general development stages.

1. Child's musical development comes out of heritage-environment interaction.
2. Child's musical development keeps continuity with inductive method in different stages and styles.
3. Musical development differs according to the different periods.
4. Musical development advances inside-out, from the general to the specific, from abstract to concrete, from simple to complicated.
5. Child's musical development is integrated with general development.
6. Musical development shows personal differences from child to child (Yıldız, 2002).

Musical development principles match up with the general education principles of pre-school period and support the child's development in all areas.

### 3.A SAMPLE PROGRAM OFFER “MUSIC IN PRE-SCHOOL TEACHING” IN POST-GRADUATE PROGRAMS IN MUSIC EDUCATION

#### Ist TERM

The Principles and Methods of Pre-school Education	(2+0)
The Principles and Methods of Pre-school Music Education	(2+0)
Program Development in Pre-school Music Education	(2+0)
Program Evaluation in Pre-school Music Education	(2+0)
Research Methods and Techniques in Pre-school Music Education	(2+0)
Music Teaching Methods and Pre-School Period	(2+0)

#### 2<sup>nd</sup> TERM

Children Songs in Pre-school Period	(2+0)
Material Preparation and Use of Orff Instruments	(2+0)
Action Development and Dalcrose Method in Pre-school Period	(2+0)
Suzuki Mother Tongue Method –Ability Training Method in Pre-school Period	(2+0)
Music and Drama in Pre-school Period	(2+0)
New Approaches in Pre-school Music Education	(2+0)

### 4.RESULT AND SUGGESTIONS

It has been found out that the content of post-graduate programs in music at universities in Turkey generally consist of performance, pedagogy, music training, music theory and research techniques (Kasap,2006). It has become obligatory for the individuals to be trained radically and thoroughly in specific branches of music in order that the functions of music in human's life can work effectively and efficiently. (Uçan, 1996). Pre-school education has undertaken a very respectable mission to lead, encourage and develop those characteristics of the child who wonders about his environment and is willing to learn (Otacıoğlu,2008). It can be considered that the need for music teacher in pre-school area can be covered with pre-school music teacher training, one of the important areas which requires to be specialised in music teaching area.

A scientific area's benefiting from other scientific areas and interacting with them requires secondary/interim disciplines to be formed and individuals who the discipline needs to be trained. Considering the educational functions of music, the necessity for music to be structured in the foundations of education in pre-school education, the most important period for an individual's development becomes crucial. This necessity has paved the way for the development of the sample program for pre-school area. It has been tried that the developed program is made up of common lessons of pre-school and music area.

As a result of the survey, in researches which were applied in the area of pre-school education, it was determined that some problems occur in music activities in pre-school education. The main problem encountered is that music classes are carried out by kindergarten teachers or other branch teachers who do not have required knowledge or ability.

The content of the class and teaching constitute another problem as well. The music studies which are not carried out in a suitable way to the children's ages and development areas create a problem (Otacıoğlu, 2008). Due to the need of "Pre-school Music Teaching" model program's development, a sample program offer "Music in Pre-school Teaching" in Post-graduate Programs in Music Education has been prepared.

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# Communication models and sensitivity approaches for intercultural peace education

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## Abstract

In today's world where intercultural communication stands as a cornerstone determining the world peace, educating the international community about peace and maintaining an effective peace language on the intercultural platform should be one of the main communicational routes to achieve. Peace education embraces a wide range of ideas ranging from creating a peace literature on which international community agrees to developing unique and innovative models for peace. Artistic productivity is one of the main topics for peace education. In this study titled "Communication Models and Sensitivity Approaches for Intercultural Peace Education", peace education through the concept of sensitivity and the strong emphasis of art on peace education will be structured. Also communication efforts in educating the society through peace will be annotated through models and unique public relation activities. Techniques of molding a public opinion on Peace Education, civil society and media's role on educating the society, reinforcing the education with initiatives by artists, international organizations and educational institutions captaincy for peace, peace literature education, emphasizing on democracy through peace education and a strong call for democracy to world public opinion are other important topics on this subject.

*Keywords: Intercultural communication, peace education, artistic sensitivity*

## 1. Introduction

In communication and education campaigns of peace, one of the most important and strategic steps is establishing the persuasive communication framework. Persuasive communication framework for peace means a common belief accepted in society and a unity of conscience for the development and creation of the terms of peace. Therefore, on the basis of any peace attempts and initiative there is a portrait of persuasive communication. As the first step in the communication activities of the peace the public should awaken a desire and effort for the necessity and realization of the peace. In order to spread the peace culture and place it in the centre of the public communication, the desire and need for the peace must be portrayed.

The peace communication and the basis of awareness campaigns are on the point of portrayal of this need and mobilization of the social dynamics for the internalization of peace. Mobilizing the social dynamics based on peace, at the same time, means settling a peace movement that leads society. Communication and artistic campaigns are the expression of the power to create public opinion of the peace communication and education.

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### *1.1. Communication Models For Peace Education*

Regarding peace education subject in intercultural communication, the communication campaigns and models have an effective role. Configuring the peace education on a sensitive point and in order to establish a sensitive peace axis, the strategic support of art and communication campaigns and activities have unifying qualities. One of the approaches suggested in this sense is the "impact of the negotiation messages". The effect that peace-oriented communication messages are encoded and shared with the public is recommended to be configured with the "thematic map model of the message"

#### *1.1.1. Thematic Map Model of the Message*

Mapping of the message in peace education; it means persuading the target audience of the campaign on the broadest perspective and highest profile, the most attendee initiative, in the most effective collaboration platform and public in an ideal peaceful point. "Peace education strives to empower people by providing them with knowledge about strategies that can be used to build peace"(Harris and Morrison,2003). Mapping also includes all communication techniques and activities for peace in all the right spots with the right contents and right timings. to ensure an effective flow of communication with planning, it is needed to bring the public in the most peaceful spot and at this point to develop communicative and artistic campaign models. In the shaping of the public opinion with the thematic mapping towards peace, capturing the most peaceful spot, a scale that is including the peace bureaucracy, peace lodge and human rights hall approaches are recommended.

#### a) Building a Peace Bureaucracy Responsive to Peace:

One of the most important stages of the scale is building a peace bureaucracy responsive to peace. Peace bureaucracy includes the subject of officials that can show initiatives in the name of the peace in levels of various official institutions and organizations create peace protocols and providing the message planning of peace in the official level and training of these personal.

Peace bureaucracy at this point is not a cumbersome structure crushed under official correspondence, the procedures and guidelines but means a peace group that will draw the official map and profile of peace and direct the peace education in an official state. For this reason, it is necessary to examine the concept of peace bureaucracy and establish the formation of the peace process on solid foundations.

The appointment of the young talents receiving higher education on the subject of peace and having a degree on intercultural peace in international institutions and organizations

-The appointment of an official "intercultural peace representative" whose study area is only peace, in Consulates and Embassies

- The establishment of a peace institute by the Ministries of Foreign Affairs and the appointment of the graduates of the this institute that gives one year training program in foreign ministries staff as "peace executive"

- Establishment of peace journalism council which includes representatives of journalist from the country's leading media organizations and the three peace journalists chosen among the group by them, taking the media leadership on the peace issue

- Establishing the "undersecretariat of peace" in the organizational chart of the Ministries of Foreign Affairs, "Undersecretariat of Peace Education" within the Ministries of National Education and "Undersecretariat of Peace Culture" within the Ministry of Culture and running high level initiatives for peace-

- To strengthen the artistic expression of peace and to establish artistic peace motifs that would find ground titled "peace artists" title by the government of the countries to the artists contributing to the peace and support of the peace initiatives of these artists by the governments.

#### b) Peace Lodge

In order to strengthen intercultural peace emphasis and to configure the most powerful peace emphasis in the frame of international public sensitivity, the suggested peace lodge approach is a structure that will manage persuasive peace initiatives and attempts about intercultural peace subjects. Peace lodge is a proposed approach to prompt the international public opinion about peace subject and to bring forward the intercultural sensitivity. "Peace is a concept that derives from a vision of that world that transcends frontiers, ethnicities, nationalities, religions, and those human differences used to rationalize war and oppression"(Alger,1998).The most important part of the approach is the parliamentary diplomacy that is conducted by the variety of units and the method of voting held by the United Nations, NATO, the European Union and other international organizations and institutions. In International institutions and organizations, the major international events and issues are considered in various sessions and resolved by the voting held at the end of the sessions. In diplomacy this method is referred as parliamentary diplomacy. As in the case of parliamentary diplomacy with a decision that will be taken under the roof of the United Nations, creation of a peace lodge in the world's leading international institutions and organizations and by putting the various issues proposed and agreed by this peace lodge to voting in United Nations, realization of peace voting symbolically every week, announcement of the result of voting to the international community and with this perspective developing a peace education model is a strong peace call for the international community.

In order to establish this peace call in a strong axis, the most critical level is the election of the peace lodge and composing it with the right persons. With the participation of a representative from each country and for the structure that will be established with the name of " Permanent Peace Representative to the United Nations", within the body of the United Nations, a strong peace communication model should be developed. Elected "Permanent Peace Representative to the United Nations", under the leadership of the United Nations should be elected among the names who has successfully completed the " Peace Communication Training" conducted in coordination with the Foreign Affairs Ministry of each country and officially offered by the governments of the countries. In this perspective the first level is United Nation's determining the categories for the peace communication training. A two-year education program which is conducted by the Foreign Affairs of that country under the categories established according to the special conditions of each country should be performed within the body of "Permanent Peace Lodge Education Program".

#### c) Human Rights Corridor

To appear peace education and peace all over the world as a common sensitivity and as an attitude, universal awareness regarding human rights is a must. In the world societies, there is no peace for the oppressed, victimized and for each person, a group, a community whose rights are violated. Human rights education is not only a corrective complement to education for peace but that it is essential to the development of peacemaking capacities ( Andreopoulos and Claude,1997). Thus, human rights education is one of the most critical topics during "Peace Guild Selection" process. The aim in the structure where each country's most prominent human rights activists, academics and opinion leaders that contribute to the human rights in society give education is building a "human rights corridor" to raise awareness of universal human rights all over the world. In this context, 100 people who are the most sensitive to human rights in every country, and who have had important contributions to the development of human rights should be invited to the education with a call from the Ministries of Foreign Affairs of the countries which are members of peace communication and education project. In some cases, organizations with peace education program acknowledge in explicit terms the connection between human rights and peace and may include some coverage of human rights material in trainings (Mertus and Helsing,2006).

These 100 people should be given a major human rights violations faced by the world and asked to develop a peace education model in the context of a personal project to resolve this violation. In this context, human rights education should also be included to the training programs of schools and the most important part of human rights corridor established under the leadership of the United Nations, from primary school to university, should consist of educational institutions in the world. The purpose of such an implementation is to gain public attention for the purpose of preventing human rights violations. Every week, to strengthen human rights with a different activity and to create it as a communication campaign model is one of the steps of the basic movement.

### *1.2. Peace Education And The Mediator Calls For Peace*

In implementation of peace education with public relations campaigns and arts activities and establishing "intercultural peace references" project is a decisive and effective project. Establishing "intercultural peace references" is creating symbols of peace which different cultures can take as a reference. In the establishment of intercultural peace references, rather decisive role of public relations, artistic activities and their campaigns are what matters. Decisive steps of intercultural peace references are as follows.

1. International peace testimonials reflect a common starting point for peace and a strong peace initiative before all the world's cultures and nations. In the intercultural platforms, to establish a strong call for the peace is to get hold of the strongest and reconciling, persuasive starting point of message of peace. To get hold of the reconciling call on behalf of the peace and to transform that call to an intercultural peace campaign model is a framework which activates the sensitivities. Thus, it is primarily needed to build a communication model of peace call. To share the active peace call, it is necessary to adopt the common language of the leaders of the peace and to make those leaders as the symbols of the campaign. Every country and region has peace leaders who have dedicated their life to peace and established a strong initiative for the peace. Transforming those leader's common efforts and beliefs to a peace message and to an intercultural communication symbol is a rational step in providing a mediator symbol. Thus, under the leadership of a leading university in each country, with the participation of the leaders of that country's peace, "intercultural peace congress" is recommended.

### 1.2.1. Creative Communication Symbols for Peace Communication

Section Removing the largest obstacles of peace in the world and creating an awareness of this issue is also starting point for the peace education studies. For example, to develop a common stand against terrorism and to create a conscience symbol is a starting point in the peace education and peace campaigns. Therefore, in all the countries of the world, creating a common symbol to present a common stand against terrorism and placing that symbol in the foundations of peace campaigns is the main step towards reconciliation. Countries experiencing terrorism the most and the study of the developments in those countries are the two significant steps. In this regard, in the terrorist attacks that occurred in various parts of the world, “The doves are missing in the first taken photo in the world, A couple of dove wings in your heart against terrorism” slogan is recommended with the use of the first photos depicting the attacks to the world and together with the first taken photo in the world. The first photograph taken in the world by the French photographer Joseph Niepce Nicophore is a garden image and a blurred vision of a pigeon nest on the roof of the hut is involved. In the point of peace communication, country flags are one of the symbols of reconciliation.

There are six types of forms where national flags are used the most. Among those forms, the most preferred ones are the three horizontal strips. Therefore, using those six formats in the form of a flag; the campaign “wave the national flag by your heart and the peace flag by your conscience: Conscience flag against the shame of humanity” is recommended. Using this slogan arranging the flags of each country side by side with a white flag prepared in the same format creates a common symbol in the creation of awareness and sensitivity. The most widespread blood type in the world can also be considered as a part of the communication campaign. As an example, the most widespread blood type is O. Based on these data, the slogan “ The most widespread blood type is **O**, but the most powerful common belief is  ” is recommended.

The use of and the evaluation of the mediator symbols in the communication and awareness campaigns is a process accelerating the convincing of the international community about peace. Slogans used by the world's countries in this regard are effective communication methods in the creation of the conciliatory symbols. When the slogans are examined, it is observed that the most widely used word is unity or in unison. For example, the slogan of Germany; (Einigkeit und Recht und Freiheit- “Unity and Justice and Freedom”); Andorra ( Virtus, Unita, Fortior- United strength is more powerful); Bahamas ( Forward, Upward, Onward Together); Belgium (Eendracht maakt macht, L'union fait la force and Einigkeit gibt Stärke- Strength is born out of unity), El Salvador

(Dios, Unión, Libertad- God, Unity, Freedom”); Indonesia ((Bhinneka Tunggal Ika- Unity in variety ) can be counted. From this point forth: “ Peace with- Birlikte baris” slogan is another suggestion for the communication campaign.

In peace communication studies, the persuasive focus is on the integration of the peace with the aimed ideal and with a peace project that community can follow; operation of the common mind transformed into communication symbols. For example, the focus in the struggle against the terrorism can be peace without loss. In order to transform the response that inflict a heavy blow to peace and response to the terrorist attacks causing huge losses into a common response that all the world screams, it is needed to conceive the losses caused by the terror as a common threat and declaration of that perception and communicative expression of it is also needed. In this framework, the focus is the principle of “ peace without loss”. For example, in a peace campaign aimed at the Middle East countries, in the most famous squares of the capitals of the Middle Eastern countries,

extruding water with sprinklers for 5 minutes, at the same time and day with the participation of the hundred thousand and a campaign such as “There is peace in every spot where the water can reach: Do not get thirsty for peace, catch the peace with water” presents an approach that is trying to establish public sensitivity with water symbol.

### *1.2.2. Peace Communication Campaigns*

While creating peace and consensus atmosphere in public, peace communication campaigns play a vital role in public education strategies and plans. Peace communication campaigns can be described as campaigns to help turn peace culture into a lifestyle, fill social conflict areas with peace themes. They also play a role in creating a powerful call for a strong peace and dialogue for the public to create a peaceful society with a sense of peace, and also they could help turn the faith shared by public into a pioneering feeling as well as providing future generations with a peaceful philosophy. In that view, they are public education campaigns conducted in order to overcome the prejudices that would lessen the impact of peace on public.

In order to create a leading educational role for peace communication campaigns in society and to help it change the social education, people need to be introduced with a strong communication model. In order to create a socially accepted communication model, the public should be provided with a generally accepted and reliable peace model. The first stage of the peace model is to evaluate the peace as a process and to conduct process management. It is necessary that each process be presented to the public in a reliable way and public support be obtained and following this progress after which a possible process would be accepted by the public, the other process to be followed should be implied. When the topic is evaluated within the frame of peace education, it is necessary that the process should be defined and explained also its parameters should be shared. For example, in a peace communication campaign aiming at peace in the Middle East, the process should be shared with the public clearly. The stages of this can be summarized as providing a persuasive focal point, determining the sides of the peace in the peace portrait, enabling a negotiation platform to determine the peace leaders who will lead the process, determining the sides of the conflict and developing consensus policies for the conflict management, reaching to an agreement concerning the conditions that will bring peace and establishing specific peace conditions, as well as presenting the facilitators and determining the sides and areas that are closest to the peace, providing a validator perspective to reach a big agreement that will bring peace, ensuring peaceful public relation activities and communicative coding of the messages, choosing the strongest peace channels to be used in communication call and developing peaceful communication referendums for the overall approval and acceptance of the peace.

### *1.3. Intercultural Respect Model*

One of the most important models of communication campaigns for peace and peace education is intercultural respect. The development of intercultural competence in general and in a multicultural teamwork setting in particular, largely depends on personal attributes such as cultural awareness, curiosity and respect (Guilherme and Garcia, 2010). Respecting and understanding the different cultures, peace, and communication are of vital importance. In order to develop the model of intercultural respect, one of the first steps to be followed is to form a communicative peace ecole. Communicative peace ecole is to create a universal stand that will be adopted by all humanity as a common attitude and that will be passed down from generation to generation and that expresses intercultural respect. While creating this ecole, the sensibility which communication and art activities will create has a big importance. Hence, establishing a sensitivity pact is an important communicative support. Sensitivity pact is taking the lead by the most sensible ones who are sensitive to the problems of the world and cultural communication and who lead the public with this sensitivity. A sensitivity scale should be developed for the sensitivity pact it to influence international community and to be regarded as a communication campaign.

Sensitivity scale should include the main criteria that would enable the international community to meet in a more sensitive path. The main sensitivity scale criteria suggested for peace communication and education can be described as follows:

- The perceivable effort for the protection of cultural heritage in the world and the country
- Taking a leading role in commemorating and embracing the human losses in any area of the world in a common communication platform.
- Conducting leading studies concerning climate and environment to mold a public opinion.
- Taking the lead in the education efforts to broaden the sense of peace among the young generations in order the hand down the peace concept from generation to generation.
- Leading the social and cultural projects for the good of underdeveloped countries and communities.
- Taking the lead in artistic and communicative activities in intercultural communication which will increase the sense of justice.
- Developing artistic and cultural products which will be a guide for intercultural peace.
- Taking the lead in art, communication and philosophical activities that will help the concept of peace on a vast area dominate and popularize peaceful idea.
- Ushering the society in the struggle against any kind of discrimination and symbolizing this struggle by way of communication and art.
- Finding new peace actors who will lead the society.

Another important element is to know and recognize the differences. To understand and beyond that to get to know the religious, sectarian, political, cultural differences, many studies and activities are needed in every parts of the world in the 5 continents. The most strategic point of peace education is the reconciliation of the differences in the world. A rich diversity of peace education is promoted by the myriad contexts in which it is practised (Salomon and Cairns,2010). Therefore, the issue of managing the differences should be put into the center of peace education and courses named “understanding and getting to know the differences” taught in secondary education. In that sense, it could be suggested that some cosmopolite centers around the world can be chosen and declared as “Harmonization Capitals”. The fact that these capitals host some public relations and communication activities to promote the reconciliation among the differences of the world would have an accelerating and strengthening effect on people to gain awareness. 20 harmonization capitals to be suggested are Turkey-Istanbul-Athens, Greece, Israel and Jerusalem, Ramallah, Palestine, Jordan-Amman, South Africa-Cape Town, United States-New York-New Delhi, India, Australia-Snydey, Canada-Toronto, Iraq-Baghdad , Germany-Berlin-Paris, France, England and London, Spain-Barcelona, Italy-Rome-Bounes Aires Argentina, New Zealand-Auckland, Kenya-Nairobi, China-Shanghai.

Giving peace education to harmonize with the differences in 100 pilot first and secondary education institutions in these 20 cities would have a positive effect on the establishment of intercultural respect ecole. For example, all leaders of sects in the world can hold an event in the 20 cities co-organized with the participation of the people named "No denominational difference; Heart Awareness: Peace for the co-existence" Organizing different public relations and communication activities in those 20 centers would raise the public awareness in international community. One of these is the intercultural project titled “Dream of 1000 years” which will symbolize the struggle against discrimination. It can be recommended that a film named “Dream of 1000 years” based on the children’s dreams that recall peace from each race, religion and sect can be produced with the cooperation of directors from every religion. The same can be repeated in the field of art.

#### 1.4. Peace Communication Campaigns Within Peace Education

Peace education-oriented modeling has an important role in peace communication campaigns. One of the most ideal approaches is to increase the number of institutions that teach in the field of peace education among universities and to convince them to adopt the subject.

Locating the peace institutes to teach graduate master programs for 2 years in the field peace in symbolic centers and deciding their course schedule together with eminent peace experts would present an active structure in peace communication studies. The suggested centers are: Institute for Middle East Peace ": Egypt-Cairo," Far East Institute for the Culture of Peace "Thai-Bangonk, Nuclear Peace Institute-Japan-Hiroşimo in the United States: New York," Institute for Interreligious Dialogue: Turkey-Istanbul, "Culture of Peace and Human Rights Institute ": Finland, Helsinki;" for Korean Peninsula Peace Institute ": South Korea: Seoul," India-Pakistan Institute of Peace: India: New Delhi, Pakistan: Islamabad, Institute for Near East Peace: Lebanon-Beirut and Institute for Peace, Non-Discrimination: South Africa: Cape-Town.

In order to teach peace education starting from primary school, schedules complying with primary and secondary curriculum should be developed. War games played by children over internet are one of the leading obstacles in this process, which hinders peace perception among children. Hence, various methods should be developed appealing to primary school children's needs and perceptions. For example, students can be given school reports showing their level of peace perception at the end of each term. It would be useful for children to be given school reports and detailed peace evaluations by peace experts who visit schools periodically, which will further their way of understanding the peace in the future. One of these educations to be taught in primary schools is listening education. Developing their listening-the-other ability is the most fruitful method in this respect. Much of education concerns itself with teaching the arts of written and spoken communication, but in peace education the emphasis is on listening, and communication is an active two-way process (Hicks,1998). Therefore, increasing this listening ability under various subjects is of high importance for the future generations. For instance, in a role play aiming to enhance their listening (respecting) ability created in class atmosphere in which two students supporting two rival football teams listen to each other's opinions and tell why they love their team so much can contribute their way of respect. This listening education to be carried out with the slogan of "If We Have Seen the Same Dream Once We Can Be the Heroes of the Same World" will definitely prove positive in the end. This topic also bears a high importance in terms of overall social-oriented peace education. Especially the widespread movie cue "we are the people of different worlds" is imprinted in people's minds not as a unifying but as a differential sentence. Especially in order to prevent those studying in secondary education from these cliches and let it remain just as a sentence in movies, the slogan "Children of Different World Catch the Stars of the Same World" can be recommended.

Rainbow is another symbol to be used in student-oriented communication campaigns. With the project titled "The most fair seven colors of the world meet in Rainbow; Catch all the Colors of the World in Peacebow (connotation for Rainbow)", fraternity, (brotherhood) equality, justice and the struggle against discrimination concepts can be symbolized under a peace rainbow that will broaden their perception of peace.

The conflict education to be taught at schools is an important part of peace communication campaigns and social peace education. Hence, it would be a wise step to set up intercultural listening camps where children from secondary schools are given listening courses that would prevent conflicts through the agreements to be done among countries. For instance, the main qualities of the international listening camp to be established between Greece and Turkey are to be as follows:

-The topics to be negotiated between Turkish and Greek students should be mutually determined by Peace experts and training professionals.

Historical sites having symbolic value for in both countries should be selected for these camps such as the Acropolis and Ephesus. The aim of the camp should completely be to improve listening skills for “the other” and therefore a communication mechanism should be developed in which students listen to each other in 30-minute sessions on a given topic.

### *1.5. Peace Modellings*

In peace campaigns and peace communication studies, the role of peace modeling is quite decisive. Peace modeling is the transformation of peace communication calls into persuasive communication strategies to process of the structuring of public opinion within the correct communication strategies and management. A direct strategy changes the other actors direction or momentum the way one billiard ball changes another, by hitting it head on ( Paguette,2003). The first of these modellings is the persuasive sharing modellings. The basic principles of persuasive sharing modellings are as follows:

1. In persuasive sharing modeling, communicative flow of peace calls should be analyzed first within the peace communication and peace education. For the communicative flow, the spot where the peace message will make the highest impact and provide an effective and powerful public opinion should be identified properly. The hot spot in the peace process is delivering the peace message which will be shared through the effective communicative channels to a wide target audience, which will build a sensitive public opinion and message's capturing the sensitive point and the ideal participant in the common conscience of the international community. In this regard, in order to conduct peace communication studies, it is needed to draw a peace map. Thus, understanding the core linguistic symbols may be critical to the initiation, negotiation, and resolution phases of any intercultural conflict episode (Toomey and Oetzel,2001) For the peace map, it is needed to discern primarily the most dangerous and the most conflicted zones for the world peace as a campaign system and as a space for the peace campaigns. In the international communicative perspective, a campaign system which will recite symbolically human being's belief for the peace, their longing for peace with the strongest symbol and which will be a common peace mission for all the world are needed to be established. In order that the campaign system can express peace messages with a strong expression, peace diplomacy studies that will be conducted in the zone have importance. Peace diplomacy studies are the diplomatic studies which should be conducted within the politic and diplomatic mechanism for the management of the peace communication with strategies in the zones where expression of peace has the utmost importance for the human being's future. In this context, active institutions and organizations of international political decision-making are primary target masses for the peace diplomacy.

Therefore, for the peace communication and education campaigns, establishing peace bureaucracy and creating a team of peace diplomacy reinforce especially the strategy and the power of decision making ability of peace communication campaigns. In the international political system, embassies and consulates should be evaluated in the context of effective bureaucracy in peace communication studies. The most important task of peace diplomacy is to enable making decisions regarding the intercultural peace in many regions of the world and to ensure the organization of referendums as a communication technique. For the governments in the world especially in areas of conflict, to disseminate the intercultural peace of a variety of cultural institutions and for the establishment of an effective communication mechanism for the world peace and to make decisions expressing their powerful wills towards peace will make an important contribution to the peace will-power in the world. In the international political decision-making, peaceful declaration of will-power in the part of a strong will-power is an important communicative symbol.

One of the active phases of peace bureaucracy and peace lobbying is to meet the world people with the persons whose peace messages are needed by those of the people. People who have the power to create a public opinion with their declarations, expressing peace messages and addressing to the public opinion provide a solid foundation for the intercultural peace studies with a firm stand and ground. At this point the Peace bureaucracy should conduct a peace-oriented traffic for peace. Considerations in the interview traffic to be carried out for peace are as follows:

- 4) Peace leaders to be elected in the interview traffic must be the correct names in terms of creating a public opinion.
- 5) Interview traffic should be handled in a conversation pyramid and each stage of the pyramid of the interview should be configured in a way to influence interview chain and to strengthen a step that will strengthen another step.
- 6) Decisions that have been taken at each stage of interview traffic should be regarded as precursors for the great agreement in binding framework.
- 7) In interview traffic, scheduling module should be created and the period of time of the actions and their orders should be determined. Sharing peace messages with the public opinion at the right time and the operation of peace-oriented right timing of the principles will support the public opinion shaping process towards peace.
- 8) As well as the determination of the main actors that will communicate with each other in interview traffic, new communication actors should be evaluated as a part of the interview traffic. New communication actors will provide the spread of the interview traffic with a chain effect and let it become public.
- 9) In the communication traffic towards peace, in order to catch the convincing focal point, it is necessary to emphasize the sharings that will influence and satisfy the public most.

Constructing the communication pyramid is a strategic step towards creating public opinion for peace. Communication traffic is the implementation of a communication model on each step of which there is a possibility of affecting the other and considering the peace talks in the context of a timing module. For this reason, in the first step of the communication pyramid non-state actors must take the role in the first place and carry out the premise diplomacy for the processes of the public opinion creation. As an example, the Elder's group which is composed of people having served as prime minister, the head of state and ministry of foreign affairs, is one of the effective civil society initiatives on this subject. The mission undertaken by the peace leaders such as Nelson Mandela, Martti Ahtisaari, Kofi Annan, Ela Bhatt, Jimmy Cartar, Desmond Tutu on peace communication and education is an important initiative. The establishment of the entity under the name of "Peace Quintet" which consists of the communication network of the Elders Group in every country and guiding the communication traffic towards peace both in their countries and in world as an entity whose reliability is generally accepted in that country, establishes one of the practical points of the communication traffic. One of the important steps in communication pyramid is managing the communication content and integrating it with the peace symbols. The important thing in the communication content is codding the interview titles with the right communicative symbols and its expression. Particularly, creative communicative and art strategies have binding support in the creation of the peace symbols. One of the world's most widely known symbols of peace are pigeons. As pigeons stretch their wings for peace, in the Middle Eastern capitals with the full participation of the

heads of state and government and cabinet members, flying thousands of pigeons to the sky and an art and organizing a public relations activity named "Peace Leadership stretching Their Wing for Peace in Middle East" are some of the recommended activities.

## Conclusion

In order to let peace communication campaigns be successful and to spread the notion of peace among public, peace subjects should be negotiated and therefore the titles that will shape the negotiation frameworks should be detailed with communication strategies. Those titles chosen for peace to reach the peace itself should be open to negotiations and also be unifying. Hence, peace education Works should focus on the ability to give meaning to these titles. Even the sides meeting around the same table could help the conflicts fade away. Communication symbols should be formed Within the concept of the slogan "If We Can Sit Around the Same Table, There is No Deadlock Ahead". Peace communication and education campaigns are the persuasive communication processes containing the concepts such as reconciliation, conflict management and intercultural respect perspective. For this process to be successful, activating and mobilizing the international community Dynamics with the right communication processes and developing effective sensitivity models are the key elements. In intercultural communication, it would be an ideal starting point that the symbols turn into a peace art and conscience to awaken the international community's conscience and ensure a peace in consciences.

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