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*Full Length Research Paper*

# Investigation of high school students' attitude and anxiety levels towards Mathematics in terms of some variables

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The purpose of this study was to investigate Turkish high school students' attitude and anxiety levels towards mathematics. For this purpose, the methodology employed in this study was a descriptive study. The participants of the study consisted of 361 high school students from three different high school types from a province in Turkey during 2014-2015 fall term. The Mathematics Attitude Scale developed by Aşkar and the Mathematics Anxiety Assessment Scale adapted to Turkish by Akın et al. were used as the measuring instruments. The data was quantitatively analysed by using independent samples t-tests and one-way ANOVA. Findings showed that gender and class levels had no significant effect on the students' attitude and anxiety levels towards mathematics, whereas school type had significant effect on the attitude and anxiety.

**Key words:** Mathematics, anxiety, attitude, gender, school type, class level.

## INTRODUCTION

### Anxiety

Anxiety is defined as a feeling which sometimes encourages people to carry out creative and positive behaviors by motivating them in everyday life and sometimes hinders such positive attitudes and generally creates uneasiness. According to theories with learning approach, anxiety is a feeling acquired via conditioned behavior and conveys the properties of stimulus. Not the source of anxiety but the volume and duration and also the importance of outside challenge determine that anxiety is either a normal or pathological case (Başarı, 1990). Spielberg also categorizes the anxiety into two

groups as state anxiety and trait anxiety. State anxiety reveals itself in a specific situation or time when it appears, it can point out a dangerous situation potentially. Trait anxiety reveals an anxiety that doesn't appear with regard to a specific situation and individuals who have this anxiety can be anxious in any situation (Croft, 2000, cited in Dede, 2008).

### Mathematics anxiety

Although mathematics studies depend on logic and reasoning, it notices in many people as a profound

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emotionality. In this sense, mathematical thinking and emotional and affective perspective towards mathematics are incorporated (Hannula, 2005). In this context, anxiety is one of the most pervasive issues which are related to mathematics in affective domain (Baloğlu and Koçak, 2006). Ashcraft and Faust (1994) define mathematics anxiety as mental disorder, fear of mathematics and a feeling of intense anger and frustration when one is required to solve and understand mathematical procedures and problems. It reveals that mathematics anxiety includes both cognitive and affective components, so this approach toward mathematics anxiety is crucial. Adamu (2014) mentioned in his article that “Richardson and Suinn (1972) defined mathematics anxiety in terms of its (debilitating) effects on mathematics performance. They observed that the feeling of tension and anxiety interferes with manipulation and solving of mathematical problems in a wide variety of ordinary life and academic situations”. Freedman (2013) also defines mathematics anxiety as “an emotional reaction to mathematics based on a past unpleasant experience which harms future learning”. One of the most effective factors of learning is anxiety developed against lesson. It is not possible for students to be successful without eliminating anxiety which may stem from lesson content or negative experiences. Rotella and Learner (1993) reached the result that fear and anxiety about mathematics prevented even children to think clearly and hindered the establishment of relations in providing organization between information in the study carried out on mathematics. It is put forward that mathematics anxiety stems from various reasons such as students’ not caring for school or their lessons, weak personality concept, and teacher and parental attitude to Mathematics (Norwwod, 1994).

On the other hand, Cemen (1987) defines anxiety about mathematics as a reactional case activated against mathematical content situations perceived as a threat to self-respect, and presented an anxiety model including environmental, personal, and situational reasons as a process. According to this model, anxiety is the interaction of these reasons producing anxiety reaction with its psychological signs. According to this, decisions are made by struggling to control anxiety during cognitive activities. If there is powerful and obvious issue/task related confidence, basically self-respect, then the individual can cope with anxiety, and can direct it to issue/task. However, if the individuals do not have the competence to control the anxiety, in that case, this may weaken their performance.

Tobias (1993) defines mathematics anxiety as a case which shows itself in the form of sensational tension or worry when an individual comes across such cases in which he has to solve mathematical problems and to carry out processes related with numbers. This case anxiety may cause forgetfulness and lack of confidence in the individual.

## Attitude

Attitude is a tendency attributed to the individual and regularly constitutes his/her thoughts, feelings and behaviours related to the psychological incident. The power of the attitude is equal to the total cognitive, sensational and behavioural aspects, which is high in fixed attitudes. The more powerful an attitude is, the more difficult it is to change it (Erkuş, 1994). Attitude is determined as a psychological variable seen as an important predictor of behaviour with its cognitive, perceptive and behavioural dimensions. Attitude includes the tendency to the attitude object, the objection to an attitude subject or being on that side (Çakır et al., 2006). Attitude is a mental, sensational and behavioural objection to pre-tendency of the individual organized depending on himself and any object around him, social issue, object, or experience against an incident, information, feeling and motivation (İnceoğlu, 2004, 19).

## Mathematics attitude

Attitudes towards mathematics have been described in different ways (Zan et al., 2007, cited in Dede, 2012):

- i) negative or positive level of affect combining mathematics. This approach omits the cognitive component of attitude,
- ii) a bi-dimensional definition: attitude toward mathematics is seen as the pattern of emotions and beliefs associated with mathematics and behaviours do not appear explicitly in here, and
- iii) attitudes are shaped with three elements such as a behaviour related to mathematics, beliefs related to mathematics, and emotional reaction. This approach reveals complex constitution of attitudes.

On the other hand, most of the students set themselves far from mathematical procedures for fear that they may make mistakes.

Researches carried out about mathematics fear and anxiety pointed out that there is the existence of a low but remarkable correlation among the attitudes towards mathematics lesson as the students’ experiences in mathematics increase (Altun, 2005). Many students in Turkey develop a negative attitude to mathematics lessons with the thought that mathematics is very challenging and that it is impossible for them to learn it starting from the primary school years; therefore, they also come to a position to lose their self confidence in mathematics learning.

This negative attitude develops against mathematics, without doubt, stems from the anxiety of not being able to learn mathematics well. At this point, it is necessary to conduct studies to determine the students’ mathematics anxiety level in order to reduce it to the lowest level (Yenilmez et al., 2004).



**Table 1.** Distribution of students taking part in the study according to schools.

Type of school	Female	Male	Total
Vocational High School	38	82	120
Anatolian High School	69	49	118
Science High School	63	60	123
Total	170	191	361

**Table 2.** Distribution of students taking part in the study according to grades.

Grade	Female	Male	Total
9 <sup>th</sup> Grade	60	49	109
10 <sup>th</sup> Grade	50	49	99
11 <sup>th</sup> Grade	32	43	75
12 <sup>th</sup> Grade	28	50	78
Total	170	191	361

## The purpose and importance of the study

This study aimed to investigate the high school students' attitude and anxiety levels towards mathematics in terms of their gender, school type and class level. The literature have revealed that few studies investigating students' attitude and anxiety levels towards mathematics according to gender, school type and class level have been conducted. Therefore, the answers to the following research questions are sought;

- 1) Do students' attitude and anxiety levels towards mathematics show significant differences according to gender?
- 2) Do students' attitude and anxiety levels towards mathematics show significant differences according to school type?
- 3) Do students' attitude and anxiety levels towards mathematics show significant differences according to class level?

## METHOD

### Research design

The methodology employed is a descriptive study in order to determine the anxieties and attitudes of students attending grades 9, 10, 11 and 12 of various high school mathematics lessons in terms of different variables. A descriptive model aims to describe a past or present case in its original form (Karasar, 1994).

### Sample

The sample for the study consisted of 361 students attending an Anatolian High School, a Vocational High School and a Science High School in a province of Turkey during 2014-2015 fall term. Some of the demographic properties of the participants are shown in Tables 1 and 2.

When Tables 1 and 2 are examined, it can be seen that 47. 1% (n=170) students are female, and 52. 9% (n=191) are male. Regarding school types, 33.2% (n=120) students attend a Vocational High School, 32. 7% (n=118) attend an Anatolian High School and 34. 1% (n=123) attend a Science High School. Also, it is also seen that 30. 2% (n=109) of the students are 9<sup>th</sup> graders, 27. 4% (n=99) are 10<sup>th</sup> graders, 20. 8% (n=75) are 11<sup>th</sup> graders, and 21. 6% (n=78) are 12<sup>th</sup> graders.

### Data collection tools

In order to evaluate the students' attitudes towards mathematics, a Likert type mathematics attitude scale developed by Aşkar (1986) and a personal information form developed by the researcher in order to collect the necessary information about the students were performed. In the information form, questions about gender, class level and school type of the participant students were gathered. In the present study, one dimensional definition of attitude has been adopted because the attitude scale includes negative or positive level of affect combining mathematics. The attitude scale consisted of 20 items. The Cronbach alpha reliability of the scale was found as 0.93. In this scale, there were 10 positive and 10 negative statements. Negative statements were reversed according to the scores mentioned above. The attitude test was graded on a scale of one to five. Each of the students participating in the study was asked to select one of the following choices for each statement; "strongly agree", "agree", "neutral", "not agree" and "strongly disagree". In a Likert type scale, since the scale point consisted of the total response points given to the items, each attitude item in the scale is pointed. For positive items, they are graded as 1,2,3,4,5 from the category "strongly disagree" to "strongly agree"; and conversely for the negative items they are graded as 5,4,3,2,1 from the category "strongly disagree" to "strongly agree". Therefore the highest possible points to be obtained from the 20 statement survey are 100 points, while the lowest is 20 points. If the points' level is high, this would show that the attitude towards the Mathematics lesson is high.

On the other hand, in order to evaluate the students' anxiety levels about mathematics lesson, a Mathematics Anxiety Rating Scale containing 24 items that was developed by Plake and Parker (1982) and translated into Turkish by Akın et al. (2009). It consisted of two factors such as mathematics learning anxiety and mathematics evaluation anxiety. Mathematics Anxiety Rating Scale containing 24 items is in the form of Likert scale. The reliability coefficient of the scale (Cronbach alpha coefficient) was found as 0.94. The students are required to choose one of the following; "never worry", "seldom worry", "often worry", "usually worry" or "always worry" for each of the 24 items given in the anxiety scale. The items in the scale are graded as 1,2,3,4 and 5 from the category "never worry" to "always worry". Therefore, the lowest level of points achievable from the 24 question scale is 24, while the highest is 120 points. If the points are low, this would show that the anxiety level is low, whereas a high points level indicates their anxiety level is high.

### Data analysis

All analyses were performed by using the Statistical Package for Social Sciences (SPSS) software. Two dependent variables were measured in the study: (1) attitude toward mathematics, and (2) anxiety toward mathematics. The independent variables measured

**Table 3.** Independent samples t-test results according to gender.

Variable	Gender	n	$\bar{x}$	s	sd	t	p
Attitude	Female	183	66.70	18.90	359	1.88	.06
	Male	178	62.82	20.21			
Anxiety	Female	170	55.18	21.87	359	.531	.06
	Male	191	56.43	22.78			

**Table 4.** Mean and standard deviation results of students' attitude and anxiety levels according to school type.

Variable	Type of high school	n	$\bar{x}$	sd
Attitude	Vocational High School	120	56.31	19.68
	Anatolian High School	118	66.23	18.89
	Science High School	123	71.67	17.20
Anxiety	Vocational High School	120	68.32	24.07
	Anatolian High School	118	54.10	19.58
	Science High School	123	45.32	16.48

the following variables: (1) gender of students, (2) class level of students, and (3) school type of students. The data was analysed by using independent samples t-tests and one-way ANOVAs and testing for main effect at the .05 level. According to the choice the students marked, arithmetic mean ( $\bar{x}$ ), standard deviation (s) and percentage calculations were worked out and interpreted.

## FINDINGS

The findings of the study are given according to the research questions.

*Research question 1: Do students' attitude and anxiety levels towards mathematics show significant differences according to gender?*

As seen in Table 3, there was no significant difference between gender concerning the students' attitude and anxiety levels towards mathematics [ $t_{(359)} = 1.88$ ,  $p > .05$ ;  $t_{(359)} = -.531$ ,  $p > .05$ ]. The findings also revealed that female students had higher scores on their attitude levels towards mathematics ( $\bar{x} = 66.70$ ) and were more positive than male students ( $\bar{x} = 62.82$ ).

Likewise, the anxiety level of female students about mathematics ( $\bar{x} = 55.18$ ) was less than male students ( $\bar{x} = 56.43$ ). Hence, it can be said that the attitude of female students to mathematics is more positive when compared to the male students, and their anxiety level is therefore lower.

*Research question 2: Do students' attitude and anxiety levels towards mathematics show significant differences according to school type?*

As shown in Table 4, the mean scores of students are ( $\bar{x} = 71.67$ ) in Science High School, ( $\bar{x} = 66.23$ ) in Anatolian High School and ( $\bar{x} = 56.31$ ) in Vocational High School for attitude variable. In addition, the mean scores for anxiety are ( $\bar{x} = 45.32$ ) in Science High School, ( $\bar{x} = 54.10$ ) in Anatolian High School and ( $\bar{x} = 68.32$ ) in Vocational High School.

According to these results, it can be seen that the attitude score of the students attending the Science High School is higher, while their anxiety levels about Mathematics Lesson is lower than other school types. Based on these findings, it can be stated that the students whose attitudes towards Mathematics is high have lower anxiety about Mathematics. On the other hand, the students whose attitude level is low have higher anxiety. Findings of students' attitude and anxiety levels according to school types are also given in Table 5.

According to Table 5, there was a statistically significant difference between attitude and anxiety scores of students on Mathematics among schools. [ $F_{(2-358)} = 21.236$ ;  $F_{(2-358)} = 39.773$ ,  $p < 0.05$ ]. Students' attitudes and anxieties on Mathematics change significantly in connection with the school types. According to the results of the Scheffe test, which was carried out in order to figure out any significant difference occurring between school types, the

**Table 5.** One-way ANOVA results of students' attitude and anxiety levels according to school types.

Variable	Variance Source	Square Total	sd	Square Mean	F	p	Significance Difference
Attitude	Between Groups	14703.779	2	7351.890	21.236	.000	B-A, C-A
	Within Groups	123939.722	358	346.200			
	Total	138643.501	360				
Anxiety	Between Groups	32660.585	2	16330.292	39.773	.000	B-A, C-A
	Within Groups	146990.097	358	410.587			
	Total	179650.681	360				

A: Vocational High School, B: Anatolian High School, C: Science High School.

**Table 6.** Mean and standard deviation results of students' attitude and anxiety levels according to the class levels.

Variable	Class Level	n	$\bar{x}$	sd
Attitude	9 <sup>th</sup> Grade	111	62.901	17.773
	10 <sup>th</sup> Grade	91	63.335	20.199
	11 <sup>th</sup> Grade	83	65.518	20.170
	12 <sup>th</sup> Grade	76	68.368	20.130
Anxiety	9 <sup>th</sup> Grade	109	58.633	20.784
	10 <sup>th</sup> Grade	99	55.353	17.360
	11 <sup>th</sup> Grade	75	54.306	28.233
	12 <sup>th</sup> Grade	78	54.025	23.675

attitude of the students attending the Vocational High School is lower than other school types, while their anxiety on Mathematics is higher than other school types. One of the reasons for this may be due to the Mathematics success of students attending vocational school being lower than the students attending other high school types.

*Research question 3: Do students' attitude and anxiety levels towards mathematics show significant differences according to class levels?*

As seen in Table 6, the students' attitude to Mathematics according to class level is ( $\bar{x}$  = 62.901) for 9<sup>th</sup> grade ( $\bar{x}$ =63.335) for 10<sup>th</sup> grade ( $\bar{x}$  = 65.518) for 11<sup>th</sup> grade and ( $\bar{x}$  = 68.368) for 12<sup>th</sup> grade respectively. According to these findings, 12<sup>th</sup> grade students' attitudes are the highest. That is, the students' attitude has increased in accordance with their class levels. On the other hand, the table 6 also shows the anxiety scores of the students as follows; ( $\bar{x}$  = 58.633) for 9<sup>th</sup> grade, ( $\bar{x}$  = 55.353) for 10<sup>th</sup> grade, ( $\bar{x}$  = 54.306) for 11<sup>th</sup> grade and ( $\bar{x}$  = 54.025) for

12<sup>th</sup> grade. It is seen that the students' anxiety level decreases, while the class level increases. According to these results, the attitude scores of the students attending 12<sup>th</sup> grade are higher, whereas their anxiety levels towards mathematics is lower. Results of students' attitude and anxiety levels according to students' class levels are also given in Table 7.

As can be seen in Table 7, there was no significant difference between students' attitude and anxiety scores according to class level [F<sub>(3-357)</sub>=1.369, p> 0.05; F<sub>(3-357)</sub>= .0872, p > 0.05].

## DISCUSSION AND CONCLUSION

In the present study, the attitudes and anxieties of students attending different high schools about Mathematics courses were investigated in terms of gender, class level and type of high school.

When the results of students' attitudes and anxieties to Mathematics were examined according to gender, no significant statistical difference was found between attitude and anxiety in terms of gender [Table 3, t<sub>(359)</sub> = 1.88, p>.05 and t<sub>(359)</sub> = -.531, p>.05 ]. It can be said that there is no significant effect on students' attitudes and anxieties about Mathematics lesson. However, female students' attitude mean to Mathematics lesson was found to be higher ( $\bar{x}$ =66.70) than male students ( $\bar{x}$  =62.82). Similarly, female students' anxiety ( $\bar{x}$ =55.18) about Mathematics lesson was found to be lower than the male students ( $\bar{x}$  =56.43). Hence, it can be said that female students' attitudes to mathematics lesson is more positive than male students. This result is due to the fact that their anxiety level is lower than the male students. Although a number of studies have been carried out to ascertain whether or not students' attitude and anxiety about mathematics has had any difference in terms of gender, obtained results have shown differences. In the studies, Cooper and Robinson (1991) found that the gender

**Table 7.** One-way ANOVA results of students' attitude and anxiety levels according to students' class levels.

Variable	Variance Source	Square Total	Sd	Square Mean	F	p
Attitude	Between Groups	1576.811	3	525.604	1.369	.252
	Within Groups	137066.690	357	383.940		
	Total	138643.501	360			
Anxiety	Between Groups	1306.839	3	435.613	.872	.456
	Within Groups	178343.843	357	499.563		
	Total	179650.681	360			

variable did not display any significance on Mathematics anxiety. In 1998, Zettle and Houghton stated that there was no significance difference between anxiety levels about mathematics between female and male students. Kurbanoglu and Takunyacı (2012) determined that students' anxiety, attitude and self-sufficiency beliefs regarding mathematics lessons did not display any significant difference according to gender in one of their studies entitled "Investigation of high school students' anxiety, attitude and self-sufficiency beliefs in respect to gender, school type and class level to mathematics lesson". Taşdemir (2013) also stated that statistically speaking, there was no significant difference in anxiety levels of students about Mathematics lessons according to the gender variable. However, Alexander and Martray (1989) found that when compared to each other, females possessed a higher anxiety to Mathematics lessons than males. In their study about the relation between attitude to Mathematics and Mathematics anxiety levels of boarding teachers' training school students, Yenilmez and Özabacı (2003) established that students of boarding teachers' training school did not demonstrate significant differences in their attitude to Mathematics lessons. In their study, where they evaluated the emotional reactions to Mathematics success and Mathematics, Stipek and Granlinski (1991) established some differences between the genders. Accordingly, they identified that females had lower mathematical talent than that of males, and that females developed negative attitudes to learning mathematics. Hence the findings belonging to gender variable of the study coincide with those of some studies, but not some research. The fact that males and females undergo different socialization processes, that they have different experience opportunities, and that the reactions they receive for the activities they carry out change according to their genders causes them to feel themselves to be sufficient in different fields (Kuzgun, 2003).

One of the findings obtained in this study was that the students' attitude to mathematics and their anxiety levels indicated that there was statistically significant difference according to the types of school [Table 5,  $F_{(2-358)} = 21.236$  and  $F_{(2-358)} = 39.773$ ,  $p < 0.05$ ]. That is, the students'

anxiety about mathematics lessons changes significantly in accordance with types of high school. According to the Scheffe test conducted in order to find out in what type of high school, the results showed that the attitude of students in Vocational High Schools appears to be lower than other school types, and their anxiety about mathematics lessons, however, is higher. On the other hand, the attitude of the students in Science High Schools is higher than the other school types, while their anxiety is lower. As for the reason behind this result, it can be shown that the success level of students in Science High Schools is higher than the other high school types. According to statistics from the Higher Education Council for Turkey (Turkish: YÖK), in the university national entrance examination of secondary education students' in 2005, the results according to the type of high school were as follows: General High School graduates accurately answered 5.72 questions, Anatolian High School graduates accurately answered 27.86 questions, Anatolian Teacher Training School graduates answered 24.77 questions, Technical High School graduates answered 5.41 questions, Science High School graduates answered 38.52 questions, Multi Program High School graduates answered 3.13 questions, Anatolian Trade High School graduates answered 4.15 questions, Theology and Preacher Training High School graduates accurately answered 1.38 questions, while Industry High school graduates answered 0.98 questions out of 45 mathematics questions (YÖK, 2007). The fact that the students' confidence increases for mathematics lessons, and that they experience the feeling to be able to succeed in the lesson affects their attitude in a positive way and as they experience success, their anxiety level also drops (Wine, 1971). Even if this success does not stem from mathematics, but from any other lesson, this affects the anxiety level about Mathematics positively.

One of the other crucial findings obtained from the study is that the students' attitude and anxiety about mathematics according to class level (Grade) did not demonstrate any significant differences [Table 7,  $F_{(3-357)} = 1.369$ ,  $p > 0.05$ ;  $F_{(3-357)} = .0872$ ,  $p > 0.05$ ]. Nevertheless, the students' attitude scores in 12<sup>th</sup> grade is the highest

( $\bar{x}$  = 68.368). That is to say, the students' attitude increased in alignment with the increase in class level. Hence, it is seen that as the class level increased, the anxiety point means of the students ( $\bar{x}$  = 54.025) dropped. According to these results, it is observed that the attitude scores of the students in the 12<sup>th</sup> grade turned out to be higher than other class levels, while their anxiety level was lower. However, this difference between attitude and anxiety points is not significant. In their study, Yenilmez and Özbey (2006) stated that the higher the class level of primary school students was, the less their anxiety was. Moreover, in another study, Kurbanoglu and Takunyacı (2012) stated that while the class levels of high school students increased, their attitude levels decreased. This result is consistent with the result of the present study. Yenilmez and Özabacı (2003), in their study carried out to find the relation between attitude and anxiety of boarding teachers' training school students about mathematics, specified that as the class level increased, the students' attitude means to mathematics lesson decreased. In their study carried out on 204 students from 6<sup>th</sup>, 7<sup>th</sup> and 8<sup>th</sup> grades, Dede and Dursun (2008) indicated that as the class level increased, the students' anxiety level increased as well. These findings also coincide with the findings of the present study.

### Limitation and further study

This study shows three major findings: (1) there was a statistically no significant difference between gender concerning the students' attitude and anxiety levels towards mathematics, (2) there was a statistically significant difference between attitude and anxiety scores of students on Mathematics among school types, and (3) there was a statistically no significant difference between students' attitude and anxiety scores according to grade level. According to these results, this current investigation point out only the differences between attitude and anxiety scores of students on Mathematics among school types. However, it should not be neglected that there are many elements such as students' learning styles, teaching materials and methods, and the depth or superficiality of mathematics curriculums which may affect students' anxiety and attitude levels (Koca and Şen, 2002 cited in Dede 2012). Therefore, what and how is the effect of different high school curriculums in the sample (Anatolian High School, Vocational High School, and Science High School) on these findings? The causes behind this result of the research may be a trend of next research with this reason. What is the effect of high school students' learning styles, learning environments, and individual differences, etc. on these results? These questions also suggest new studies for specialists.

On the other hand, this current research study is limited

with the responses given by high school students to items in the questionnaires in a natural setting. Naturally, it may be hard to determine students' attitudes and anxieties using only a survey therefore next study could involve the conducting of classroom observations and in-depth interviews with high school students in order to capture what principal causes behind students' attitudes and anxieties towards mathematics.

Finally, due to the limited sample size (high schools in a province of Turkey), therefore, it may be hard to generalize the results of the present research to other environments. Therefore next studies could examine whether similar findings can be obtained from studies based on extensive samples from different cities, regions and countries.

### Conflict of Interests

The authors have not declared any conflict of interests.

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*Full Length Research Paper*

# Students' opinions about the effect of value-themed short stories used in education

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In order to avoid problems such as lack of confidence, lack of respect, and lack of love, as well as violence within a given social structure, students should be trained not only as academically successful individuals, but also as people who have adopted the core values of the society. To address this need, this study explores the use of short stories, which are thought to be effective for developing awareness of these core values, with a group of Turkish primary students. The students were told stories by the researcher, and their opinions about the effects of these stories were investigated. The research sample consisted of 30 volunteer students from the 6th and 7th grades of an elementary school in Ankara, Turkey. In this study, a qualitative research approach was used. The data were obtained through written and oral statements. The researcher coded the responses as either cognitive or affective through content analysis. According to the results, 12 gains in the cognitive dimension and 20 gains in the affective dimension were observed via students' assessments of these educational short stories. In light of this data, it can be said that educational short stories may provide a significant contribution to students' cognitive and affective development.

**Key words:** Educational story, values, teacher, student, effectiveness of the class.

## INTRODUCTION

Recently, many educational systems have been making changes in response to pressure to achieve greater results (Desimone, 2009; Fullan, 1999; O'Brien and Christie, 2008). In this respect, helping students to become good citizens and to develop positive personality traits are often seen as responsibilities of the school (Dağdelen, 1999; Ryan, 1993). For instance, in Turkey, the National Education Basic Law No. 1739, which refers to educating good men and good citizens, defines students' acquisition of social values as an expectation and goal of the educational process.

Values such as honesty, tolerance, goodness and mercy are human-specific; they add value to human beings and differentiate them from other creatures. They help humans to recognize their actions as appropriate in accordance with their aims (Kuçuradi, 1995, 8); add meaning to life; and improve many aspects of life (Humane Values Manual, 1996; Parashar et al., 2004). Thus, values should be considered in many aspects of teaching, including establishing the classroom environment; applying learning activities; adopting teaching strategies; selecting content; managing classroom

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behaviors; assuming a teaching style; and applying discipline; as well as in teachers' attitudes and behaviors towards students (Aydın, 2003; Black, 1996; Veugelers and Vedder, 2003).

In modern approaches to education, an understanding of how students obtain knowledge is a foundational aspect of the educational process. As a result, many learning models and teaching methods have been developed that enable students to explore knowledge independently (Kaf, 2000). However, it is especially difficult to provide moral development in line with the goals of education in a system that relies on verbal explanations and sermons, and where ethical advice is memorized according to the question-and-answer method. This approach, which replaces feelings and actions with words, is in conflict with natural ethics (Kale, 2008). Rather, value as a principle of behavior occurs as a result of learning through experience (Sari, 2005).

A review of the related literature reveals four basic approaches to the direct teaching of values. These include transfer of value, expressing of value, ethical judgement and value analysis (Tahiroğlu et al. 2010). The value expression approach basically depends on helping individuals to recognize both their already-formed and their emerging values (Bacanlı, 2006). In the application process of this method, group debates, role-plays, opinion cards, open-ended questions, autobiography, interviews, quotations, student reports, caricatures, pictures, films, stories and so on can be used (Bacanlı, 2006; Doğanay, 2007; Unesco, 2005).

One educational technique used for the teaching of values is story telling (Hamilton and Weiss, 2005). In reality, humankind has a mysterious force that reflects all wisdom, as well as direct and indirect disorders. In this sense, the art of telling and understanding stories can be considered as a form of education, wherein stories built upon themes such as love, virtue, tolerance, passion, honor, wisdom, fidelity, loyalty and compassion are thought to contribute to the development of conscience and character (Aydın, 2011). Stories that contain values in their content can affect many levels of the mind simultaneously. Powerful stories leave their trace on people and shape their behaviors. Such stories relate how we form our personalities and relationships with people. As Badger, a character created by Barry Lopez, says, "If stories accompany us, if stories are cared for, they become instructive on many required topics. Sometimes, a person needs stories more than food in order to survive" (Galding and Wallace, 2010).

People who are reading or listening to a story establish empathy with the characters in the story very quickly; they may identify with one of the characters who appeals to them or close to them by putting themselves in the place of the heroes. As Kenneth (2001) asserts, the characters and the construct of the story help readers in detailing their relationships with others in their own lives;

thus, stories can be an important and effective method of teaching (Kenneth, 2001). Furthermore, stories can give hope for the possibility of having a meaningful life despite sorrow and losses and can inspire readers (Baker, 2006; Russell, 2004). For this reason, Bruner believes that stories can provide a creative and constructive means for learners to infer meaning from world, adapt to the world, and live their lives more meaningfully (Frykman, 2009).

Stories have an international validity in many aspects of personal and mental development and are an important pedagogical instrument in the psychological development of children and teens (Davis, 2007; Rossiter, 2001). Thus, stories that portray universal values and promote awareness of right and wrong can help students to learn and to internalize these values by illuminating their behaviors and points of view. Accordingly, it is important for teachers to develop the knowledge, ability and teaching methods necessary to increase the effectiveness of stories in the classroom (Cochran-Smith and Fries, 2001; Garm and Karlsen, 2004; Goodnough and Hung, 2009; Garm and Karlsen, 2004; Smith, 2008).

How can the importance of confidence or the virtue of forgiveness be taught? Can we cope with difficulties without desperation and admit them as opportunities to develop strength? How can we help learners understand that of the elements of humanity are fundamental to a moral society, and that every individual holds the responsibility for developing him- or herself? In this study, it is proposed that telling stories may be more effective for instilling these values than sermonizing and lecturing, and the effects of story-telling on learners' development of moral awareness is evaluated.

The story below, titled "Saving the World," (Anonymous, 2015) is an example of materials that can be used for building awareness about being a good person:

After a tiring week, the man got his newspapers when he woke up and imagined lying down for the whole day. While he was thinking about this, his son came and asked when they would go to the park. The father had promised his son that he would take him to the park, but since he did not want to go out, he tried to think of an excuse to get out of the promise. Suddenly, he noticed a world map that had been included in the newspaper as a promotion. He cut the map into small pieces and gave them to his son:

1. "If you put this map in order, I will take you to the park!" He said, and thought:

2. "Oh, finally, I am free. Even the best geography professor could not put it in order by evening!"

After ten minutes, his son came again:

3. "Dad, I put the map in order. Let's go the park!" He said.

The man did not believe him at first and wanted to see the map. He could not believe his eyes and asked his son



how he had managed it. The child made this noteworthy explanation:

4. "There was a human picture on the back of the map. When I put the man in order, then the world fixed itself!"

As in the example above, the end of such stories must be a full-stop, in a surprising style, and the outcomes are typical value-loaded conclusions. The moral outcomes that are to be understood should be clear, in a manner that is comprehensible and perceivable, and the reader should be able to interpret the conclusion easily (Rousseau, 2000). Furthermore, by telling stories using different intonations and adding emphasis according to the intended interpretation, the effect of the stories can be increased. Ultimately, these stories carry wisdom and values for all generations for those who hear them (Profeit-LeBlanc, 2003). It can be said that teachers who tell such stories may create awareness and give guidance to their students; as such, they may be distinguished from other teachers.

However, aside from being effective storytellers, teachers should consider certain features in selecting the stories to be told. Unkovich (2011) outlined these features as follows:

1. Stimulating and directive stories should be chosen; the stories should prompt students to think about life, love, hope and even finding solutions for despair.
2. Real stories should be practicable and realizable. Students want to hear from others that they can reach their aims and overcome difficulties.
3. In delivering a story, a classroom setting in which students can express their feelings freely and feel secure should be provided in order to strengthen them for coping with life.
4. Stories that show actions and results should be chosen. Life lessons are learned more effectively from good stories than from advice-giving adults or from sermons.
5. Stories that are related to students' lives and the difficulties they encounter will be more easily internalized.

Using gesture and mime appropriately, as well as proper intonation and stress, will not only increase the effectiveness of stories, but also decrease problems in classroom management through the new image that the teacher will acquire. Furthermore, in order to convey the values in each lesson, the teacher must have incorporated these values in their own lives and know how to transmit them effectively.

It can be said that most educators will agree that students should acquire values such as peace, justice, confidence and hope; however, they may have difficulty in internalizing these abstract concepts unless an effective method, one that is not based solely on advice, is applied. In reviewing the literature on the subject, some

studies were encountered that emphasize the importance of using stories in the teaching of values (Deveci and Ay, 2009; Karatay, 2007). However, no studies have been found concerning the effects of stories in teaching values. Given the positive effects of using stories in education, the researcher was drawn to investigate the impact of using short stories to teach values. In this study, educative short stories that involve basic values were used to increase the effectiveness of a lesson; improve the attention of the students; and address the need to learn about values, which has been stressed as an important aim of education.

Accordingly, at the end of every lesson in a course taught by the researcher, educative short stories were told to groups of students, and at the end of the semester, the students' opinions about the effects of value-themed short stories were investigated.

## METHODOLOGY

### Research model

For the purposes of this study, a qualitative research method, which enables detailed investigation of how a specific case is experienced, was used (Işıktekiner and Altun, 2011). Students' point of view constitutes an important focus in educational research (Christensen and James, 2000; Lewis and Lindsay, 2000; McCallum et al., 2000); therefore, this study was conducted via a descriptive approach in order to define students' opinions about the effects of value-themed story telling on the lessons. In her role as the instructor in a science and technology course, the researcher included value-themed short stories each week, generally at the end of a lesson, in order to help students gain the universal values previously described. After telling the stories, in order to allow students to reach their own conclusions, immediate discussion of the stories was avoided; however, if the students wanted to share something about the stories, their comments and evaluations were taken.

### Study group

The research group for the study consisted of 30 randomly selected volunteer students from the 6<sup>th</sup> and 7<sup>th</sup> grade classes of an elementary school in Ankara, Turkey. The ages of the students were 12-13 years. Parental permission was obtained before carrying out the study. The participating students were told value-themed educative stories by the researcher over the course of an academic year.

At the end of the process, the students were asked to respond to the question, "Do you think that the stories told in the classroom had an effect on your development? If so, what is the nature of these effects?" Their answers were given in writing, except in the case of nine students who had difficulty in written expression; these students were given the opportunity to answer orally in a face-to-face interview, which took approximately fifteen minutes. The interviews were recorded with the permission of the students.

### Data analysis

The data were analyzed through content analysis, a scientific

research method that is used for making meaningful and valid inferences from texts (Tavşancıl and Aslan, 2001). Analysis of the data took place in four phases: (1) coding the data; (2) defining the themes that emerged from the coded data; (3) organization of the codes and themes; (4) defining and interpreting the findings (Yıldırım and Şimşek, 2005).

First, the data were grouped according to the similarity of the students' opinions (Patton, 2002). For instance, the statement, "After we listened to the stories, we participated in the class more effectively; also, we like teachers who integrate stories in the lesson more," was evaluated under the theme "cognitive gain" and assigned the code "increased motivation for the lesson." It was also classified under the theme "emotional gain," with the code "we like the teacher better." Through this process, each students' statements were coded, and then interpretations were made by evaluating their written and oral expressions. In order to define the meanings that students attributed to the stories, their expressions were classified by taking the similarity of the content into consideration (Patton, 2002). The aim of this process was to interpret the data and reveal the facts embedded within.

### Researcher's role

In a qualitative study, the investigator conducts research in natural settings and interprets events in such a way that readers can make sense of them (Creswell, 1998). However, in doing so, it is understood that the presence of the researcher may impact the participants, and therefore, the outcome of the study. On the other hand, the more time the researcher spends in a given setting, the less likely his or her presence is to affect the setting (Yıldırım and Şimşek, 2005). In this case, the research was the instructor of the course and had been with the students throughout the course of the semester; as such, her presence in the classroom was routine and was likely to have minimal impact

### Validity and credibility checks

To provide validity, the data were encoded and supported by direct quotations from the students. Furthermore, the significance and integrity of the findings were continually tested by the researcher. Namely, the consistency of the concepts that constituted the themes among themselves and with the other themes was evaluated to determine whether significant integrity was evidenced. The findings were reviewed by the students who participated in the study and were found to be accurate; furthermore, they were found to be consistent with previously formulated predictions.

In order to establish credibility, the data collection process, application and analysis stages were reported in detail in order to allow for replication and for testing through additional studies. Furthermore, the findings were compared to the related literature, and member checks were obtained from the participants. Finally, an experienced researcher from the field was asked to evaluate the data in terms of the themes related to cognitive and emotional gains. The evaluations of the researcher and the expert were compared, and the number of items that constituted "agreement" or "disagreement" was determined. The credibility of the researcher's interpretations was calculated using Miles and Huberman's (1994) formula ( $\text{Credibility} = \frac{\text{agreement}}{\text{agreement} + \text{disagreement}} \times 100$ ); the credibility of the study was calculated at 0.94.

## FINDINGS AND COMMENTS

In this section, the findings from the students' responses

concerning the effects of stories on their development are given. The findings that were related to cognitive and affective gains are presented here, supported by direct quotations from the participants in order to portray their ideas more fully (Yıldırım and Şimşek, 2005). The findings that fell within the scope of the cognitive gains theme are illustrated in Table 1.

The cognitive dimension is related to an individual's using and developing his or her mental potential, thereby increasing his or her knowledge and abilities and creating an opportunity for rich and multidimensional perception and decision-making abilities. In this manner, surroundings that were once seen as limited are changed, and new life choices are presented (Cüceloğlu, 1994). Every one of the 30 students who reported on the effects of the short stories on their development expressed positive views. In coding the feedback from the students, a total of twelve cognitive gains were detected. The high-frequency cognitive gains noted by the students included greater enjoyment of lessons ( $f=9$ ), increased attention to the lessons ( $f=9$ ), increased success ( $f=7$ ), increased motivation for the lessons ( $f=6$ ), increased participation ( $f=5$ ) and increased retention ( $f=5$ ). Additional gains included refinement of behaviors ( $f=5$ ), strengthening of the educational process ( $f=4$ ), teaching students how to think ( $f=3$ ) and relaxing the brain ( $f=3$ ), encouraging students to study more ( $f=3$ ) and contributing to social development ( $f=1$ ).

It has been asserted that "story-telling is a valid method that triggers children's imaginations and prompts them to reach a higher cognitive level with their responses to questions" (Kortner, 1998). The findings of this study support the opinion that stories increase learners' cognitive development.

Some of the answers given by the students in relation to the cognitive gains from the stories are presented below. Although the research questions are related to the participants' individual views, the purpose of the study is to draw attention to the effects of stories on students in general; however, here, the exact expressions of the participants are reported.

"Understanding the lesson is easier and more enjoyable. Furthermore, these stories help with the memorability of the lessons so we can remember them easily..." (S. 4)

"Children come one step closer to success with lessons derived from their young lives. Those lessons sometimes make a difference in the way they study, and sometimes in their amount of study. These stories even get the attention of students who are less inclined for learning. As time passes, a child becomes an individual who can ask questions, can interpret and can apply what he [or she] thinks..." (S. 2)

"Skillfully relaxing students' minds with stories without interrupting a lesson is an important contribution." (S. 6)

"If students are told such success stories every day, their

**Table 1.** Cognitive gains of the stories

<b>Codes relating to cognitive gains</b>	<b>Student codes</b>	<b>f</b>	<b>%</b>
1. Greater enjoyment of the lesson	2, 4, 12, 14, 24, 25, 27, 29, 30	9	15
2. Increased attention to the lesson	5, 14, 20, 17, 22, 27, 29, 11, 13	9	15
3. Increased success	1, 7, 9, 19, 23, 25, 27	7	11.7
4. Increased motivation for the lesson	6, 17, 18, 21, 22, 27	6	10
5. Increased participation in the lesson	2, 6, 24, 27, 28	5	8.3
6. Increased retention of the lesson	2, 4, 10, 27, 28	5	8.3
7. Refined behaviors	4, 8, 9, 15, 27	5	8.3
8. Strengthened the educational process	2, 11, 14, 21	4	6.7
9. Teaches us how to think	3, 7, 28	3	5
10. Relaxes the mind without interrupting the lesson	1, 6, 22	3	5
11. Encourages students to study the lesson more	7, 12, 29	3	5
12. Contributes to social development	21	1	1.7
Total		60	100

own levels of success in education will increase. Students' imaginations and limits to their thinking will increase."(S. 7)

"Such stories affect learners' grades dramatically. Their grades get higher." (S. 9)

"Stories save learners from excessive feelings of ambition. They show that failures can also teach and that mistakes are opportunities to improve. They make learners consider that situations that seem bad can be seeds for achieving success." (S. 19)

"Participation in the lessons increases. Children memorize the stories in one part of their mind; they will remember a story in the face of an event and they will not fall into despair..." (S. 28)

The findings from the students' responses that are related to affective gains are presented in Table 2.

Through coding the students' feedback about the effects of the stories told in the classroom, 20 affective benefits emerged. The most frequent affective gains are as follows: Helps us mature, contributes to our development (f=16); prepares us for life, teaches about life (f=9). These gains are followed by expressions that have the same frequency: makes us like the teacher better (f=7); helps us to look at life positively (f=7); shows us the way in life (f=7). That stories encourage; teach students to look at events from multiple points of view; develop senses such as esteem, mercy and goodness (f=6); help students to see their mistakes; adds joy to living (f=5); and teach students to establish empathy (f=4) were also evaluated by the students as benefits of the stories. These were followed by opinions that the stories had positive effects on friend relationships, increased their imagination, increased their self-confidence, helped them to recognize their senses (f=3), taught the value of their belongings, taught them to cope with problems (f=2), made them realize the importance of the stories, taught them to be responsible to others and made them love

school (f=1). The students' responses indicated numerous positive effects of the stories in the affective domain, in particular. Some of their ideas in this regard are highlighted below:

"Students become more positive [because of] the stories, and gradually, their point of view about life will change. This positive effect will be reflected in their inner world..." (S. 1)

"Stories increase and reveal emotions like compassion and kindness in students. They show that we can make people upset by judging them without thinking. Stories show that such behavior is wrong. In sum, stories tell us not to hurt creatures, not to upset people, to have respect, and many other things." (S. 3)

"Students come to like the teacher via stories. It is essential to education that students like the teacher and vice versa."(S.6)

"Stories increase students' imagination and thinking ...Day by day, positive traits such as level of success, will to study, and awareness of the value of their belongings begin to increase."(S. 21)

"Stories tell us to look at the bright side and not to see events from a negative perspective. They make us feel that we should evaluate events by considering both the good and the bad things."(S. 8)

"From one story, I learned that it is bad to stay angry with somebody, and from another story, I learned that prejudice is a bad thing. The lessons we take from stories help us become decent people in life."(S. 25)

"It makes peevish and aggressive students become better."(S. 15)

"Children's self-reliance increases; they take note of these stories in a part of their mind, and by remembering the story, they will not become discouraged by an event ...children's hopelessness is eliminated with stories full of hope..." (S. 18)

**Table 2.** Affective benefits of the stories.

Codes relating to affective gains	Student codes	f	%
1. Helps us mature, contributes to our development	1, 4, 5, 8, 11, 14, 15, 16, 17, 19, 20, 21, 22, 23, 26, 27	16	16.8
2. Prepares us for life, teaches about life.	6, 7, 8, 13, 15, 21, 24, 25, 27	9	9.5
3. Makes us like our teacher better.	3, 8, 9, 12, 18, 22, 25	7	7.4
4. Helps us to look at life positively.	1, 16, 19, 20, 28, 29, 30	7	7.4
5. Shows us the way in life.	7, 9, 14, 20, 27, 28, 30	7	7.4
6. Gives power to those who are struggling and provides encouragement.	1, 6, 10, 14, 20, 28	6	6.3
7. Teaches us to look at events from multiple points of view.	1, 3, 8, 11, 20, 28	6	6.3
8. Develops our senses such as esteem, mercy, goodness.	3, 10, 15, 24, 28, 30	6	6.3
9. Helps us to see our mistakes.	3, 4, 5, 9, 20	5	5.3
10. Adds joy to living.	10, 11, 19, 20, 24	5	5.3
11. Teaches us to establish empathy.	1, 2, 7, 17	4	4.2
12. Affects our friend relationships.	5, 11, 19	3	3.1
13. Increases our imaginative power.	7, 14, 28	3	3.1
14. Increases self-confidence.	15, 20, 28	3	3.1
15. Helps us to recognize our senses.	3, 17, 20	3	3.1
16. Teaches us to know the value of our belongings.	7, 28	2	2.1
17. Teaches us to cope with our problems.	20, 14	2	2.1
18. Helps us to realize the importance of the story.	16	1	1
19. Teaches us to be responsible for others.	21	1	1
20. Makes us love school.	28	1	1
Total			

"Thanks to these stories, we can understand the experiences and the realities of life. Stories help me to understand what is what. I use them as a guide in my life..." (S. 20)

"They help us to mature psychologically." (S. 21)

"Students' learning the lesson at the end of the story and discussing the story can increase confidence towards learning and the teacher." (S. 22)

"It is a very good thing for us to understand life and to learn to live with reality. It also helps us to feel that lessons are enjoyable. It encourages us grasp life." (S. 24)

"Stories that are related to real life encourage us to be good people by taking lessons from life and applying the good behavior to our surroundings." (S. 27)

"It relaxes us when we are bored with the lesson. Stories show that school is really educating us. They prepare us both for new schools and for life" (S. 14).

Affective development involves understanding one's own feelings and the feelings of others, understanding the reasons for them and using that knowledge in one's thinking and actions (Shapiro, 1998). Among the features of affective intelligence that can be developed via learning are self-motivation, the ability to go on despite challenges, the ability to postpone gratification through

impulse control, the ability to control the psychological state so as not to let problems hinder one's thinking, the ability to put oneself in another's place, and the ability to cherish hope (Goleman, 2006). In this sense, we can say that stories provide important contributions to cognitive and affective development on the basis of the findings gathered from the students. Namely, it was observed that there was a great increase in students' attention to their lesson; they anticipated the class meetings with excitement; they shared the stories with their families; and their parents gave feedback to the teacher about positive changes in the students' attitude and behaviors.

## DISCUSSION AND RECOMMENDATIONS

Acquiring virtues is strictly associated with a child's character development. Distinguishing right from wrong, and choosing right and applying it, are not easy to learn; and schools have often been criticized for failing to place necessary emphasis on the concepts of "good" and "right." Amid countless possibilities and trial and error situations among changing conditions, we work to better our lives by developing appropriate reactions and behaviors (Myers et al., 2004; Yörükoğlu, 2003). In this respect, it is believed that ethics education is bound both

to individual potential and to the interest of the educational system; thus, Aydın (2003) points out that schools are expected to make an effort to develop and support basic values such as responsibility, esteem and justice in students. Similarly, Deveci and Ay (2009) stress the need for implementing values education in schools in order to encourage moral behavior in students' daily lives. They further emphasize the importance of appreciating the benefits related to affective values and assert that effective methods should be developed in order to promote appropriate values in the behavior dimension.

Values or belief models can be expressed via symbolic means such as myths, rituals, stories, legends and special language (Weiner, 1988); accordingly, stories can be used to embed abstract values in children's minds. Stories that are related to values can promote progress in the ability to interpret and inquire about right and wrong. Furthermore, stories told in lessons can draw students' attention. Via stories, we reflect fundamentals that give meaning to our life and that we may not have otherwise recognized. We can trigger unrealized senses and powers of imagination that have important effects on our individual and collective lives (Miller and Pennycuff, 2008; Wachtman and Johnson, 2009). In particular, stories can help children to obtain information about human experiences (Carson and Becker, 2003), as well as providing them with opportunities to investigate, analyze and explain the concepts and events that relate to real life (Craig et al., 2001). In this process, they can evaluate themselves holistically and complete themselves in missing points in terms of character. This approach can increase students' interactions both within themselves and with other people and can remind them that they are carrying the responsibility of being a better human.

In this study, when the randomly selected students' opinions were investigated, it was found that all of the students believed that telling value-themed stories during lessons affected their development positively. These gains were evaluated under cognitive and affective themes, and 12 gains in the cognitive dimension and 20 in the affective dimension were observed.

Cognitive development capacity is measured by the speed of movement between one's mind and intuition and the ability of embracing different points of view (Loehr and Schwartz, 2006). From the findings, it can be inferred that the cognitive gains from the stories included making lessons enjoyable, increasing attention, success, motivation, participation, memorability, and relaxation of the mind, as well as stimulating greater motivation for learning. Furthermore, the stories taught learners to think, helped to refine their behaviors and contributed to the development of society. These findings support the opinion of Milson and Mehlig (2002), who claimed that values define the limits of acceptable behaviors and guide attitudes and behaviors in the society.

Making an evaluation about the affective domain in education is more difficult than with the cognitive domain. For this reason, different methods and techniques may be developed to address this aspect of learning (Bacanli, 2006). When the value-themed stories used in this study were evaluated according to student opinions, it could be said that they provided many benefits in terms of affective development. The findings show that stories can contribute to the development of affective abilities such as acquiring virtues, learning to be a good person, preparing for life, developing maturity, understanding different points of view, and building self-confidence. Furthermore, coping with problems, feeling responsibility, recognizing emotions, knowing the value of belongings, enabling recognition of errors, improving imagination and positivity, and learning to establish empathy were among the gains that students expressed.

Affective intelligence development is considered as the basis of affective gains (Goleman, 2006). Among the features of affective intelligence that can be learned and developed, there are self-motivation, going forward in spite of problems, delaying gratification through impulse control, modifying the psychological state so as not to let problems hinder thinking, putting oneself in the place of others, and cherishing hope. Within this scope, it can be said that the findings of this study comprise the features of affective development to a great extent.

Schools have the responsibility to prepare children for life, and thus, they should make it their mission to raise moral individuals, in addition to preparing students for their professional lives. In this respect, it can be suggested that measures should be taken to increase the awareness of teachers in order to promote the study of values, as stressed in the official aims of education. Furthermore, it can be recommended that educators focus on gathering value-themed stories to be used as educational materials, making arrangements for their use in educational settings, increasing teacher awareness about the utility of stories, in education, and also conducting research at different education levels about the effects of stories in education.

### Conflict of Interests

The author has not declared any conflict of interests.

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*Full Length Research Paper*

# Latent profile analysis of good citizenship of Rajabhat Universities' students in the Northeast of Thailand

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The purpose of this study was 1) to develop good citizenship indicators of Rajabhat Universities' Students in the Northeast of Thailand. 2) to classify latent profile of good citizenship of Rajabhat University's students in the northeast of Thailand. The sample was 800 Rajabhat University's students in the northeast of Thailand. Findings 1) there are only 8 indicators of good citizenship 2) revealed that two-class solution exhibited the best empirical and conceptual fit with the data and the entropy measure is higher the most Classification Quality (Entropy=0.9222 likelihood = -1840.622, AIC = 3731.244, BIC = 3848.359 and ABIC = 3768.970). The proportion of students in the first group, low level of good citizenship, was 258 students (32.20 %), and 542 (67.70 %) in Group 2, high level of good citizenship.

**Key words:** Indicators, latent profile analysis, good citizenship.

## INTRODUCTION

Rapid economic and social change together with scientific and technological advancement has made it imperative for adaptation of basic education provision, which must be harmonized with such change and progress. The importance of Thailand's development is a quality development of its human resources by interdisciplinary advanced-academic trainings to enable its citizens to carry on various professions in accordance with the preparation to enter The Association of Southeast Asian Nations (ASEAN) Economic Community (AEC); also to instill in them conscious awareness to be socially responsible, to abide by the laws and respect

human rights (Office of the National Economic and Social Development Board, 2011). Owing to the aforementioned statements, Thailand's educational standard has set up the preferable characters of its citizens as having virtue and pride in being Thai and global citizens, and conducting an honest living. The Nation Education Act of Thailand of 1999 has realized the importance of the right proportion between acquiring knowledge and obtaining virtue in the combined learning procedure by instillation of virtue, ethics, good values, and preferable characters in children (Ministry of Education Thailand, 2001; Channual, 2008).

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People have decreased the practices of good values and traditional customs in societies, since the advent of globalization; this has caused Thai society to be after materialism but with less awareness of morals and national good culture. Except for the previous problems stated, presently, most Thai families live as single family, making them lack warmth in society and self-dependent; therefore, the children of those families are left alone and they turn to spend their lives with friends outside their families. Those children might do something unreasonable or have some wrong beliefs and values that might cause them to do something wrong or bad intentionally or unintentionally. Similarly, those children as Thai people have encountered struggle, so they forget being generous to people around them. Living for survival may cause people to seek incomes for their needs. Less people's generosity could make them more greedy by earning their living through taking advantages of others, so those people could be short of generosity and public unity without respecting others' rights and sticking public advantages. The stated problematic situation becomes more serious, causing morals and mental decadence (Office of the National Economic and Social Development, 2011; Pang, 2010; Channual, 2008; Nipawong, 2002).

Like all societies, Thai citizens are essential components of the society. Every society needs quality citizens who possess healthy minds and bodies, capable of thinking, performing jobs and solving problems intellectually. Good citizens are efficient as essential parts in the development of the nation's prosperities and security. A good citizen behaves according to the social norms and traditions and leads a virtuous life. For sustainable development of the society, every Thai citizen has the duty of being a good citizen in order to maintain social peace and order by living virtuously, having ethics and abiding the laws. Being a good citizen does not only raise the society, but also education, economy and politics, to the level of a sustainable development. Currently every sector in the country has given more importance in being good citizens, particularly in the educational sectors with the emphases on cultivating children as future good citizens to strengthen the society and create more solid foundation for the country. As stated in the vision of The Basic Education Core Curriculum of 2008, Thai Government is determined to develop every student to become a national human resource with a balanced physical fitness, intellectual knowledge, good morality, and a pride of being a Thai and global citizen (Department of Curriculum and Instruction Development, 2008). Although good citizens are need efficient, but there were not clear. So the researcher developed good citizenship indicators of Rajabhat Universities' Students in the Northeast of Thailand. Before identifying specific subgroups, we explored the question by using latent profile analysis (LPA). This analytic strategy provided the basic for empirically derived common or shared social contexts in

indicators good citizenship were used.

## Objectives

The purposes of this study were

- 1) to develop good citizenship indicators of Rajabhat Universities' Students in the Northeast of Thailand.
- 2) to classify latent profile of good citizenship of Rajabhat University's students in the northeast of Thailand.

## METHODOLOGY

The researcher developed indicators good citizenship of Rajabhat Universities' Students in the Northeast of Thailand Both qualitative and quantitative researches were used. The study was divided into 3 steps: 1) Constructing variables of being a good citizen 2) Developing and improving the indicators of good citizenship and 3) Examining and analyzing these indicators between the hypothetical researches and the empirical data. Three groups of students were studied as follows: Group I – Four students for multi-case studies in order to develop indicators of being a good citizenship, Group II – One hundred and twenty students for the Exploratory Factor Analysis, and Group III – Eight hundred students for the second-order Confirmatory Factor Analysis.

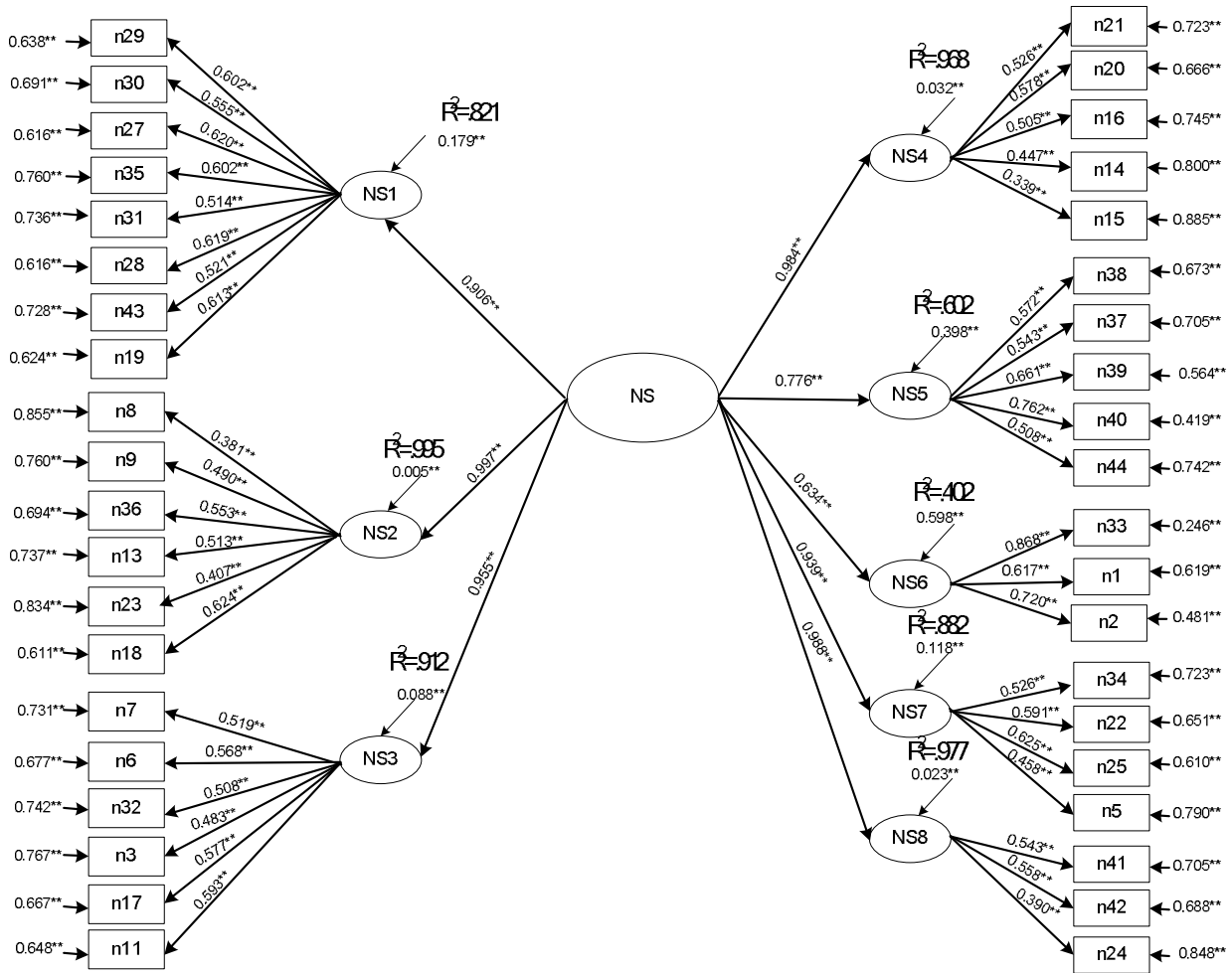
The qualitative method of interviewing experts in this field of study was used in Step I. Initially, there were 144 variables of good citizenship which were reduced to 85 suitable variables. In Step II in-depth interviews of student representatives of 4 Rajabhat Universities in the northeast of Thailand were conducted. The variables were further reduced to 45. Then Exploratory Factor Analysis was applied to develop 8 indicators of 40 variables and the second-order Confirmatory Factor Analysis was used to verify the index of item-objective congruence (IOC) in Step III.

Since the indicators of good citizen consist of various observed variables, the Latent Profile Analysis was applied in this study. As previously stated, Latent profile analysis was used to identify the similar social contexts in which indicators were used. Latent profile analysis is similar to latent class analysis (LCA), except LPA uses continuous or ordinal observed indicators whereas LCA analyzes categorical indicators. The underlying assumption of LPA is that the relationship among continuous indicators can be explained by a categorical latent variable. The continuous indicators are considered to be locally independent, meaning that the observed items are statistically independent within each latent class (Lazarfeld and Henry, 1968; Ruscio, 2004). Researcher used Latent Profile Analysis to classify latent profile of being a good citizen of Rajabhat University's students in the northeast of Thailand with Mplus program version 7.2

## RESULTS

Among students of the 4 Rajabhat Universities of the northeast of Thailand, there are only 8 indicators of being a good citizen: 1) acceptable social behavior 2) skills in the thinking process 3) the eagerness in acquiring knowledge 4) virtue in living peacefully together 5) the love for the country, religion and the royal family 6) the practice of self-efficient living 7) being service-minded for the public and 8) having ethical values. The findings





**Figure 1.** Confirmatory Factor Analysis indicators of being a good citizen of Rajabhat University’s student in the Northeast of Thailand.  $\chi^2= 617.703$ ,  $df= 580$ ,  $p\text{-value} = 0.1349$ ,  $CFI = 0.996$ ,  $TLI = 0.995$ ,  $RMSEA = 0.029$  and  $\chi^2/df = 1.065$ .

testified that the construct validity of the model was acceptable ( $\chi^2 = 617.703$ ,  $df = 580$ ,  $p\text{-value} = 0.1349$ ,  $CFI = 0.996$ ,  $TLI = 0.995$ ,  $RMSEA = 0.029$  and  $\chi^2/df = 1.065$ ). Each indicator’s weight of these standard variable components of the model had the level of significance at .01. The decisive co-efficient values range between 0.402-0.955 as shown in Figure. 1.

A latent profile analysis was done, using eight indicators of "being a good citizen ", each measured on a 1-4 Likert-type scale. The results show that there are 3 classified models of latent profile of being a good citizen and each model is comprised of 2, 3 and 4 groups, respectively. When considered for the probability discrimination of correctness, the model consisting of had 2 class model fits better with theory, gives better class probabilities, and the entropy measure is higher the most Classification Quality (Entropy=0.9222 likelihood = -1840.622, AIC = 3731.244, BIC = 3848.359 and ABIC = 3768.970). The proportion of each group is as follows:

Group I, low characters of being a good citizen, is 258 students (32.20 %), and Group II, high characters of being a good citizen, is 542 students (67.70 %) as shown in Tables 1-2 and Figure. 2.

From Table 2 students in group profile group 1 (Class 1 = 258, 32.20 %), in group profile group 2 (Class 2= 542, 67.70%) The overall indicator of the 8 different significance levels. 01 All the profiles of group 1 and group profiles group 2 , the indicator every opportunity to display attributes of good citizenship requirement in all profiles.

In group profile group 1 the average of each of the obverse probability sector average (0.964) can be classified based profiles indicate that one group has a weight of magnitude lower than the average for all. Indicator is the love for the country, religion and the royal family most average (3.296 \*\*) is an important indicator of the members are organized into groups 1.

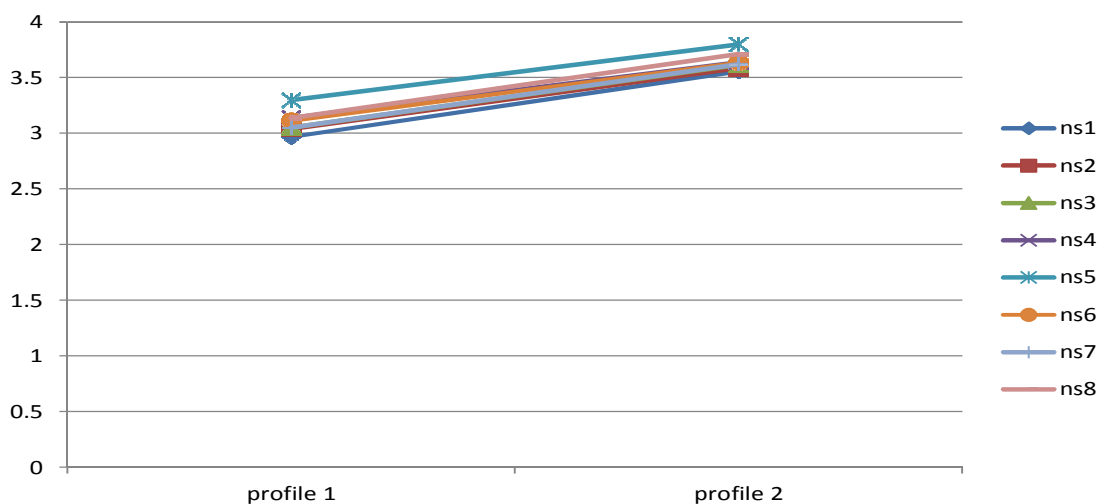
In group profiles group 2 the average of each of the

**Table 1.** Latent profile analysis results classify latent profile of being a good citizen of Rajabhat University's students in the northeast region, Thailand.

No of class	Loglike-lihood	No of free parameter	AIC	BIC	ABIC	$E_k$ = Entropy	Member in class
2	-1840.622	25	3731.244	3848.359	3768.970	0.922	1 = 258 2 = 542
3	-1542.272	34	3152.544	3311.821	3203.852	0.851	1 = 148 2 = 301 3 = 351
4	-1436.542	43	2959.084	3160.523	3023.974	0.822	1 = 69 2 = 169 3 = 294 4 = 268

**Table 2.** Average classification profiles of latent profile of being a good citizen of Rajabhat University's students in the northeast of Thailand.

Indicators	Class 1			Class 2		
	Mean	S.E.	%	Mean	S.E.	%
acceptable social behavior	2.968**	0.023	59.36	3.559**	0.015	71.18
skills in the thinking process	3.040**	0.024	60.80	3.587**	0.014	71.74
the eagerness in acquiring knowledge	3.051**	0.027	61.02	3.616**	0.014	72.32
virtue in living peacefully together	3.136**	0.029	62.72	3.639**	0.013	72.78
the love for the country, religion and the royal family	3.296**	0.030	65.92	3.798**	0.013	75.96
the practice of self-efficient living	3.116**	0.027	62.32	3.635**	0.016	72.70
being service-minded for the public	3.049**	0.027	60.98	3.621**	0.016	72.42
having ethical values	3.135**	0.036	62.70	3.709**	0.015	74.18
count		258			542	
proportions		0.322			0.677	
Average Latent Class Probabilities		0.964			0.984	

**Figure 2.** Latent profile of being a good citizen of Rajabhat University's students in the northeast of Thailand.

obverse probability sector average (0.984) can be classified based profiles indicate that one group has a weight of magnitude lower than the average for all. Indicator is the love for the country, religion and the royal family most average ( 3.798 \*\* ) is an important indicator of the members are organized into groups 1.

The average of the indicator all the profiles both groups found. Group profile group 2 was higher than in group 1, group profiles every indicator.( group profiles group 1 =59.36% - 65.92 %, group profiles group 2=71.18% - 75.96%).That was, all the indicators could be classified according to the students' profile .

## DISCUSSION

Latent Profile Analysis was to classify latent profile of good citizenship of Rajabhat University's students in the northeast of Thailand. We found that 8 indicators of good citizenship could divide students into two groups. The first group profile was the group of 258 low quality citizenships at the mean of 59.36%-65.92 %. The second group profile was the group of 542 high quality citizenships at the mean of 71.18%-75.96%.The ability to accurately predict was at 92.20% (Entropy= 0.922). It might because latent profile analysis was a statistical method used to classify the big group members in to subgroup members considering observed variables and continuous variables. These latent variables were developing from the indicators using Mixed Methodology (the Quantitative method, Exploratory Factor Analysis and the Second-order Confirmatory Factor respectively). The researcher employed three phases in this study: First, conducted the good citizenship variables. Second, developed and adjusted the indicators of good citizenship. Third, examined the consistency of indicators measurement model of good citizenship concerned the hypothesis and empirical data. This affects the ability to group profiles and forecasts were made considering the number of dimensions. The same features of the data within or between different groups or even specific groups along with the characteristics of each group were covered at one time (Mutually Exclusive and Exhaustive). The nature of such classification has never been studied on its criteria before and could not know in advance what the results would be divided into subgroups. (Bray et al, 2006) and consisted with the research of Dena A. Pastor et al. (2006) has been made towards the goal of Profile Analysis of learning achievement and found that the latent profile analysis (LPA) gave better analysis result than traditional analysis techniques such as multiple regression and cluster analysis. The research of Bulotsky-Shearer et al. (2012) has studied the Profile Analysis of the students' behavioral problems by peers and teachers. The analysis result clearly classified the students' behavioral problems into two groups. The first group was high proficiency students and the second group was low

proficiency students. Michael et al. (2007) studied Variations in social contexts and their effect on adolescent inhalant use: A latent profile investigation. Findings revealed that a three-class solution exhibited the best empirical and conceptual fit with the data. Identified classes represented a gradient of low, moderate, and high levels of contextual effects where approximately one third of adolescent inhalant users reported high levels of inhalant use in response to social contextual influences. The researcher developed the research instruments following the academic steps. The sample group was the representative students from 8 Rajabhat University which was large enough to affect the credibility of the findings. The finding, consisted with Ministry of Education (2008) (Department of Curriculum and Instruction Development, 2008), has set desired characteristics in the Basic Education Core Curriculum A.D. 2008 such as love the nation, religion and the monarchy, avidity for learning, applying principles of Sufficiency Economy Philosophy in one's way of life and public-mindedness and Sakchai Nirunthawee (2005) has concluded that desired characteristic of good citizenships of young citizen should have 3 dimensions as follow: knowledge, belief, and behavior. Jitrabab (2003) stated that desired characteristic of young Thai citizens should have good life skills which help them manage the problems they faced. Their immunity of mentally was strong enough to deny the danger of provoking incitement offenses. They should be good, intelligent, and happy persons. They can adjust themselves in a balanced globalization and have the ability in global literacy by using English, computer, and understanding cultural diversity as well. They could spend their simple life in sufficient economy philosophy, self-reliance, and follow the principals of Buddhism.

## Expected benefits and application

1. The information obtained could help stakeholders acknowledge different levels of the indicators of good citizenship among the students of Rajabhat Universities in the northeast region of Thailand. The stakeholders could apply this information in planning programs for developing university students to become future good citizens according to their characters.
2. All 8 indicators of good citizenship are statistical significance. 01 and the same factors how that every indicator is important therefore similar to the results of the research to be featured on every indicator.

## ACKNOWLEDGMENTS

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## Conflict of Interests

The authors have not declared any conflict of interests.

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Full Length Research Paper

# Integrative review of social presence in distance education: Issues and challenges

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**The purpose of this review is to provide an overview of the evolution of social presence research in the field of distance education and identified problems in investigating this construct. The researchers took an integrative review on existing social presence studies to answer three questions: (a) How definitions of social presence evolved since its establishment (b) How research focus shifted (c) What problems exist in social presence measurement. A total of 189 empirical studies in the area of distance education from 1976 to 2013 were selected and reviewed. The results of the study suggested that social presence was still illusive and difficult to define. Moreover, because of its ambiguity, many doubts and problems were identified in measuring social presence. Lastly, this review specified the limitations of similar studies, and provided guidance for future investigations.**

**Key words:** Integrative review, social presence, learning environment.

## INTRODUCTION

Last three decades have witnessed the exponential development of online education, promoted by the advances of information technologies. When individuals participate in distance learning events, their abilities to establish interpersonal contact with others can be greatly diminished.

Research focuses have been put in exploring how to improve distance learning by enhancing its social context and integrating diverse types of interaction. One element, social presence, has drawn great attention in the last three decades as a significant factor in sustaining and facilitating interaction in technology-mediated environments.

## The theoretical underpinnings of social presence

Previous studies in the field of human communication have identified three concepts closely related to social presence. They are intimacy (Argyle and Dean, 1965), immediacy (Wiener and Mehrabian, 1968), and interactivity (Rafaeli, 1988, 1990). Intimacy is the feeling of close connection with others (Argyle and Dean, 1965). Immediacy is used to assess the psychological distance between communicators which is conceptualized by Wiener and Mehrabian (1968). Immediate behaviors communicate liking (and closeness) while non-immediate behaviors communicate disliking (and distance)

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(Mehrabian, 1971). Interactivity (Rafaeli, 1988) is a characteristic of different communication settings. It reflects to what extent the transmission happens later on is dependent on earlier (previous) transmissions (Rafaeli, 1988). Built upon these, the construct of social presence was firstly established as “the degree of salience of the other person in the interaction and the consequent salience of the interpersonal relationships ...” (Short et al., 1976, p. 65).

In the recent three decades, there is a sharp increase in studies of social presence. There are several reasons for conducting an integrative review of the social presence research. First, the review study systematically examines the entire social presence body of research in light of its nature, instrument, variables, effects, and empirical evidence does not exist. The most recent comprehensive review (Biocca et al., 2003) of social presence dates back to more than ten years ago. Second, there lacks a consensus as to what constitutes social presence across various studies. Third, due to the dramatic change in educational environments, how social presence is initiated, maintained, and felt by the participants in the new learning environment would not stay the same. There is a need to summarize and update the empirical evidence about the effects of social presence.

### Research purpose

The overall goal of this integrative review is to summarize the accumulated understanding and knowledge about social presence in distance teaching and learning practices. It bears multiple purposes by reviewing social presence theories, analyzing various conceptualizations, examining existing empirical evidence, and evaluating methodological approaches (Broom, 1993). This integrative review will result in a more comprehensive understanding about social presence and highlight the important unresolved research issues. This study attempts to answer three research questions: (a) How definitions of social presence evolved since its establishment (b) How research focus shifted (c) What problems exist in measuring social presence.

### METHOD

The methodology that guided this study was the integrative review approach as outlined by Cooper (1998). It is the most comprehensive way of reviewing that allows the inclusion of various types of research studies of the same interest (Cooper, 1998). Studies were mainly reviewed and analyzed both qualitatively and quantitatively. The integrative approach takes three main stages as listed below.

#### Data collection

Data collection involves an extensive search of the literature. The

researcher used two complementary strategies to locate studies to ensure that this review included the most exhaustive set of documents relevant to social presence. First, a computer search was conducted of six scholarly databases. They were Education Research Complete, Academic Search Complete from Ebscohost databases, ERIC from CSA database, PsycINFO from APA PsyncNET database, Education from Jstor database, and ProQuest Dissertations and Theses database.

The researchers requested the retrieval of all peer-reviewed documents containing the search term “social presence” in key words or article document titles. Since from the year of 1999, social presence was identified as one factor of the frame work named “community of inquiry” (Rourke et al., 1999), the researcher also requested the retrieval of all peer-reviewed documents containing the search term “community of inquiry” in article titles and “social presence” in general. A search of these databases indicated more than 300 documents. When the data were delimited as empirical studies, over 200 documents remained. Second, the “ancestry approach” (Polit and Beck, 2008, p. 109) was used as a complementary strategy. It obtained additional relevant articles from the review of citations in the literature already located.

#### Evaluation of data

The basic unit of evaluation was each individual study identified in the previous step. A study had to meet several criteria to be included in this review. First, the data was screened for peer-reviewed empirical studies. Reviews and abstracts were excluded because this study was trying to use the empirical evidence to answer the research questions.

Second, each study was examined to decide whether it pertained to the focus of social presence. The study must also be relevant to distance education. Thus, excluded studies were interested in pure psychological factors in human relationships and organization/company management. After screening, 189 empirical studies (112 of them were journal articles and 77 of them were doctoral dissertations or master’s thesis) were selected for the integrative review.

#### Data analysis

An initial reading of the studies during the search process helped the researchers to develop a codebook used in analysis to document all relevant study characteristics (Swider, 2002). A summary table was developed to record a wide range of characteristics of each study. The summary table had three sections. One researcher did the majority of the coding, and generated the tables. The other research read, revise and validated the table. Finally, the researchers arrived at an agreement of the table.

The first section of the summary table was about basic demographic information, including publication characteristics (year, author, journal/conference), study targets (educational status of the participants, the discipline, the institutional information) and the setting in which the study took place (e.g., web, videoconferencing, audio-conferencing, and etc.). To answer the first and second research question, the second section recorded definitions of social presence and variables used to represent social presence. The last section collected information related to the last research question. Information relevant to the measurement instruments, methodological design, analysis approaches, and the study results were recorded.

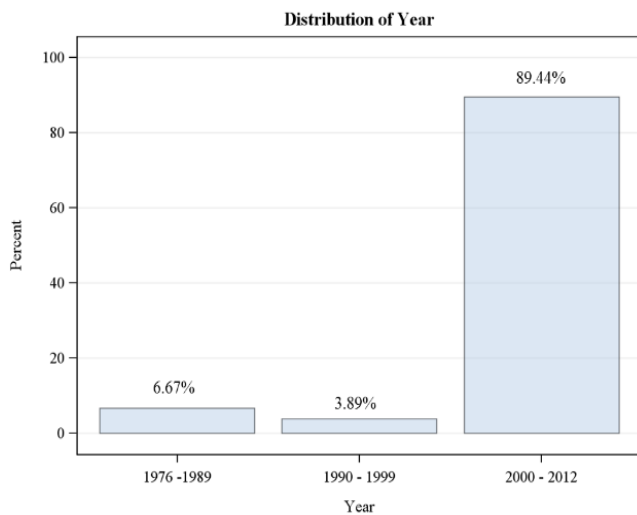


Figure 1. Distribution of studies by years.

## RESULTS

### Trends of the publication

In total, 189 empirical studies were selected for this integrative review, of which 112 studies were peer reviewed journal articles and 77 studies were dissertations. Seventy four out of 77 dissertations were Ph.D. studies while the rest of three were Master's theses. This study reviewed empirical studies spanning the years from 1976 to 2012 (Figure 1). The majority of the studies (89.44%) took place between the year of 2000 and 2012 and half of the studies were conducted after 2008 (median=2008).

For study targets, 88.95% of participants were students, including undergraduate students, graduate students, postsecondary students, second level residential school students, high school students, and adult learners. There were also 8.84% instructors participating the studies, including university faculty, pre-service teachers, high school instructors, and professional instructional designers. Four studies had both students and instructors as participants. The remaining 2.21% participants were web users of academic blogs, groups or events. While 88.70% of the participants studied or worked in the higher education setting, 11.30% were not from higher education.

Previous studies investigated social presence with various types of media in technology-mediated environments (Figure 2). The web played a dominant role (86.14%) which included the general online learning environment, as well as the specific use of some web applications, such as wikis, blogs, and Twitter. The next mostly used media type was video (6.02%), including

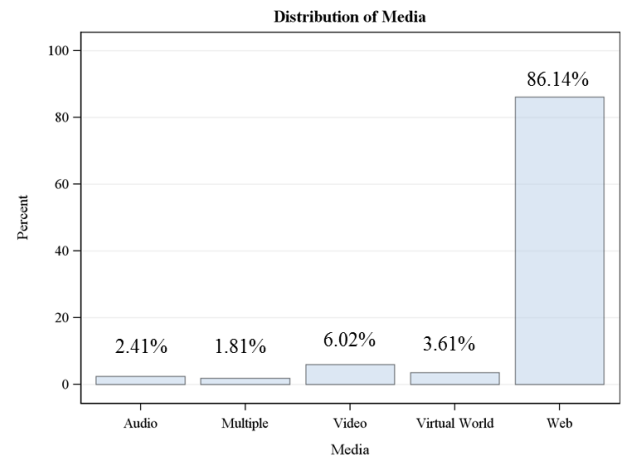


Figure 2. Distribution of media.

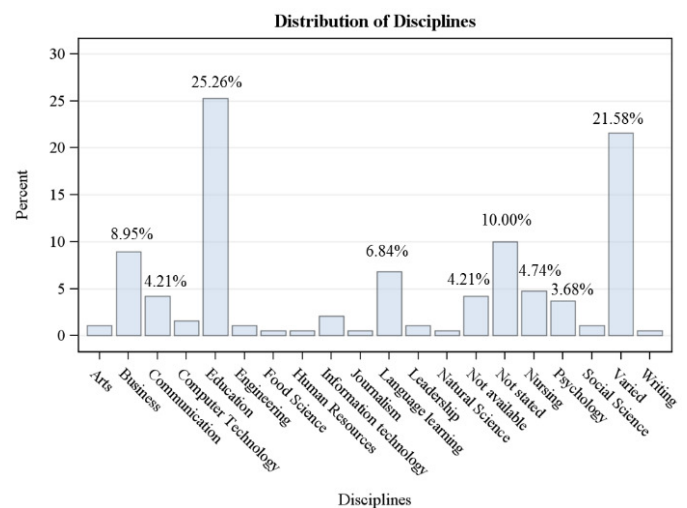


Figure 3. Distribution of disciplines.

video conferencing, video lectures, and televised classroom. Audio, such as audio conferencing or MP3 audio was used in 2.41% of the studies. In addition, 3.61% of the studies were conducted in a virtual world, which used Second Life exclusively.

As reported in Figure 3, previous social presence studies were associated with a variety of disciplines. However, most studies were clustered in certain disciplines, such as Education (25.26%), Business (8.95%), Language Learning (6.84%), Nursing (4.74%), and Psychology (3.68%). A large group of studies (21.58%) also selected participants without relation to the disciplines. Ten percent of the studies did not specifically report participants' disciplines. Moreover, for studies not conducted in higher education, there was no disciplinary

classification.

### The evolution of social presence definitions

The conceptualization of social presence went through five main stages, including (a) a quality of medium, (b) telepresence and copresence, (c) psychological involvement, (d) intelligence involvement, and (e) performable conceptualizations.

**A quality of medium.** The concept of social presence was first established by Short, Williams, and Christie (1976) in the field of social psychology in telecommunication. After examining different types of media, they postulated that due to the inability of some communication media to project non-verbal cues, the interpersonal communication via such media would be hindered. They implied that different types of communication media embodied social presence in various degrees, and therefore social presence was perceived “as a quality of the medium itself” (Short et al., p.65). Such statements were in concert with some other researchers (Daft and Lengel, 1984; Sproull and Kiesler, 1986; Trevino et al., 1987) who also implied that the medium might affect social presence directly.

**Telepresence and Copresence.** Social presence was viewed as an experience when multiple people were transported to the same place, which was related to the notion of telepresence and copresence (Collins and Murphy, 1997; Lombard and Ditton, 1997, September). Telepresence originated within the industry area to describe the importance of a control of the machine at a distance (Martin, 1981). It was elaborated to describe a sense of shared space of remote participants (Buxton, 1993; Lombard and Ditton, 1997, September). Copresence described the awareness of the other living organisms across the physical distance (Biocca and Nowak, 2001; Goffman, 1959), which in turn would lead to the feeling of co-location.

Accordingly, social presence was regarded as a feeling of presence toward people that were physically separated (Mason, 1994; McLeod et al., 1997; Sallnäs et al., 2000; Steinman, 2010), as being together (Hwang, 2007), and as a sense of proximity (McLeod et al., 1997). Heeter (1992) defined social presence as the existence of other people and the extent to which he/she is reactable. McLeod et al. (1997) interpreted social presence as the degree of “tangibility and proximity” (p. 708) of other communicators. McLellan (1999) further stated it as “the sense of being present in a social encounter with another person” (p. 40). Tu (2000) described it as “the degree of person-to-person awareness” (p. 1662). Steinman (2010) stated it as the perception of “their classmates as real persons instead of just names on a list” (p.158).

**Psychological Involvement.** Nowak and Biocca (2001) claimed that social presence should be extended from the idea of telepresence and copresence (being together) to the idea of being together for interactive events. It means that the sense of social presence must involve certain changes in the psychological state (Biocca et al., 2003).

Participants do not only need the ability and opportunity to interact with each other, but they also need to be emotionally motivated to respond to the other participants (Biocca et al., 2001; Kehrwald, 2008). Therefore, Blocher (1997) described social presence as the extent to which communicators feel being present in a reciprocal social interaction via a conduit of interactive communication media (p. 33). Similarly, social presence was described as a projection of oneself into communication (Garrison, 1997; Garrison et al., 2000; Rourke et al., 1999; Whiteman, 2002).

Immediacy (Wiener and Mehrabian, 1968), intimacy (Argyle and Dean, 1965), and interactivity (Rafaeli, 1988) were three determinant factors to initiate social interaction and set up interpersonal relationships. A large number of studies defined social presence by associating it to these three concepts with an emphasis on the salience of interpersonal relationships. Social presence was defined as “those nonverbal behaviors that reduce physical and/or psychological distance between teachers and students” (Anderson, 1979, p. 544), and a number of immediacy behaviors, including “uses first names, asks questions, uses humor, uses personal pronouns, discloses personal information, and use ... emoticons or punctuation marks...” (Menzie, 1991, p.38). As researchers became more and more interested in studying the comfortable levels of these interpersonal relationships (Andersen, 1979; Andersen et al., 1979; Gorham, 1988; Hackman and Walker, 1990; Kearney et al., 1985; Plax et al., 1986), social presence was defined as “the feeling that others are involved in the communication process” (Whiteman, 2002, p. 6), the feeling of connectedness with one another (Caspi and Blau, 2008), the capabilities of “express themselves personally” (Salloum, 2011, p.44), a facilitator of interpersonal relationships (Gunawardena and Zittle, 1996; Shin, 2002; Short et al., 1976) and an environment that was “comfortable, positive, supportive, necessary, encouraging, and genuine” (Liang, 2006, p.103). It was noted that Short et al. (1976) admitted social presence as a “salience of the interpersonal relationships” (p. 65) although they attributed it to “a quality of the medium itself” (p. 65). Therefore, their definition was quite vague (Walther, 1992).

**Intelligence Involvement.** In the distance learning environment, social presence is not simply a function of interpersonal relationships, but “the cognitive representation of the group by group members” (Rogers



and Lea, 2005, p. 1). Therefore, Biocca (1997) described social presence as “the degree to which a user feels access to the intelligence, intentions, and sensory impressions of another” (p.22). It was further interpreted as “reading a mind” (Biocca et al., 2003, p. 472). Social presence was also treated as degrees of mutual understanding (Biocca et al., 2001; Savicki and Kelley, 2000). Tu and Mclsaac (2002) referred to social presence as the degree that one feels and reacts to other “intellectual entity” (p. 146). Gramling (2003) defined social presence as the capabilities of demonstrating themselves in technology-mediated communication and the connection with others in teaching and learning. Salloum (2011) described social presence as “a sense of belonging to the learning community” (p.44).

**Performable Conceptualizations.** Biocca et al. (2003) pointed out that there was a trend to use implicit or explicit behavioral indicators in defining social presence because there was increasing evidence from empirical studies showed that social presence could be demonstrated by a number of visible activities, such as expressing emotion, posting/replying messages, using certain language (such as “we”, “our”), participating in group activities, and etc. (Garrison et al., 2000; Kehrwald, 2008; Rourke et al., 1999). Therefore, social presence was defined as participants’ ability to project themselves and their availabilities for transactions (Kehrwald, 2008). As Biocca et al. cited, Palmer (1995) stated social presence as building “a relationship through an interdependent, multichannel exchange of behaviors” (p. 291). Heeter (1992) emphasized the extent to which other individuals react to the user in defining social presence. Menzie (1991) defined social presence as a number of immediacy behaviors. Social presence was also described as the subjective projections of self into a technology mediated environment, the subjective feeling of others’ presence, and relations with others (Kehrwald, 2010).

The most recent definition of social presence (Garrison et al., 2010) emphasized participants’ ability to identify with the community, conduct communication, and develop interpersonal relationships via projection of their personal characteristics.

Due to the development of emerging social medium systems, recent studies in immersive virtual environments defined social presence involving more behavioral engagement (Biocca et al., 2003). For example, in Second Life, the definition of social presence was extended to include communication behaviors that an avatar is able to convey, including gestures and voices (McKerlich and Anderson, 2007).

In sum, the conceptualization of the construct went through five main stages. Social presence is such a complicated construct that its conceptualization is never consistent across different studies (Table 1).

## Evolution of research foci

The foci of the empirical studies were grouped into four categories (Figure 4): media comparison, users’ awareness, learning experience and attitudes, and behavioral engagement. These categories gradually emerged during analyzing studies’ statements of research purposes and adoption of social presence definitions in previous studies.

Short et al.’s (1976) statement of social presence led to the development of media richness research in social presence field. In early studies, social presence was used to compare the capabilities of different media and students’ affective attitudes towards a specific medium. Many researchers identified the quality of media as social presence, or at least as one significant dimension of social presence (Bigley, 2012; Caspi and Blau, 2008; Doran, 2010; Newberry, 2001).

The discussion on social presence and communication media from the 1980s to 1990s pointed to a research focus shifting from comparing media characteristics to exploring users’ awareness of others. Social presence enabled opportunities for social activity in the mediated environment (Nowak and Biocca, 2001). Social presence was used to study users’ perceptions of others, and feelings of isolation or connectedness in mediated communication, especially in the field of distance education.

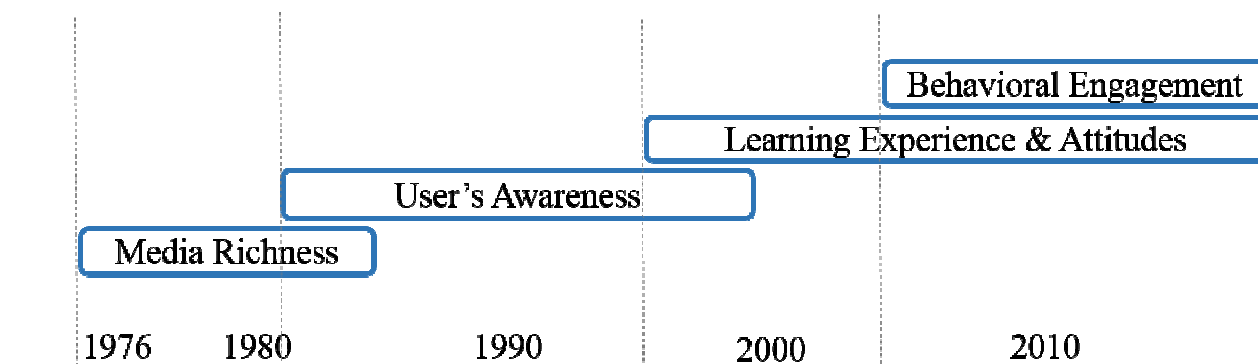
Researchers began to study the emerging associations between the social presence and other social issues, such as the motivation for communication, the attitudes towards the instructor/peers, and the sense of collaboration (Mason, 1994; Sallnäs et al., 2000).

The third group, learning experience and attitudes, was most popular. This is because social presence definitions related to psychological and intelligence involvement types of statements take a dominant part in recent studies. These studies were mainly conducted after 1997. Researchers have been interested in examining to what extent the psychology involvement of social presence triggers and influences students’ positive attitudes towards the instructor and peers, the learning satisfaction, the affective learning, the mutual understanding, the sense of learning community, the willingness of collaboration, the group cohesion, the perceived learning achievement, and ultimately the actual final products (Cobb, 2009; Gorham, 1988; Gunawardena and Zittle, 1997; Hackman and Walker, 1990; Tu and Mclsaac, 2002). Social presence has been used as an indicator to assess the whether an environment is socially supportive for learning from the perspective of the participants.

Nowadays, as more visible indicators were identified as evidence of social presence, the fourth research focus, behavioral engagement, gradually emerged. They mostly spread out from 2004 to now. Performable statements of social presence are often accompanied by a list of behavior indicators.

**Table 1.** Definitions of social presence.

Stage	Definition	Example studies
A quality of medium	“the degree of salience of the other person in the interaction and the consequent salience of the interpersonal relationships ...” (Short et al., 1976, p.65)	(Gefen and Straub, 1997; Kim, 2005; Tung and Deng, 2006)
Telepresence and copresence	“to the extent which other beings (living or synthetic) also exist in the world and appear to react to you” (Heeter, 1992, p.2) “the degree of tangibility and proximity of other people that one perceives in a communication situation” (McLeod et al., 1997, p.708)	(Mason, 1994; McLellan, 1999; Sallnäs et al., 2000; Tu, 2000)
Psychological involvement	“those nonverbal behaviors that reduce physical and/or psychological distance between teachers and students” (Andersen, 1979, p.544) “the feeling that others are involved in the communication process” (Whiteman, 2002, p.6) “one feels socially present in a distance learning environment” (Blocher, 1997, p.5)	(Caspi and Blau, 2008; Cobb, 2009; Gorham, 1988; Gunawardena and Zittle, 1997; Kehrwald, 2008; Nowak and Biocca, 2001)
Intelligence involvement	“reading a mind” (Biocca et al., 2003, p.472) “the degree of feeling, perception, and reaction to another intellectual entity...” (Tu & Mclsaac, 2002, p.146)	(Bente et al., 2008; Cortese and Seo, 2012; Shen and Khalifa, 2008)
Performable conceptualizations	“a relationship through an interdependent, multichannel exchange of behaviors” (Palmer, 1995, p.291) “an individual’s ability to demonstrate his/her state of being in a virtual environment and so signal his/her availability for interpersonal transactions” (Kehrwald, 2008, p.94)	(Conceicao and Schmidt, 2010; Garrison et al., 2010; Kehrwald, 2010; Wanstreet and Stein, 2011)



**Figure 4.** The illustration of the focus evolution.

They allow researchers to examine the degree to which social presence really exists. It also enables researchers to discover the development pattern of social presence as the communication progresses. Therefore, social presence studies begin to explore how and to what extent

it affects diverse learning variables at different stages of a course and how it can be manipulated by instructional interventions along the passage of distance learning classes (Akyol and Garrison, 2008; Swan, 2002, 2003; Vaughan, 2004).

## Measurement of social presence

The majority of previous studies used subjective measures to evaluate social presence. It means social presence was assessed via participants' conscious judgment (Van Baren and IJsselstein, 2004).

**Quantitative instruments.** Surveys are the most predominant form of quantitative instrument. Survey design uses quantitative and numeric description to represent participants' attitudes or opinions (Creswell, 2009). More than 90% of the studies employed one of five instruments that were widely recognized and validated. The first well-recognized scale, Social Presence Scale was constructed by Short and her colleagues (Short et al., 1976). They maintained that social presence was users' attitudes towards a medium. Therefore, they constructed 17 five-point bi-polar scales to evaluate and compare users' feelings towards different types of media. The second widely used scale Spres Scale was constructed by Gunawardena and Zittle (1997) which was based on the concept of "immediacy". It was extended to Social Presence Scale by Richardson and Swan (2003) as well as Swan and Shih (2005) in order to fit in a wider online learning environment instead of computer-conferencing environment only. Another widely used scale Immediacy Behavior Scale was also grounded in the concept of immediacy. Richmond et al. (1987) summarized previous immediacy studies and created a list of nonverbal immediacy behaviors used by classroom teachers that might affect students' cognitive learning. Gorham (1988) consolidated a list of verbal immediacy behaviors into a likert-scale. Items from both nonverbal and verbal immediacy scales very combined into the Immediacy Behavior Scale to measure social presence.

Fourthly, as the understanding of social presence developed from a unitary dimension construct to a multidimensional construct, Biocca et al. (2001) created the Networked Minds Social Presence Questionnaire to measure social presence from the aspect of awareness of the other, psychological states (attention, emotion, motivation), and interdependent behaviors. Arbaugh et al. developed a measure of social presence as one of the subscales in their Community of Inquiry (CoI) framework (Arbaugh et al., 2008). The CoI instrument was widely used because social presence was not examined alone, but closely related with the other two key factors (teaching presence and cognitive presence) to better evaluate the comprehensive learning experiences (Garrison, 2011). An enhanced version of CoI survey instrument was developed recently by asking respondents to rate the relative importance of each survey item (Diaz et al., 2010). The last commonly used scale Computer Mediated Communication Questionnaire was developed by (Tu, 2002). It measured social presence from four dimensions: social context, online communication,

interactivity and privacy. Besides these scales, there were also some other instruments used in a small number of studies. A summary of all the existing survey scales retrieved for this review is listed in Table 2.

By using surveys, social presence was measured in terms of quantification of participants' subjective feelings towards a variety of measurable elements, including media richness, copresence, humanizing, intimacy, immediacy, interactivity, and connection, which were identified as important elements representing social presence.

A small number of studies assessed other factors such as self-identity, self-categorization, and etc. as representatives of social presence. The existence and degree of social presence was quantified as a range of score from 0 (non-existent) to 5 or 7 (very high degrees) of the subjective senses of these elements. It seems that most of social presence scales were constructed in a specific context under which students were using a/some specific technology tool(s) for communication.

**Qualitative instruments.** Qualitative instruments were adopted to capture the direct experiences of social presence from participants. Observation, interview, and document content analysis were primary qualitative instruments. While observation and interview measured social presence in terms of participants' subjective feelings, document content analysis investigated the existence of behaviors indicators of social presence. The assumption of using behavior indicators is if one shows certain behaviors, he/she must be socially present (Biocca et al., 2003).

When a transcript was coded by multiple reviewers, the index of percent agreement was normally used in most studies to indicate inter-rater reliability. However, this index was easily contaminated by excluding semantically close codes (De Wever et al., 2006) and inclusion of agreement codes by chance (Lombard et al., 2002). Different indexes could be used to ensure reliability. However, only a few studies (De Wever et al., 2006) met this requirement.

## DISCUSSION

### Social presence is difficult to define

The evolution of definitions reflects two essential features of social presence construct (Figure 5). The first remarkable characteristic of social presence in its involvement is that it is not simply existent or nonexistent. Instead, it exists in degrees (Biocca et al., 2003; Kehrwald, 2008; Lowenthal, 2010; Tu and Mclsaac, 2002) and varies on a continuum from absent degrees, to low degrees embodying psychological involvement, to high degrees including certain levels of behaviors (Biocca et

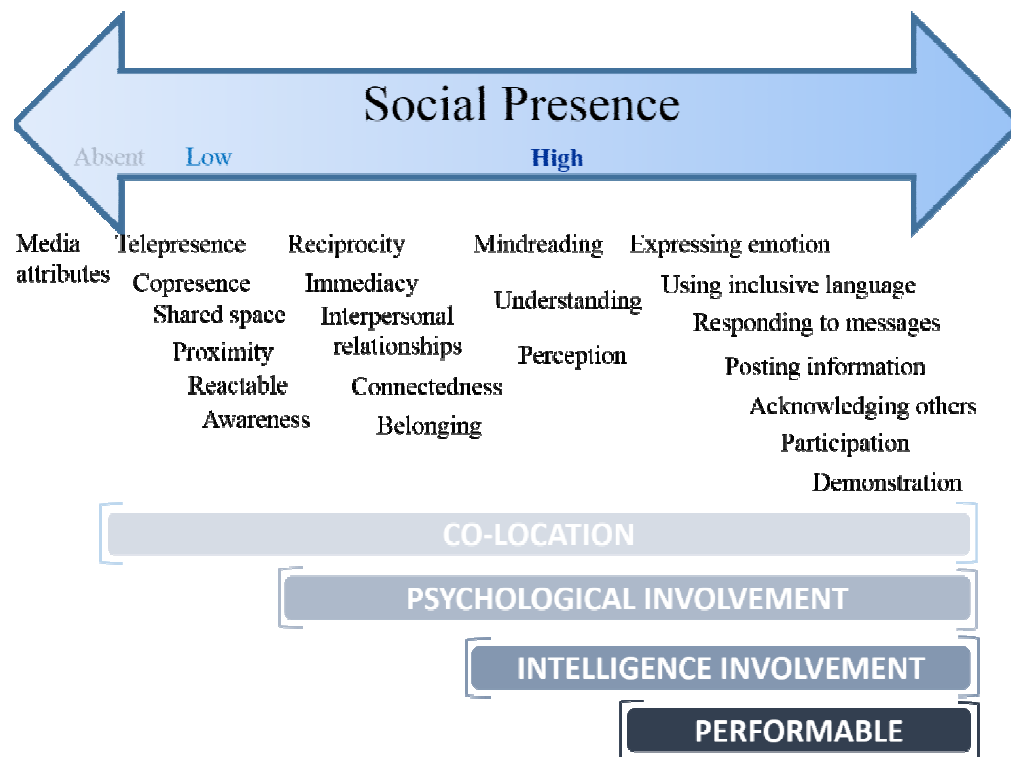
**Table 2.** Overview of quantitative instruments for measuring social presence.

<b>Instrument Name</b>	<b>Establisher</b>	<b>Year</b>	<b>Measure at a Glance</b>
Social Presence Scale	Short et al.	1976	Bipolar mental sets towards media
Immediacy Behavior Scale	Richmond et al.	1987	Observable nonverbal classroom social presence behaviors and how students value them
	Gorham	1988	Observable verbal immediacy behaviors and how students value them
Spres Scale	Gunawardena & Zittle	1997	Attitudes towards the media, communication environment, and the sense of intimacy
Networked Minds Social Presence	Biocca et al.	2001	Copresence, psychological involvement, and behavioral engagement
Social Identify Scale	Lee et al.	2001	Perception of self-categorization and self-identity in computer-mediated group activities.
Para-Social Presence Scale	Kumar & Benbasat	2002	Immediacy, empathy, affective attitudes, and the involvement of participants
Classroom Community Scale	Rovai	2002	Connectedness, group cohesion, passion, trust and interdependence with a learning community
Social Presence Scale	Saenz	2002	Items were constructed based on a literature review of intimacy, immediacy and interactivity.
CMCQ	Tu	2002	Social context, online communication, and interactivity
SP scale	Richardson & Swan	2003	Perception of others, the learning environment, and the online experience
	Swan & Shih	2005	As the same above, but add more peer interaction elements and separate social presence of students from the instructor
Social Space Scale	Kreijins et al.	2004	Participants' feelings of their own and others' behaviors as well as perceived frequency of certain types of others' behaviors.
Social Presence Scale	Wise et al.	2004	Perceived friendliness of instructor's messages, familiarity with the instructor, and enjoyment of interacting with the instructor.
Social Presence Scale	Lee & Nass	2005	Participants' feeling of others' voices as real people and the consequent involvement with what's being heard.
Social Presence Behaviors Scale	Weaver & Albion	2005	Perception of interactions with others.
Communication Survey Scale	Lowry et al.	2006	Participants' feelings towards communication processes, such as perceived quality of discussion, appropriateness, richness, openness, and accuracy of the communication.
Social Presence Scale	Yamada & Akahori	2007	The perception of others, ease of communication, and consciousness of the second language communication
Col	Arbaugh et al.	2008	Open communication, group cohesion, personal/affective projection
Social Presence Scale	Kim	2010	Perceived social proximity and affiliation of others
Social Presence Scale	Kreijins et al.	2011	Participants' feeling of being transported to a shared space.

al., 2003). Social presence is dynamic. It measures the moment-by-moment judgment about the interaction with another sentient that might be limited or facilitated by a medium (Biocca et al., 2001). It develops in ongoing demonstrations (Kehrwald, 2008). At its lowest degree, social presence simply means being there, and at its highest degree, social presence represents mutual dependent behavioral interaction. The increasing degrees of social presence imply greater involvement in

participants' representations of themselves, the interaction with others, and the understanding of another subject's emotions, intentions, as well as dispositions connected to oneself (Biocca et al., 2003; Kehrwald, 2008; Tu and McIsaac, 2002).

The second prominent characteristic of social presence conceptualizations is that it evolves from a unitary concept to a multidimensional construct. Social presence is so broad and complex that it embodies many sub-elements



**Figure 5.** The illustration of social presence evolution.

(Biocca et al., 2001; Garrison et al., 2000; Rourke et al., 1999; Tu and Mclsaac, 2002; Wulff et al., 2000). There lacks a consensus as to what constitutes social presence across various studies (Biocca et al., 2003; Kreijns et al., 2011; Lowenthal, 2010). Many studies used broad or vague definitions so that it was hard to have exact corresponding items in the measurement of social presence (Lowenthal, 2010). In addition, quite a few studies claimed studying social presence. However, their conceptualizations were short of theoretical foundation and biased in their particular research interests a (Chen et al., 2005; Kekwaletswe, 2007; Leh, 2001). Therefore, the measurement and results of these studies are questionable.

### **Social presence is difficult to measure**

Due to the complexity and ambiguity of social presence conceptualizations, not a single social presence measure is universal. It is difficult to find a multifaceted sound measuring instrument. As apparent from the Appendix, not a single questionnaire successfully covered all dimensions of social presence inclusively and exclusively. It seems that the existing instruments tend to measure varying subsets of social presence variables encompassing media attributes, intimacy, immediacy, and others, depending on the varying conceptualizations of social

presence assumed by authors. Some studies measured social presence as a broader concept, including various aspects while some studies perceive social presence as a narrower construct. For example, the Spres Scale developed by Gunawardena and Zittle (1997) primarily assessed elements of media attributes and immediacy while the Networked Minds Scale constructed by (Biocca et al., 2001) focused on dimensions of co-presence and interactivity. Moreover, there were studies (Chen et al., 2005; Giesbers et al., 2009; Hernandez, 2008; Lyons et al., 2012; Tourangeau et al., 2003; Weinel et al., 2011) claiming to investigate social presence, however what they had measured were not within the space of interest associated with social presence. It was unclear whether these instruments were measuring social interaction, social climate, the feeling towards social medium, or some other constructs that were frequently confused with social presence.

Moreover, social presence is not a static construct. It fluctuates with the progress of the communication. Survey studies used a cross-sectional design which was unable to examine the dynamic pattern of social presence. In addition, using the voluntary survey to get data is hard to control non-respondent bias. It is possible that those who did not respond to the survey felt low degree of social presence (Kim et al., 2011; Leong, 2011). In addition, each questionnaire was constructed in a

certain situation tailored for a specific technology tool such as computer conferencing system (Gunawardena and Zittle, 1997; Rourke et al., 1999), computer-supported collaborative environments (Kreijns et al., 2011), video (Homer et al., 2008), email (Richardson and Swan, 2003), mobile learning environments (Arminen and Weilenmann, 2009; DuVall et al., 2007; Kekwaletswe, 2007), virtual environments (Burgess et al., 2010; Hodge et al., 2008; Jin, 2011; McKerlich and Anderson, 2007; Shen et al., 2010), and general online learning experience (Tu and Yen, 2006). It is unknown whether the measuring items will become problematic when social presence is studied under different contexts. The development of questionnaires has gone hand in hand with, and to a large extent relied on the development of social presence theories. Therefore, the doubt of items in different questionnaires could only be solved until a sound social presence theory has been developed.

## Conclusion

In sum, the idea of social presence is still illusive though it has been examined for decades. The construct itself proves difficult to define. Studies varied a lot in claiming what social presence is in their own studies. Vague definitions and unclear dimensions are also seen in previous studies. Moreover, the dynamic feature and multi-facet constitutes make it hard to measure. Technology-oriented instruments, and inadequate test validity and reliability also present challenges for developing a sound social presence measure. More works are required to revalidate the construct constitutes and instruments. A more rigorous framework is the basis of the development of future social presence research. More importantly, as the development of new communication tools never stops, researchers are called to investigate the dynamics of social presence in the new technology context, such as mobile environment and 3D virtual world.

## Conflict of Interests

The authors have not declared any conflict of interests.

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Full Length Research Paper

## Sixth graders and non-routine problems: Which strategies are decisive for success?

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**This study investigated the role of each strategy in explaining sixth graders' (12-13 years old students') non-routine problem solving success and to determine which strategies are more effective in discriminating between successful and unsuccessful students. Twelve non-routine problems were given to 123 pupils. Answers were scored between 0 and 10. Bottom and top segments of 27% were then determined based on total scores. All scripts of pupils in these segments were then re-scored with regard to strategy use. Multiple regression analysis showed that strategies explain 65% of the problem solving success. Order of importance of strategies are as follows: *make a drawing, look for a pattern, guess and check, make a systematic list, simplify the problem, and work backward*. According to discriminant analysis results, strategies which play a significant role in distinguishing top and bottom students are *look for a pattern, make a drawing, simplify the problem, guess and check and work backward, respectively*.**

**Key words:** Sixth graders, mathematics education, non-routine problems, non-routine problem solving, problem solving strategies.

### INTRODUCTION

Not only in the history of mathematics but also in mathematics teaching, problem-solving always plays an important role, since all creative mathematical work demands actions of problem-solving (Burchartz and Stein, 2002). Besides, mathematics education communities commonly agree that teaching problem solving means teaching non-routine problems as well as routine problems. Actually, a large body of literature about mathematical problem-solving shows that non-routine problems are the kind of problems which are most appropriate for developing mathematical problem-solving and reasoning skills, as well as development of the ability

to apply these skills to real-life situations (Cai, 2003; London, 2007). Although routine problems can be solved using methods familiar to students by replicating previously learned methods in a step-by-step fashion, non-routine problems are problems for which there is no predictable, well-rehearsed approach or pathway explicitly suggested by the task, task instructions, or worked-out examples (Woodward et al., 2012). Importantly, non-routine problems require reasoning and higher-order thinking skills and often go beyond procedural skills (Kolovou et al., 2009).

Non-routine problem solving strategies can be defined

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as procedures used to explore, analyze, and probe aspects of non-routine problems in an attempt to formulate pathways to a solution (Nancarrow, 2004). These strategies play a very important role in the mathematical process experienced by students while solving non-routine problems. Results of recent studies have provided evidence for the use of non-routine problem solving strategies as a means to enhance problem solving (Elia et al., 2009). In the literature, the most outstanding non-routine problem solving strategies are as follows: *Act it out, look for a pattern, make a systematic list, work backward, guess and check, make a drawing or diagram, write an equation or open sentence, simplify the problem, make a table, eliminate the possibilities, use logical reasoning, matrix logic, and estimation.* (Herr and Johnson, 2002; Altun et al., 2007; Leng, 2008; Posamentier and Krulik, 2008; Posamentier and Krulik, 2009; Fang et al., 2009).

According to Tiong et al. (2005), non-routine problem solving strategies do not guarantee solution, and have non-rigorous suggestions about what should be done. Besides, these strategies are not applicable to a certain type of question in a specific topic area. On the contrary, non-routine problem solving strategies are generally applicable through types of question and topic areas. This raises another important characteristic of non-routine problem solving strategies, that of *transferability*. The most important reason to learn non-routine problem solving strategies is that they can help individuals solve problems in unfamiliar topic areas and expand their point of view.

The terms “non-routine problem” and “problem” will be used interchangeably from this point. Additionally, the terms “strategies” and “problem solving success” will refer to “non-routine problem solving strategies” and “non-routine problem solving success”, respectively.

### ***A general overview of studies on non-routine problem solving***

Most research about non-routine problem solving is aimed at examining students' currently used skills and attitudes on this subject without any intervention (Hok-Wing and Bin, 2002; Muir and Beswick, 2005; Wong and Tiong, 2006; Wong, 2008; Muir et al., 2008; Elia et al., 2009; Salleh and Zakaria, 2009; Mabilangan et al., 2012). There are also some studies examining effects of an intervention on non-routine problem solving skills of students (Follmer, 2000; Ishida, 2002; Nancarrow, 2004; Johnson and Schmidt, 2006; Lee et al., 2014). Some research aims to reveal what problem solving abilities mathematically promising and/or low achieving students show in solving non-routine problems (Johnson and Schmidt, 2006; Budak, 2012). Gender related differences

on solving non-routine problems have been investigated in other studies (Salleh and Zakaria, 2009; Abedalaziz, 2011). Another group of studies is focused on the place of non-routine problems and strategies in mathematics textbooks and syllabi (Lianghuo and Yan, 2000, Kolovou et al., 2009; Marchis, 2012).

Grade levels of aforementioned studies vary from primary school to high school and their results can be summarized in five points. Firstly, many students consider that non-routine problems are more complicated and difficult than routine problems. Therefore these students may not initially believe that the non-routine problems are mathematical since they are not familiar with this kind of problem. Secondly, providing students with a framework for the use of strategies is beneficial and increased students' level of confidence. Third, mathematically promising students are more determined in solving non-routine problems and look for alternate ways if the one they tried does not work. However, the direct teaching of strategies to low achieving students makes them more comprehensive and positive about solving non-routine problems; Fourth, there are no significant differences between males and females with regard to ability and attitude to solve non-routine problems. Lastly, only a very small proportion of the problems included in the textbooks is non-routine. In some textbooks series these problems are completely absent.

### ***Related studies***

Some of the studies carried out with sixth graders will be explained more in-depth here as they are related with the current study: In his study, Ishida (2002) also used non-routine problems, and strategies examined by him were the same as this study. But distinctly from the present study, participants in Ishida (2002)'s study had been taught strategies explicitly since 2<sup>nd</sup> grade. In Ishida's study (2002)'s, students solved only two non-routine problems, usually in at least two ways, and they were asked which of their solution strategies for each question was better. Students generally selected a strategy as being better because it was efficient, and easy to use or to understand. Mathematical values such as generality were rare. Muir et al (2008) and Wong (2008) also elaborated on strategies selected by sixth graders to solve non-routine problems. However, the former focused on characteristics of behaviors associated with “novice” and “expert” problem solvers. Muir et al. (2008) asserted that these categories were not fully adequate and instead “naïve”, “routine” and “sophisticated” approaches to solving problems were identified. Wong (2008) made a comparison of strategies used between two parallel tests which were administered after a few months. The comparison showed that some pupils did not use similar

strategies to solve parallel problems. In studies by Ishida (2002), Muir et al. (2008) and Wong (2008), pupils' written solutions were analyzed according to strategies used. Although it was not carried out at sixth grade level, another investigation which is most related to the present study in respect to aim and statistics was done by Altun and Sezgin-Memnun (2008). It was carried out with mathematics teacher trainees that were given problem solving instruction. Pre, post, and retention tests were also conducted. Statistical analysis revealed that instruction increased the trainees' problem solving success. The most successful strategies were ranked as follows: *simplify the problem, look for a pattern, reasoning, make a drawing, make a systematic list, guess and check, and work backwards*. According to discriminant analysis results, *reasoning, work backwards, make a drawing, make a table and simplify the problem*, respectively had a big impact in separation of successful and unsuccessful participants. The analysis also confirmed that 80% of problem solving success could be explained by the strategies used.

### Research questions

Studies investigating the impact of each of above mentioned strategies on the success of students are really rare. Moreover, none of them are at sixth grade level. Therefore, this study investigates the role of each strategy in explaining success and in discriminating between successful and unsuccessful students at sixth grade level. Thus, research questions are as follows:

- i. What is the role of each non-routine problem solving strategy in explaining the non-routine problem solving success?
- ii. Which non-routine problem solving strategies are more effective in discriminating between successful and unsuccessful students at sixth grade level?

## METHOD

### Participants

One hundred and twenty three students in sixth grade participated in the study from a secondary school governed by MoNE (Ministry of National Education) in Bursa/Turkey. Age range at six grade level may be different in some countries, but sixth graders in Turkey are 12-13 years old as it is in most countries.

Sixth grade level was chosen because sixth graders were supposed to have adequate literacy to enable understanding of the questions and to be able to record their answers in written form. Participants had not had any special training on non-routine problem solving in their school life before the current study.

### Information about data collection instrument and procedure

To measure the problem-solving success of students, a paper and

pencil test comprising 12 non-routine open-ended problems (Problem Solving Test-PST) was constructed by the author. All problems in PST were chosen with regard to their appropriateness in terms of degree of challenge offered to the selected age group, and their potential to be answered using a variety of strategies both across the problems and for any given problem, like Muir et al. (2008) did in their studies. For example, problem numbered as six and eleven in the PST could be answered successfully through applying *make a diagram, look for a pattern and simplify the problem* strategies together.

The PST instrument was administered to participants by a PhD student who was enrolled in a program on mathematics education. PhD student was also a mathematics teacher and he conducted the PST to all his students. PST was presented to students in two sets since it was thought that 12 questions were too much for students to solve at once. There was one week between two structurally parallel sets. Students were given 90 minutes in total to complete the PST. But, if a student needed it, he/she could have extra time. Students were encouraged to write down all their thoughts while they were solving the problems. Problems in the PST were intended for pupils to make use of *make a systematic list, look for a pattern, work backward, simplify the problem, make a drawing, and guess and check* strategies (see Appendix). Previous studies, projects and books (Ishida, 2002; Altun et al., 2007; Posamentier and Krulik, 2008; Fang et al., 2009) dealing with strategies that can be learned and used at sixth grade level were taken into consideration during selection of strategies.

All students' answers to each problem in PST were scored between 0 and 10 by categorizing them under the titles of *correct, little mistakes stemming from calculation errors or inattentiveness, insufficient answers despite understanding the problem and taking the right action, wrong answers* and *no answer*. Every student got a success score between 0 and 120. The administrator of the PST had previously been trained in analyzing answers of students and non-routine problem solving. Answers were evaluated independently by the author and PhD student, and the given points were compared to each other. Nevertheless, when uncertainty arose, the author and the student discussed the solution and decided upon an agreed code. This process was similar to that used in Wong's (2008) study. The focus was on the correctness of the students' problem solving processes. Strategy usage was not taken into consideration at this point.

Based on scores for each question in the PST instrument, Cronbach's alpha was used to assess the reliability of the instrument. Generally, the lower limit for Cronbach's Alpha should be .70 (Robinson et al., 1991). The alpha coefficient was computed as .75 for the PST indicating acceptable reliability for the instrument.

To assess validity of the PST, confirmatory factor analysis with Varimax rotation was performed based on the same scores as used for the Cronbach alpha reliability. Before proceeding with factor analysis, it was necessary to assess the sampling adequacy. This was done using the Kaiser-Meyer-Olkin (KMO) and Bartlett's test for Sphericity. The level of significance of KMO and the Bartlett's test for Sphericity should be significant at the .05 confidence level (Hair et al., 1998). Table 1 shows that the results of the tests meet acceptable levels that permit proceeding with the factor analysis.

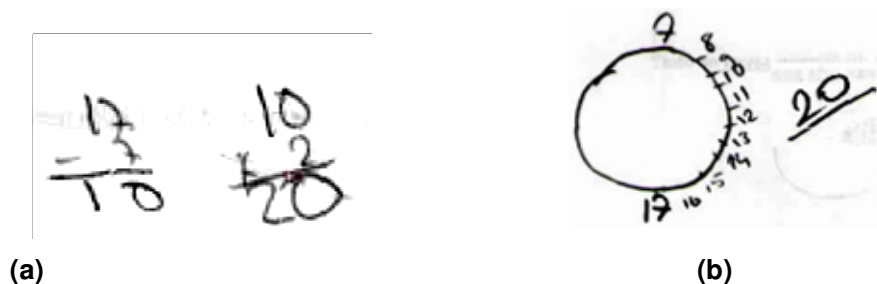
Factor analysis results suggested the existence of five factors. The eigenvalues showed that these factors explained 14.69, 12.83, 11.54, 10.74 and 10.26% of the variance of PST scores, respectively. Collectively these factors explained 60.06% of the variance. As seen from the rotated component matrix (Table 2), factor loading of almost each item is greater than .45. Thus, it can be said that problem solving success was properly measured by items of PST. In other words, the administered PST test was

**Table 1.** KMO and Bartlett's Test results.

Kaiser-Meyer-Olkin (KMO)		.50
Measure of Sampling Adequacy.		
Bartlett's Test of Sphericity	Approx. Chi-Square	152.56
	df	66
	Sig.	.000

**Table 2.** Rotated component matrix.

Item	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5
3	.85	-.03	.04	.01	-.02
7	.74	.02	.28	.00	-.26
4	.58	.05	.30	.11	.33
8	-.04	.66	-.03	-.06	-.10
9	.06	.64	.10	.21	-.09
10	-.14	.55	.54	.03	.01
6	.25	.53	-.40	-.09	.49
1	.14	-.01	.72	.00	.13
12	-.03	-.01	-.16	.81	.16
11	.13	.17	.38	.63	-.07
2	.20	.29	-.27	.33	-.64
5	-.01	-.07	.06	.25	.58

**Figure 1.** Ozan and Damla's answer to second question in PST.

validated.

To answer the research questions (except the scoring system explained above), all student scripts were evaluated with regard to strategy use again. Instead of scoring each question separately, usages of each strategies dealt with in this study were coded as 2 (correct and effective usage of strategy), 1 (incomplete usage of strategy), and 0 (no usage of strategy). So, every student had a point about usage of each strategy.

To explain scoring processes of problem solving success and strategy use thoroughly, some samples from students' answers to questions in PST will be reprinted here. As seen from Figure 1a, Ozan<sup>1</sup> did not prefer to use *make a drawing* strategy to answer the second question in PST (*Students in a class are standing in a*

*circle; they are evenly spaced and are numbered in order. The student with number 7 is standing directly across from the student with number 17. How many students are in the class?*). Instead, he wrote: "Firstly I found that there are 10 students on the half of the circle (including 7, except 17). Then I thought that the number of students on the other half of the circle must be the same. Therefore I multiplied the 10 by 2". Since Ozan's reasoning and answer were right, his problem solving success score for this question was 10 (Figure 1a). But Ozan did not get any score about use of *make a drawing* strategy from this question. Another student's answer to the same question is represented in Figure 1b. Damla<sup>1</sup> directly used *make a drawing* strategy. Filling half of the circle, Damla recognized that there are nine students between 7 and 17 (except them). And she concluded that there must be nine students on the other half as well. Lastly, Damla added 7 and 17, and she reached the solution.

<sup>1</sup> Pseudonym name

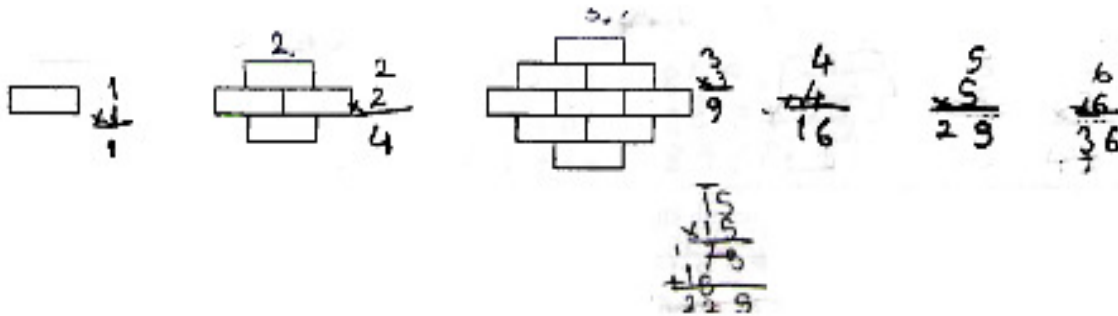


Figure 2. A student's answer to sixth question in PST.

Table 3. Multiple regression analysis results related to discussion of problem solving success.

Strategies	Mean	SD	B	Std error	$\beta$	t	p	Dual correlation
Constant			6.88	1.87		3.67	.00	
Make a systematic list	.82	.39	5.11	1.67	.17	3.05	.00	.11
Make a drawing	.49	.53	8.46	1.08	.44	7.81	.00	.41
Work backward	.11	.34	4.47	1.99	.13	2.25	.03	.30
Look for a pattern	.66	.59	8.45	1.51	.41	5.59	.00	.55
Simplify the problem	.37	.53	3.56	1.60	.17	2.23	.03	.52
Guess and check	.20	.46	6.12	1.48	.25	4.14	.00	.41

Damla's success score was 10, and she exhibited correct and effective usage of *make a drawing* strategy.

Sixth question in PST (*Each of following shapes consists of small rectangles like the first one. How many rectangles do you need to make fifteenth shape?* ) is required using a variety of strategies together. One of students, Ceren<sup>1</sup> successfully used *look for a pattern* and *simplify the problem* strategies to solve the problem (Figure 2). She first examined the numbers of rectangles in first three shape. Then Ceren realized that if she multiply the number of shape by itself, she can find the number of all rectangles in the shape. She got full success score from this question. Besides, her strategy scores on use of *look for a pattern* and *simplify the problem* strategies were 2.

To account for inter-coder agreement, Cohen kappa coefficient for inter rater agreement was calculated based on codes about strategy use and found to be .79. Based on these codes again, means and standard deviations about each strategy were then computed. To reveal how functional the strategies were in the problem solving success, multiple regression analysis was carried out by using strategy scores (independent variables) and total problem solving success scores (dependent variable) for each student.

In order to see which strategies were more useful in discriminating between successful and unsuccessful students, first bottom and top segments of 27% were determined according to the total success scores which the students achieved in the PST. The group at the bottom (low achievers) consisting of 27% of the students was composed of those who had got a score of 16 or lower, and the group at the top (high achievers) consisting of another 27% of the

students achieving higher than 27. There were 37 students in each of bottom and top groups. Discriminant analysis was carried later out based on the strategy and total success scores of students.

## RESULTS

With regard to the first research question, multiple regression analysis was used to determine each strategy's contribution to problem solving success. The results of the regression analysis are given in Table 3.

According to the dual correlations between the problem solving success and strategies, it can be seen that the highest correlation coefficients belong to the strategies of *look for a pattern* (.55), *simplify the problem* (.52), *guess and check* (.41) and *make a drawing* (.41). Correlation coefficients which belong to *work backward* and *make a systematic list* strategies (.30 and .11) indicate that there is a positive but weak relationship between each of these strategies and problem solving success. Generally speaking, there is a significant relationship between strategies and problem solving success ( $R = .80$ ,  $R^2 = .65$ ,  $p = .00$ ). Strategies used in this study as independent variables, explain almost 65% of problem solving success. According to the standardized regression

**Table 4.** Wilks' Lambda and F values of bottom and top groups in terms of success.

Strategies	Wilks' Lambda	F
Make a systematic list	.99	.09
Make a drawing	.77	21.40*
Work backward	.92	6.21*
Look for a pattern	.61	45.40*
Simplify the problem	.78	20.51*
Guess and check	.89	9.22*

\*Significant at .05 confidence level.

coefficients ( $\beta$ ), the order of relative importance of strategies in terms of their effects on the problem solving success is as follows: *make a drawing*, *look for a pattern*, *guess and check*, *make a systematic list*, *simplify the problem* and *work backward*. According to t-test results about the regression coefficients, it appears that all strategies had a statistically significant role in explaining problem solving success. The regression equation related to the success in problem solving is as follows: "problem solving = 6.88 + 8.46 *make a drawing* + 8.45 *looking for pattern* + 6.12 *guess and check* + 5.11 *make a systematic list* + 4.47 *work backward* + 3.56 *simplify the problem*.

According to the results of discriminant analysis (considering the low values of Wilks' Lambda and high value of F), strategies that play a significant role in distinguishing successful and unsuccessful students were *look for a pattern*, *make a drawing*, *simplify the problem*, *guess and check*, and *work backward* respectively (Table 4). The *make a systematic list* strategy did not have any significant contribution. With the help of the discriminant function, a classification with an accuracy rate of 86.5% was achieved.

## DISCUSSION

Non-routine problems, which are usually not specific to any mathematical topic, have no fixed procedure for solving, and require the use of one or more strategies to solve. Moreover, non-routine problems are especially challenging for many students, since these kind of problems require an integration of several cognitive processes such as accounting for all possibilities, visualizing relationships (Lee et al., 2014).

Regarding the findings about the research questions, the  $R^2$  value found through the multiple regression analysis demonstrates that in general, knowledge of strategies explains 65% of non-routine problem solving performance. Besides, 86.5% accuracy in classification according to discriminant analysis results suggests that

strategies have a dominant and decisive role in determining novice and expert problem solvers. Altun and Sezgin-Memnun (2008) achieved the similar results in this sense. However, the most important contribution of the present study is the detailed information on the role of each strategy. Even though almost all strategies had statistically significant roles, two strategies were conspicuous: *look for a pattern* and *make a drawing*. These two strategies had strong effects not only in explaining success, but also in discriminating high and low achieving students. *Simplify the problem*, *guess and check* had relatively weak roles. *Work backward* was the weakest strategy in explaining success and in discriminating high and low achievers. Neither high nor low achieving students could use this strategy successfully. In spite of its significant impact on success, *make a systematic list* did not have function to differentiate low and high achieving students. When this inefficiency of *make a systematic list* is combined with the high mean of it, it can be said that students in both achievement group coped with the problems requiring application of this strategy.

Determining importance order and distinctiveness of each strategy in terms of problem solving success may bring some important outcomes which can be used to arrange textbooks and learning environments. First, since each of six strategies sought in the current study has meaningful contribution to success, it can be concluded that all these strategies are feasible to work at sixth grade level. High potential of *look for a pattern* and *make a drawing* strategies might indicate that these strategies can be highlighted. However, other strategies should not be neglected. On the contrary, impotent strategies such as *work backward* should be given more time so that they can also explain the success and can be used effectively by all students.

Despite the fact that this study provides meaningful conclusions, further research is necessary. Firstly, using more different types of non-routine problems would provide more robust evidence for the findings of this study. Strategies which were not investigated in this study such as *logical reasoning* or *make a table* can be included in future studies. Maybe routine problems can also be involved to provide more detailed information about the general problem solving success of students. Besides, thinking processes of students were not analyzed in detail in the present study. Because this study was based on students' written answers and many students have difficulties in writing down their thinking processes. Complementary qualitative methods such as clinical interviews, observations and videotaping of pupils solving problems could be used to collect data about students' cognitive processes. In addition, examining students of different grades, age and school year level, mathematical abilities, and educational systems would be

more excellent analysis.

In summary, if a primary goal of instruction is to develop students' ability to think strategically so that they have a problem solving disposition including the confidence and willingness to take on new, unfamiliar and difficult tasks, non-routine problems should be developed from the first grades of elementary school. Teachers may benefit from non-routine problems that force students to apply what they have learned in a new way. Furthermore, teachers should increase the variety of strategies which they present to the students by considering grade level, and difficulty level of the strategy.

### Conflict of Interests

The author has not declared any conflict of interests.

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**Appendix**

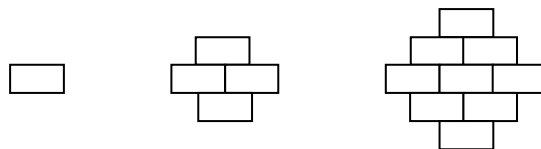
*Problem Solving Test (PST) Set 1*

- 1) How many three digit numbers can be formed from the digits 3, 5, and 7, if each digit can only be used once?
- 2) Students in a class are standing in a circle; they are evenly spaced and are numbered in order. The student with number 7 is standing directly across from the student with number 17. How many students are in the class?
- 3) A bus driver started to drive from the terminal and dropped one third of his passengers off at every bus stop he stopped by. Meanwhile, no passenger got on the bus. After stopping by 3 bus stops there were 8 remaining passengers on the bus. How many passengers got on the bus at the terminal?
- 4) Tolga's team entered a mathematics contest where teams of students compete by answering questions that are worth either 3 points or 5 points. No partial credit is given. Tolga's team scored 44 points on 12 questions. How many 5 point questions did the team answer correctly?
- 5) What is the sum of numbers in 29<sup>th</sup> row of the following pattern?

```

      1
     3 5
    7 9 11
   13 15 17 19
  21 23 25 27 29
 31 33 35 37 39 41
    
```

- 6) Each of following shapes consists of small rectangles like the first one. How many rectangles do you need to make fifteenth shape?"



*Problem Solving Test (PST) Set 2*

- 7) Four people share 15 cookies. Providing that each person gets more cookies than the previous person (except the first one), in how many different ways can they share?
- 8) In a horse race, horses are represented with the first letters of their name. Could you find their order of finishing the race by following the clues given below?
  - F is 7 seconds ahead of C.
  - P is 6 seconds behind of B.
  - D is 8 seconds behind of B
  - C is 2 seconds ahead of P.
- 9) Ali, Veli and Can gain 300 Turkish liras in total after working at a job together. They do not have the same amount of money, so they decide to share the money fairly. First, Ali gives half of his money to Veli and Can equally. And then Veli gives 10 Turkish liras to Ali. Now each of them has the same amount of money. Find the amount of money each boy has at the beginning.
- 10) In a yard were chickens and rabbits. They had 49 heads and 122 legs. How many chickens and how many rabbits were in the yard?
- 11) Find the following pattern and predict the next four terms. Then write a sentence explaining your pattern.  
2, 3, 5, 9, 17, 33,   ,   ,   ,
- 12)

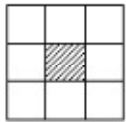


Figure 1

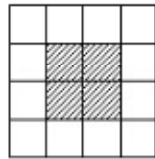


Figure 2

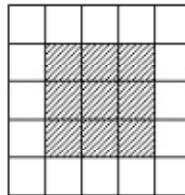


Figure 3

- a) How many small shaded squares are there in the seventh figure? Describe how you got your answer.  
b) How many small unshaded squares are there in the seventh figure? Explain how you found your answer.

*Full Length Research Paper*

# Examining leisure boredom in high school students in Turkey

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**High school students who do not have leisure skills are more likely to be bored during leisure time. The aim of the study is to examine leisure boredom of high school students based on some variables (gender and income), and to investigate the relationship between leisure boredom, the presence/absence of anti-social behavior and the frequency at which high school students participate in recreational activities. This study utilized survey research methods and consisted of a convenience sample of 497 students who enrolled in state high schools in Ordu City- Altinordu township, Turkey. Their ages range from 15 to 18 years. The students completed the Leisure Boredom Scale (LBS) and demographic information form. In the result, it was found that there was no significant difference between ( $p>0.05$ ) leisure boredom subscales and gender. However, a significant difference ( $p<0.05$ ) was seen between gender and exhibiting anti-social behavior. There was also a significant difference between the perfection subscale of LBS and income. Furthermore, no significant relations were detected between the students' leisure boredom levels and the physical, social, cultural-artistic, touristic and miscellaneous activities they performed ( $p>0.05$ ).**

**Key words:** Leisure, adolescent, leisure boredom, high school students.

## INTRODUCTION

Boredom has been conceptualized as a state of under-stimulation, under-arousal, lack of momentum, or a lack of psychological involvement associated with dissatisfaction in the task situation (Brisset and Snow, 1993; Larson and Richards, 1991). Iso-Ahola and Weissinger (1990) defined leisure boredom as: 'a negative mood or state of mind that reflects a mismatch between optimal experiences that are perceptually available to an individual' (p.4). Feelings of leisure boredom can be created by meaningless leisure or multiple constraints. In other words, lack of leisure skills combined with restricted

leisure opportunities is likely to cause feelings of boredom in leisure. And this may result in delinquency and drug use during free time (Iso-Ahola and Weissinger, 1987). Perceptions of leisure as boredom are associated with negative effects, and can be manifested as beliefs that the available leisure experiences are not sufficiently frequent, involving, exciting, varied or novel (Iso-Ahola and Weissinger, 1990). Leisure boredom is a likely consequence of conflicting perceptions of having too much time available with too little to do (Hill and Perkins, 1985) or having an abundance of time is central to

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boredom (Philips, 1993). Recently, Drucker mentioned that individuals living a multidimensional life have several advantages, including a more fulfilling life, developing and strengthening the sense of purpose and meaning to life, and preventing boredom (Bruce, 2010).

### **Leisure, leisure activities, leisure boredom and adolescents**

Free time and leisure are related yet quite distinct concepts that are often used interchangeably. Free time occupies a broader domain than leisure and refers to the time that is free of obligatory activities. It is the time when adolescents are not engaged in school-work, homework, work or chores. Relative to working adults, adolescents have more free time available for leisure, although this may vary depending on the social-cultural context (Wegner et al., 2011). Leisure can be regarded as being 'nested' within the domain of free time, as leisure activities usually occur during free time. Leisure has been defined as the purposeful and intentional use of free time to engage in self-selected activities that are meaningful and intrinsically motivating to the individual in that they are enjoyable, fun, refreshing and pleasurable (Wegner et al., 2008). Leisure is an occupation that enables adolescents to experience freedom, intrinsic motivation and positive affect (Kleiber et al., 1993).

Researchers have indicated that participating in leisure activities has significant associations with various physical and psychological conditions (Kim and Choi, 2006; Kim, 2007; Park, 2007). It is indicated that the more time adolescents spend in engaging in leisure activities, the more they feel comfortable and satisfied (Kim, 2009). Many researchers have further suggested that leisure activities are an important factor in coping with stress (Iso-Ahola and Park, 1996; Iwasaki, 2001; Iwasaki and Mannell, 2000; Lee and Kim, 2005). Lee and Yi (2006) indicated that a physical leisure activity, in particular, has a relatively strong positive effect on stress management behaviors.

As the authors reported, leisure boredom frequently occurs among youths. Adolescence is a time of transformation in many areas of an individual's life and also a time for experimentation with rules, roles, and relationships. Adolescents purposely seek out risks and such behaviors that permit them to; (1) deal with anxiety, frustration and failure, (2) be admitted into peer groups and identify with a youth subculture; (3) confirm personal identity; (4) express opposition to adult authority and conventional society; (4) take control of their lives; and (6) affirm maturity and mark a development transition into youth adulthood (Jessor and Jessor, 1977). The first stage is early adolescence, which covers the period of

11-14 years. The second is middle adolescence, from 15-18 years, and the third is late adolescence, from 18-21 years. In the midst of these rapid physical, emotional, and social changes, youths begin to question adult standards and the need for parental guidance (Okhakhume, 2014). Those adolescents who experienced more positive experiences in structured activities, such as sports and hobbies, were less bored than when watching television or engaging in other unstructured activities. More recent research has found that adolescents reported high levels of boredom not only in school, but also out of school, and importantly in leisure situations (Caldwell et al., 1992).

### **Risky behaviors, leisure boredom, and high school students**

Adolescence is a critical period for the development of healthy behavior and lifestyles (Barnes and Farrell, 2006). Although there are many behaviors that might be considered questionable, the Centers for Disease Control and Prevention (CDC) has identified six health risk behaviors as being particularly salient for the development of optimal health. These six anti-social behaviors include: (a) behavior that contributes to unintentional injuries and violence; (b) tobacco use; (c) alcohol and other drug use; (d) sexual behavior that contributes to unintended pregnancy and sexually transmitted diseases; (e) unhealthy dietary behavior; and (f) physical inactivity (CDC, 2008). These behaviors are often established in early childhood and may continue and intensify through the adolescent period. Studies showed that some social problems and various forms of delinquency such as media violence, internet addiction, and alcohol or drug abuse result from boredom during free time (Newberry and Duncan, 2001; Fedorov, 2005). For instance, adolescents who smoke are more bored and less challenged than non-smokers (Orcutt, 1984). Besides, adolescent smokers cite relaxation and relief from boredom as reasons for smoking (Mattick and Baillie, 1992), and also adolescents' participation in crime may be correlated with leisure boredom (Mukherjee and Dragger, 1990).

Since most studies on adolescent leisure have been conducted in the United States, those findings may not be directly applicable to Turkey. While some of the studies reviewed here sampled students, many involved university students and adult populations whose leisure experiences may not be comparable to those of adolescent populations. The narrow range of leisure activities examined by many studies may limit the comparability of their findings. Also, many studies have focused on leisure activities rather than on the individuals who participate in them and leisure attitudes and satisfaction, etc.

The present study aims to ameliorate these shortcomings by incorporating the widest range of adolescents' leisure pursuits possible. Moreover, it adds to the research knowledge base by indicating anti-social behavior, leisure choices, and some demographic features to examine leisure boredom.

This study examines the boredom of high school students during leisure and investigates the relationship between leisure boredom and the presence/absence of anti-social behavior and the frequency at which high school students participate in recreational activities. Four research questions emerged from the research literature as areas of investigation for this study:

1. Is there a gender difference concerning leisure boredom?
2. Is there a gender difference relating to anti-social behavior or not?
3. Is there an income difference concerning leisure boredom?
4. What are the relative contributions of leisure boredom to recreational activities (physical, social, cultural-artistic and touristic activities) participation frequency (never, sometimes, and often)?

## METHODOLOGY

### Sample

According to Ordu Provincial Directorate for National Education's Statistics, the study population includes a total of 3928 students (OPDNE, 2014). This study utilized survey research methods and consisted of a convenience sample of 497 students attending state high schools in Ordu City- Altinordu (city center) township, Turkey. Their ages range from 15 to 18 years (Table 1). The sample size was calculated with  $n = Nt^2pq / (d^2 (N-1) + t^2pq)$  formula (Bas, 2008) and 95% of confidential interval,  $d: 0.05$ ;  $t: 1.96$ . This is based on the assumption that in all conditions the survey hypothesis will occur within the equal probability; both  $p$  and  $q$  values are taken as 0.5 for  $N=3928$ . The final result is  $n=350$ . The self-administered questionnaire required approximately 15 min to complete.

### Measurement

The survey instrument consisted of two sections. The first section consisted of demographic questions and leisure questions (with whom they participate in leisure activities, where they participate in leisure activities, which recreational activities they choose and leisure participation frequencies). One more question was added to indicate whether they have anti-social behavior or not. The second section consisted of the Leisure Boredom Scale, and it was used to assess perceptions of boredom in leisure (LBS: Iso-Ahola and Weissinger, 1990). It is a 16 item instrument scored on a 1 to 5 scale; higher numbers indicate higher levels of boredom. It asks people to indicate how they feel about their leisure time (i.e., non-work hours). Iso-Ahola and Weissinger (1990) reported alpha reliability on the total scale ranging from .85 to .88. LBS was added to Turkish literature in 2014 for high school students after the validity and reliability of the studies were conducted by Siyez and

**Table 1.** Demographic characteristics of study participants (N=497).

		N	%
Gender	Male	236	47.5
	Female	261	52.5
Age	15	88	17.7
	16	96	19.3
	17	228	45.9
	18	85	17.1
	Bad	15	3
Perceived income	Medium	216	43.5
	Good	266	53.5
Having anti-social behavior Or not	Yes	131	26.4
	No	366	73.6

Soylu. It includes two subscales and a total of 12 items. The first subscale is 'perfection' which measures students' leisure time arrangement and management skills. The second subscale is 'motivation' and it measures students' skills in taking leisure time effectively. Overall alpha reliability for the LBS was .87. For this study, the internal consistency coefficient was .88 and the significance level was  $p < .01$ . LBS is a five-point Likert-type scale, whose highest point is 12 and lowest point, 80.

### Analysis of data

In the analysis of the data, the SPSS package program was used. For the demographic features of the research group, frequency and percentage calculations were made. The distributions of the variables based on the groups were examined, and the normality of the distributions was evaluated. It was concluded that their distribution pointed out non-parametric features. K-S Normality Test result was significant for gender ( $D(261) = 0.075$ ,  $p=0.001$ ;  $D(236) = 0.121$ ,  $p=0.000$ ). K-S Normality Test result was significant for income levels (low, medium, high), respectively ( $D(15) = 0.226$ ,  $p=0.038$ ;  $D(216) = 0.099$ ,  $p=0.000$ ;  $D(266) = 0.113$ ,  $p=0.000$ ).

The Mann-Whitney-U Test was calculated to compare the mean scores for the variables studied (gender and leisure boredom). The Kruskal-Wallis- H Test was used to compare the mean scores for income (low-medium-high) and leisure boredom. The Chi-square test was applied to detect if a significant difference existed between students' gender and their tendency to exhibit anti-social behavior. The Spearman-Brown correlation coefficient was used to detect if a significant relationship existed between frequency in participating in recreational activities and leisure boredom level. The statistical significance level was accepted as  $p < 0.05$ .

## RESULTS

The results of the study are presented in the order of the research question.

**Research Question 1:** *Is there a gender difference concerning leisure boredom?*

The Mann-Whitney-U test was employed to detect if a

**Table 2.** The Mann Whitney-U test results for leisure boredom subscales concerning gender.

	Gender	N	Mean Rank	Sum of Ranks	U	P
Perfection	Female	261	256,54	66.956,50	28.830,500	0,217
	Male	236	240,66	56.796,50		
	Total	497				
Motivation	Female	261	255,25	66.620,50	29.166,500	0,217
	Male	236	242,09	57.132,50		
	Total	497				

**Table 3.** The Chi-square test showing the relationship between students' gender and their tendency to exhibit anti-social behavior.

Do you think you exhibit behavior that could be identified as anti-social?			Gender		Total
			Female	Male	
Total	Yes	n	55	76	131
		%	42,0%	58,0%	100 %
	No	n	206	160	366
		%	56,3%	43,7%	100,0%
		n	261	236	497
		%	52,5%	47,5%	100 %

$\chi^2 = 7,910$   $p=0,005$ .

significant difference existed between gender and leisure boredom subscales (Table 2).

The findings revealed that female students exhibited greater levels of leisure than male students; however, there was no significant difference between gender and perfection and motivation subscales of LBS ( $p>0.05$ ).

**Research Question 2:** *Is there a gender difference relating to anti-social behavior or not?*

As demonstrated in Table 3, a significant difference existed between students' gender and the tendency of exhibiting anti-social behavior ( $p<0.05$ ). Of all the students, 42% who reported exhibiting anti-social behavior are females; 58% students who reported exhibiting negative behavior are males. Of all the students, 56.3% students who reported not exhibiting negative behavior are females; 43.7% students who reported not exhibiting anti-social behavior are males. 26.3% of all students reported exhibiting anti-social behavior, which could be termed as negative.

**Research Question 3:** *Is there an income difference concerning leisure boredom?*

According to the Kruskal- Wallis-H test results (Table 4),

there is a statistically significant difference between the perfection subscale and medium and high-income levels. The leisure boredom scores are lower in the high-income level than the medium-income level.

**Research Question 4:** *What are the relative contributions of leisure boredom to recreational activities (physical, social, cultural-artistic and touristic activities) participation frequency (never, sometimes, and often)?*

Table 5 shows that there are no significant relations between leisure boredom levels and physical activities ( $p>0.05$ ). Although all coefficients are positive, near-zero values of correlations show that no significant relations exist between leisure boredom level and social activities. Also, no significant relations could be detected between leisure boredom level and cultural-artistic activities ( $p>0.05$ ). Except for the "I go to exhibitions-charity sales" item, the rest of the items provided negative coefficients. A negative significant relation could be identified between leisure boredom levels and spending long term holidays outside the city ( $p<0.01$ ). In other words, there is an opposite relation. A low-level positive-way relation could be measured between leisure boredom levels and a tendency to do nothing ( $p<0.01$ ). In other words, as boredom levels increased the tendency to do nothing

**Table 4.** The Kruskal-Wallis-H test results for leisure boredom and income.

		<b>N</b>	<b>Mean</b>	<b>Std. Deviation</b>	<b>Kruskal Walls Test</b>	<b>p</b>	<b>Significant difference</b>
Perfection	low	15	2,53	0,95	9,156	0,010*	Medium and high
	medium	216	2,79	0,68			
	high	266	2,63	0,68			
Motivation	low	15	2,69	0,97	5,686	0,058	No difference
	medium	216	3,17	0,65			
	high	266	3,07	0,67			

**Table 5.** Spearman-Brown correlation for frequency in participating in recreational activities and leisure time boredom level.

<b>Physical activities</b>	<b>Leisure boredom</b>
1. I walk for recreation.	0,017
2. I jog.	0,065
3. I participate in fitness activities (aerobics, yoga et al.)	0,064
4. I participate in far Eastern sports.	-0,001
5. I lift weights.	-0,037
6. I play racket sports (tennis, table tennis, badminton et al.)	0,028
7. I play ball sports (football, basketball, volleyball et al.)	-0,040
8. I participate in outdoor sports (climbing, trekking, mountaineering et al.)	0,053
9. I participate in activities such as fishing, shooting, horse-riding.	-0,028
<b>Social Activities</b>	<b>Leisure Boredom</b>
1. I visit relatives/friends.	0,047
2. I join courses.	0,085
3. I participate in foundation/association events.	0,015
4. I eat out.	0,023
5. I have picnics.	0,033
<b>Cultural-Artistic Activities</b>	
1. I read publications such as books, newspapers, journals.	-0,001
2. I go to the cinema.	-0,015
3. I go to concerts.	-0,056
4. I go to the theater.	-0,086
5. I go to exhibitions-charity sales	0,047
6. I visit museums.	-0,001
<b>Touristic Activities</b>	
1. I visit tourist attractions outside the city.	0,003
2. I visit tourist attractions outside the city for recreation.	-0,089
3. I spend my long term holidays outside the city.	-0,124(**)
<b>Miscellaneous Activities</b>	
1. I watch TV-Videos.	0,024
2. I listen to music (radio, cassette, CD et al.)	0,045
3. I play computer games at home.	0,036
4. I do gardening.	0,077
5. I go shopping.	-0,009
6. I go to cafeteria-club.	-0,039
7. I play computer games at an internet café.	0,060
8. I do nothing.	0,163(**)

increased.

## DISCUSSION

In the present study, no significant difference was detected between the leisure boredom subscales and gender among the high school students; however, it was also demonstrated that female students reported higher levels of leisure boredom than male students. These findings may be explained by the differences in the type of activities that males and females participate in and the availability of gender based facilities in their city. The findings of no significant differences between leisure boredom and gender support previous research by Weissinger et al. (1992), Weissinger (1995) and Hickerson et al. (2007). Especially during the developmental adolescent period, schools and local governments and other institutions have to provide leisure centers (e.g. sports centers) for young people. There are no sports centers or any cultural services in the state high schools of Ordu City, and also public leisure centers are not designed for adolescents (Ordu Municipality, 2015; OPDNE, 2014). Therefore, students may not be aware of the leisure concept, and may not manage their leisure. In a study undertaken with Canadian high school students, Shaw et al. (1996) showed that female students felt greater pressure from friends to participate in activities that they really did not want to compared to the pressure experienced by males. Females, in comparison to males, were also more likely to please their parents or to satisfy parental demands when participating in free time activities. According to the study of Patterson et al. (2000), rural female students were higher in leisure boredom than rural males compared to urban males and females, who did not differ significantly. Rural communities offered few recreation facilities to cater to the interests of young women. Henderson et al. (1999) found significant gender differences existed between the participation of men and women in leisure activities. For women, participation may be more social whereas men may prefer more competitive activities.

On the other hand, a significant difference was mentioned between gender and exhibiting anti-social behavior. Male students exhibit more anti-social behavior than female students. The most frequently reported negative behaviors are 'tobacco/hookah smoking, alcohol consumption, and telephone/internet addiction'. This finding draws a parallel with relevant studies conducted in different countries. There was a significant difference between the amount of alcohol reportedly consumed by young males and females. Males consumed more alcohol per week than females, with 30.5% of males consuming more than ten alcoholic drinks per week, compared to

13.6% of females. For both groups, the recently released threshold for heavy drinking by the National Institute of Alcohol Abuse placed them in the high-risk category for adverse health events (Patterson, 2000). Furthermore, a Danish study found that men were more likely than women to drink alcohol during leisure activities: 11.5 versus 2.5%, respectively (Gronkjaer et al., 2010). Participation in recreational leisure activities is also believed to be a positive alternative to substance abuse among young people, which is why several prevention programmes have been designed to engage the young in such activities (Munro, 2000; Smothers and Bertolucci, 2001). However, certain leisure activities within certain social networks and context can affect behaviors in a negative way (e. g. in terms of smoking and drinking habits) (Kuntsche et al., 2004).

This present study found that there is a significant difference between the perfection subscale and medium and high-income levels. Leisure boredom scores are lower in high-income levels than in medium income levels. In other words, income may be important for managing and arranging leisure time and avoiding leisure boredom for high school students. This result is parallel to previous studies. Economic factors (e. g. cost of accessing facilities) can be the constraint for leisure as mentioned by many researchers (Higgins et al., 1994; Pittman 1994; Robinson and Godbey 1997). Bone et al. (2003) investigated the needs of 108 young people aged between 12 and 18 years. The young people interviewed reported experiencing a deep sense of boredom, alienation and marginalization that rendered them vulnerable to some personal and social difficulties. One 17-year-old respondent stated, "There's not much to do....everything requires money....it's a boring place..." (Bone et al., 2003, p.2.). This shows that economic factors can affect leisure boredom levels.

In the present research, no significant relations were detected between students' leisure boredom levels and the physical, social, cultural-artistic, touristic and miscellaneous activities that they performed. This result is surprising. It has been repeatedly shown that participation in leisure activities, such as social, cultural and physical is associated with an overall improvement in physical health, psychological well-being, quality of life and survival and reduction of leisure boredom (Wilkinson et al., 2007; Zambon et al., 2010; Pressman et al., 2009; Hickerson et al., 2007). Besides, responding appropriately to the recreational needs of adolescents is important because the patterns and habits formed during this age are the blueprints for lifelong attitudes and behavior. However, the present study shows us that students do not know the concept and benefits of leisure, so they cannot develop their leisure skills and manage or arrange their leisure time. This result also supports the



idea that there is a relation between leisure boredom level and doing nothing. For example, a survey of students by Shaikh and Deschamps (2006) indicated that most students believed that they did not have sound health because they did not use their time to do anything to promote their health. Students frequently suffer from not being able to manage their time and routine.

It is important to state that leisure awareness in Turkish society may not be as developed as in Western societies, and Turkish society is undergoing a rapid social change from being a traditional and rural society to an increasingly urbanized society. Therefore, high school programs concerned with students' life and recreation need to offer a wide range of programs and activities that cater to males and females of all levels of education in active competitive team sports, active individual sports and passive leisure to meet different leisure aspirations. By providing a wide array of programs, participants will be more likely to find activities that reduce the opportunity for leisure boredom and reduce the ratios of exhibiting anti-social behavior. In addition, by being aware of activity differences based on gender, providers will be able to develop programs that meet the leisure needs of both males and females.

### Conflict of Interests

The author(s) have not declared any conflict of interests.

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*Full Length Research Paper*

# Examination of the PISA 2009 reading skills and information and communication technology (ICT) use skills of Turkish students

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**The aim of this paper is to determine relation between PISA Reading Skills and ICT use skills of Turkish students. In this study are four variables such as joy/like Reading, use of Libraries, Online Reading and Plausible value in reading which are dealt with as indications of reading skills. It constitutes six variables such as attitude towards computers, ICT internet/entertainment use, ICT for school related tasks, ICT availability at home, ICT availability at school, use of ICT at school. They are dealt with as indications of ICT use. Canonical correlation analysis is used to determine the relation between reading skills and ICT use skills. A high level significant relationship is found between 2009 PISA Reading skills and ICT use skills of Turkish students.**

**Key words:** PISA 2009 reading skills, communication technology use skills, canonical correlation.

## INTRODUCTION

Education is definitely a systematic process in which permanent patterns of behavior have been created in individuals. As for teaching, it is total sum of processes practiced for carrying out learning and development of behaviors which are desired in individual (Özçelik, 1998). Thereby, such terms as teaching, education, teacher, learning and student play a significant role in educational surveys. According to Morgan (2004), terms of learning is defined as continuing change which exists as a result of review or experience. As for term of teaching, it can be thought as learning activities of an individual.

Education system is not a static structure. Thereby, learning- teaching processes in education show various changes in accordance with times. In fact, many more terms such as e-learning, e-education, computer-assisted

education, individualized tests, smart boards, education technologies, information communication technologies have come to enunciate frequently for last 20 years (Aşkar, 1992; Güngör and Aşkar, 2004; Ziya et al., 2010). Especially, an increase in computer use in daily life has also increased use of computer in education. However, it is observed that Turkey falls behind regards to literacy of the information communication technologies use in education compared to developed countries and countries which are members of OECD (Çetin, 2011). In his study, Aşkar (1992) stated the purpose of information communication use in education as follows: 1-Keeping students informed on computer technologies and use it as an instrument 2- Supporting learning-teaching.

Using information and communication technologies has

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become an integral part of everyday life. It is possible to define information and communication technologies as audiovisual and written tools used for generation and transmission of knowledge. Tools of information and communication technologies are being used in several fields such as health, law, art, and education. Particularly in educational settings, information and communication technologies have become an indispensable tool in developing knowledge and skills of students, in other words, as part of teaching and learning. As tools of information and communication technologies have become a part of learning, the impact of such tools on student's performance is extremely important for pedagogues, because today, it is one of the objectives of education to develop children's thinking skills in reading, mathematics and science, role of information and communication systems in attaining these objectives is undeniable. Particularly distance education systems have increased the use of information and communication technologies.

Program for International Student Assessment (PISA) is a screening survey conducted for evaluation of information and skills that group of 15 age students have acquired by Organization for Economic Cooperation and Development (OECD) every three years (OECD, 2012). PISA Project does not aim what degree group of 15 age students who continue formal education following compulsory education have taught subjects (mathematic, sciences and reading skills) within education program but aims at measuring information and skill using abilities in certain circumstances they encounter in today's information society (OECD, 2012). Within this scope, student and school questionnaires for measuring the use of information communication technologies have been carried out in PISA. New questions have been added to the surveys with regard to how students around the age 15 use new technologies; and how they use new technologies for internet connection and entertainment.

Focal assessment framework of PISA implemented in 2009 was on reading skills of students. The assessment framework is changed to mathematics, science and reading in turns in every three years. The concept of literacy (reading skills) used in PISA in 2009 was defined as competence of students in using knowledge and skills, analyzing, making logical conclusions, and engaging in effective communication in interpreting and solving the problems they encounter in various circumstances in the domain of the basic topic (PISA, 2009; National Preliminary Report, 2010). Especially, researches carried out by Program for International Student Assessment-PISA at international level have also provided striking data in terms of many country.

## LITERATURE REVIEW

Research shows that even though students and teachers

in Turkey do not much skilled in terms of using information and communication technologies, it is remarkable that they have positive attitudes and opinions towards using information and communication technologies (Cüre and Özdener, 2008; Yavuz and Çoşkun, 2008; Kayaduman et al., 2011; Ayvacı et al., 2014).

It is possible to see lots of research by which the effects of presence and usage frequency of information and communication technologies have on harmony with life, success, and attitudes are studied. For instance, it is seen that usage of information and communication technologies makes a significant difference in competence of students in science and mathematics (Balım et al., 2009). In addition, it is found by Acar (2012) on the data of Turkey that the variable of using computer technologies had a significant negative impact on 2009 PISA fields of reading, mathematics, and science.

In the research about results of PISA 2003, Aşkar and Olkun (2005) have emphasized that an access to computer at schools is low in Turkey compared to countries of OECD and problem solving skills of students who have an access to computer at school and at home are higher than students who have not an access to computer. Gürsakal (2012) emphasized in her study that periods of computer use by students at home and in school, their strategies of study, and education levels of their parents are predictive variables in reading, science and mathematics performance of students. According to study conducted by Ziya et al. (2010) it is stated that students' self confidence on processing which require good command of computer knowledge, use of word processing and electronic spreadsheets programs and internet use have an negative effect on mathematic success level. Güzeller (2011) stated that self-sufficiency belief of Turkish students towards computer who have participated in PISA 2009 project shows no difference in accordance with sex, but there is a significant difference on attitudes relevant to computer according to sex and this difference is not significant in practice.

Delen and Bulut (2011) found that Turkish students' frequency of using information and communication technologies at home and school is a strong predictor of their performance in science and mathematics according to PISA 2009 data. Gümüş and Atalmış (2001) emphasized that computer use for learning purposes has a negative effect while computer use for entertainment purposes has a positive effect on reading performance according to PISA 2006 data of Turkey. It is observed in PISA 2000 data that Canadian students who have a high performance of reading have a correlation between the use of internet and computer at home. However, a negative correlation is observed between the variable computer use in library and reading performance of Canadian students (PISA Canada). The study conducted by Biagi and Loi (2012) on the correlation between ICT variable and PISA performance in the data of 23

countries participating in 2009 PISA offers information of universal value. That is the results of the estimates presented in this report point to a generalized negative correlation between the use of ICT (in terms of either intensity or deviations from the mean) and PISA test scores.

It is also possible to see the effects of several variables such as demographic, cultural, socioeconomic ones on science, mathematics and reading performance of students. It is remarkable that studies of Shelley and Yıldırım (2013), in particular, reveal significant predictors of mathematics and science performance variables on reading performance of students. Therefore, it is considered that reading skills have important effects on the skills of science and mathematics, and the skills of ICT use have important effects on reading skills, because the use of the tools of information and communication technologies in communication among people in everyday life. Communication is essentially a part of a process that involves comprehension, expression or transmission of a piece of information, and solving problems. Communication is a skill and superior quality of this skill will certainly facilitate learning processes.

### Aim of this study

Aim of this study is to determine relation between PISA Reading Skills and ICT use skills of Turkish students. Frequency of similar studies in literature makes a significant contribute to the education policies of countries in interpretation of PISA results.

### METHOD

#### The population and the sample

The population of this study constitutes group of 15 age students receiving an education in Turkey. As for the sample of this study, it constitutes 4996 students determined with random method by PISA international center from total sum of 170 schools by stratification of 56 cities and school types from 12 statistical region units (Ministry of Education [MEB], 2011). Of these students, 48.94% (n=2445) are female, 51.06% are male (n=2551), and 98% study in state schools. The majority, 67.9%, of students are in the 10th grade (n=3393).

#### Data collection

In this study, there is no data collection tool. Data of this study have been acquired from 2009 PISA student questionnaires, ICT for the student questionnaires and official web page of PISA. These are the tools for the study.

#### Data analysis

In data set of student questionnaire, ten variables such as attitude towards computers, ICT internet/entertainment use, ICT for school

related tasks, ICT availability at home, ICT availability at school, Use of ICT at school, Joy/Like Reading, Use of Libraries, Online Reading and Plausible value in reading have been discussed. Points of items for such variables were not summed up as a total point. On the contrary, predictor points related to variables were taken directly from the data file of PISA. When missing values in variables have been extracted from the data set, processing continues from 4540 students.

Canonical correlation analysis is used to determine the relation between reading skills and ICT use skills. Canonical correlation is a technique used in determining the relation between two variables set. Canonic (Kalaycı, 2006:238). In other words, it examines the relation between linear combinations of variables belonging to one set and linear combinations of variables from other set (Tatlıdil, 1992).

The first set in this study are 4 variables such as joy/like Reading, use of Libraries, Online Reading and Plausible value in reading which are dealt with as indications of reading skills. As for the second set, it constitutes 6 variables such as attitude towards computers, ICT internet/entertainment use, ICT for school related tasks, ICT availability at home, ICT availability at school, Use of ICT at school which is dealt with as indications of ICT use.

*Set 1 ( Reading Skills=V):* Joy/Like Reading  
Use of Libraries  
Online Reading  
Plausible value in Reading

*Set 2 (ICT use skills= U):* Attitude towards computers  
ICT internet/entertainment use  
ICT for school related tasks  
ICT availability at home  
ICT availability at school  
Use of ICT at school

### FINDINGS

The correlations between the variables of computer-related attitude, internet use, ICT use for tasks assigned at school, availability of ICT at home, availability of ICT at school, and correlations among the use of ICT at school, which are considered the indication of the skills of Turkish students of using ICT in PISA 2009, are shown in Table 1.

According to Table 2, there is a positive, medium level, significant relationship between skills of ICT internet/entertainment use and use of ICT for school related tasks. ( $r=0,627$   $p<0.01$ ). In other words, as the use of internet increases, level of ICT use in duties at school also increases or as the use of internet decreases, level of ICT use in duties at school also decreases. Regarding this conclusion, it can be stated that students' perceiving information communication technologies as a joy results in that they perceive computer technologies at school in a similar way. It is notable that there is no relationship between students' ICT availability at home and use of ICT at school. ( $r=0.024$   $p>0.05$ ). Another result can be stated in a way that there is a relationship close to zero between variables of attitude towards computers and ICT availability at school and Use of ICT at school. In other words, ICT availability at school and level of use can not

**Table 1.** Correlations of variables one another relevant to ICT use skills.

	Attitude towards computers	ICT internet/entertainment use	ICT for school related tasks	ICT availability at home	ICT availability at school	Use of ICT at school
Attitude towards computers	1					
ICT internet/entertainment use	.270(**)	1				
ICT for school related tasks	.150(**)	.627(**)	1			
ICT availability at home	.266(**)	.625(**)	.455(**)	1		
ICT availability at school	.070(**)	.130(**)	.164(**)	.204(**)	1	
Use of ICT at school	-0.012	.142(**)	.289(**)	0.024	.349(**)	1

\*\*p<0.01.

**Table 2.** The correlations of variables regarding PISA 2009 reading skills.

	Joy/Like Reading	Use of Libraries	Online Reading	Plausible value in reading
Joy/Like Reading	1			
Use of Libraries	.169(**)	1		
Online Reading	-.068(**)	.054(**)	1	
Plausible value in reading	.253(**)	-.210(**)	.152(**)	1

\*\*p<0.01.

reflect the students' attitudes significantly. The correlations of variables taken for PISA 2009 Reading skills are handled and shown in Table 2.

According to Table 3, it can be said that the relationships between variables handled as the indicators of reading skills are generally low. The highest relationship between these variables is between the level of students' Joy/Like reading and PISA 2009 reading skills performances. However this relationship is a positive, low level significant relationship ( $r=0,253$   $p<0.01$ ). In other words, there is a linear relationship between liking reading and reading skills performances of Turkish students taking part in PISA 2009 project.

According to PISA 2009 data, a negative, considerably low level (almost close to zero) significant relationship is found between Online Reading skills and Joy/Like Reading performances of Turkish students ( $r = -0,068$   $p<0.01$ ). It is also found that there is a low level, almost close to zero relationship between Online Reading performances of Turkish students and level of Library Use ( $r=0,054$   $p<,01$ ). In other words, it can be said that there is no relationship among Online Reading skills and Joy/Like Reading and Library Use skills of Turkish students.

It is observed that there is a negative relationship between the frequency of using library and reading success of Turkish students taking part in PISA 2009 project ( $r= -0,210$   $p<0.01$ ). In fact, it is surprising that reading performances of students who use library

frequently are low. At this point, the frequency and the purpose of using library by students in schools should be reexamined in terms of student and teacher. Eigenvalues and canonical correlations related to the canonical correlation between PISA 2009 reading skills and skills of ICT use are specified in Table 3.

According to Table 3, calculated eigenvalue related to canonical correlation pair is the indicator of total variable. As the eigenvalues increase, correlation coefficients also show increase. It is observed that in four canonical correlation pairs calculated, the highest eigenvalue takes place in the first function (1,06). In other canonical correlation pairs, eigenvalues decline steadily. When the significances of canonical correlations found in acquired canonical variable pairs are tested with Wilks Lamda statistics, it is found that four canonical correlation coefficients are significant at the error level 0.01. The highest relationship is observed in the first function ( $r=0,717$   $p<0.01$ ). In other words, there is a high level significant relationship between 2009 PISA Reading skills and ICT use skills of students. Again, 51% of reading skills for Turkish students in 2009 PISA is characterized by the skills of ICT use. Raw canonical coefficients regarding first function in canonical variable pairs, standardized canonical coefficients and canonic loadings are shown in Table 4.

Standardized coefficients are those which show amount of variation occurred in canonical variable as standard deviation in response to increase in one standard

**Table 3.** Eigenvalues and canonical correlations.

Function	Eigenvalue	Pct.	Cum. Pct.	Canonical Correlation	Wilks L.	Sig.
1	1.060	81.405	81.405	0.717	0.388	0.000**
2	0.194	14.894	96.299	0.403	0.799	0.000**
3	0.039	3.025	99.324	0.195	0.954	0.000**
4	0.009	0.676	100	0.093	0.991	0.000**

\*\*p&lt;0.01.

**Table 4.** Raw, standardized canonical coefficients and canonic loadings.

Set	Variables	For the first canonical function		
		Raw canonical coefficients	Standardized canonical coefficients	Canonic loadings
Set 1	Joy/Like Reading	0.222	0.191	0.226
	Use of Libraries	0.011	0.011	0.018
	Online Reading	-0.768	-0.948	-0.980
	Plausible value in reading	-0.002	-0.126	-0.224
Set 2	Attitude towards computers	-0.104	-0.131	-0.409
	ICT internet/entertainment use	-0.409	-0.573	-0.930
	ICT for school related tasks	-0.153	-0.176	-0.694
	ICT availability at home	-0.268	-0.349	-0.829
	ICT availability at school	-0.034	-0.04	-0.192
	Use of ICT at school	0.08	0.091	-0.062

deviation occurred in original variable. In other words, these coefficients are those showing the amount of original variation effect taking place in set in the formation of canonical variable (Keskin and Özsoy, 2004). According to this, equality regarding U1 canonical variable (reading skills) will be as follows:

$$U1 = 0,191*y1 + 0,011*y2 - 0,948*y3 - 0,126*y4$$

In the formation of U1 canonical variable, the highest but negative contribution is made by Online Reading with 0.948 contribution amount. It is also observed that the lowest contribution to the U1 (reading skills) is made by Use of Libraries variable. V1 canonical function regarding ICT use skills is as follows:

$$V1 = -0,131*x1 - 0,573*x2 - 0,176*x3 - 0,349*x4 - 0,040*x5 + 0,091*x6$$

In the formation of V1 (ICT use skills) canonical variable, the highest contribution is made by ICT internet/entertainment use variable with -0,573 contribution amount. However this contribution is negative. It is also observed that the lowest contribution to V1 variable is made by ICT availability at school.

As it is more appropriate to use correlations between original variables taking place in that set and canonical variable, these correlation coefficients are named as correlation loadings or weight. When canonical loadings of variables in reading skills data set and its own canonical variable (U1) are examined, it is seen that the highest loading value belongs to Online Reading with -0,980. For ICT use skills, the highest factor loading value is ICT internet/entertainment use variable with -0,930.

## DISCUSSION

A high level significant relationship is found between 2009 PISA Reading skills and ICT use skills of Turkish students. A similar conclusion was arrived at by Fuchs and Woessmann (2005) who used PISA 2000 data in their study and found a positive relationship between mathematics and reading performances and ICT use performances of students. However, Steffens (2014) determined PISA achievements do not increase with ICT use in his study. In addition, it is found by Acar (2012) on the data of Turkey that the variable of using computer technologies had a significant negative impact on 2009 PISA fields of reading, mathematics, and science. Song

and Kang (2012) determined in their study on elementary, secondary and higher education students that students with high ICT use skills for data collection and communication have also high academic success. However, Aypay (2010) did not find any significant relationship between ICT use skills and academic success of Turkish students taking part in PISA 2006 project.

In this study, it is observed that as the frequency of internet use of Turkish students taking part in PISA 2009 project increases, the frequency of ICT use for duties in school increases. It can be said that the tendency of students to use internet for e-mail, writing blog or chatting increases their ICT use skills for duties in school. It is also observed in this study that there is a negative contribution of ICT internet/entertainment use variable to students' reading skills. Therefore, the frequency and purpose of Turkish students to use internet out of school should be examined carefully. Another striking conclusion is that in their study on PISA 2003 data, Sweet and Meates (2004) did not find a strong relationship between ICT use and having a computer in the house and success level in some of the countries. Nevertheless, according to the research by Spieza (2010), the effect of the use of computer at home rather than at school on Science points in PISA 2006 is greater and positive in many countries. In this study, on the other hand, availability of communication technologies at home rather than at school has a greater effect, albeit a negative one, on PISA 2009 reading performance of Turkish students.

It is fair to say that student is more passive in performance of reading printed sources, and more active in online reading. Needless to say, performance of reading printed sources would differ from that of reading online resources. It is notable that Online Reading variable has a negative contribution on reading skills of Turkish students taking part in PISA 2009 project. For this reason as Eraslan (2009) emphasized in his study, it should be our goal to train qualified teachers with ICT use skills. Therefore, teachers who have ICT skills would play a significant role in students' gaining of such skills. Teachers should provide ICT skills such as making online research, using online library to our students. Gngr and Akar (2004) stated that being in e-learning process affects student's self-sufficiency perceptions positively. However in this study, it is observed that the availability and the use of ICT did not make positive effect to the attitudes of students.

Another conclusion from the study is that the frequency and the purpose of students' library use should be reevaluated. As stated by Leino (2014), it should be kept in mind that students with the best reading performance has an intermediate level of competence in computer use, however frequency of computer use is not correlated with strategies of summarizing, comprehending, and remembering in reading. It should also be kept in mind that the skills of using information and communication

technologies do not consist of computer skills only.

Biagi and Loi (2012) find that student' PISA test scores in reading, mathematics and science increase with the intensity of computer use for Gaming activities while they decrease with the intensity of computer use for activities that are more related with school curricula. Therefore, game activities should be included frequently, and classical curriculum design should be avoided, to improve the skills of ICT use in learning and teaching processes.

PISA 2009 Turkey report reveals that Turkish students' skills of using information and communication technologies are not at the expected level yet. It is well known that lack of competence among teachers in terms of ICT, lack of infrastructure in schools and houses, incompatibility of curriculum programs with the requirements of communication technologies, lack of knowledge on ICT, negative attitudes of teachers, students and parents towards ICT are among the reasons for ineffective use of such skills. Resolution of these adversities will affect academic performance of students positively.

The Movement of Enhancing Opportunities and Improving Technology, namely FATİH, initiated by the Ministry of National Education in Turkey has been a positive initiative; however its outcomes have still not reached the expected level. The project's effects on students' performance have not been measured yet. It is thought that FATİH project would have positive effects on academic performance of students due to its positive returns on ICT usage skills of Turkish students if the project is concluded as intended.

In conclusion, it is seen that there is a significant correlation between the use of information and communication technologies and reading competence levels of students. However, this result does not imply that there is a causal relationship between the use of information and communication technologies and reading competence levels of students. It is suggested that the causality between the use of information and communication technologies and reading competence levels be studied by different statistical methods.

### Limitation

The Conclusions of this study cannot be generalized to other countries since the sample of this study only included 15-year-old Turkish students from PISA 2009 data.

### Conflict of Interests

The author has not declared any conflict of interests.

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*Full Length Research Paper*

# The effects of gender of private sports establishment administrators on job satisfaction: A case of Istanbul

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This study aims to indicate whether work satisfaction varies according to gender, the job itself and factors of human resources. To evaluate reassurance related with their jobs, a short version of 'Minnesota Jobs Satisfaction' survey was carried out with 32 men and 18 women who work at private sporting establishments in Anatolian side of Istanbul. Besides the average satisfaction scores of the managers involved in the survey, the factors of human resources management and satisfaction scores related to professional activities were evaluated. Human resource management has five factors: 'organization and labor relations', 'motivation and constitution of proper job environment', 'career planning', 'achievement valuation' and 'wages'. The frequency analysis of these five factors and general satisfaction of sporting managers was calculated. An assessment was done to know if there is diversity between their average scores based on gender. After evaluation of data with Spss programme, frequency analysis and average score calculation were done. The differences among satisfaction level rate according to gender groups were analysed with Kruskal Wallis test, one of the non parametric tests with 0.05 significance level. According to our research, the scores from the highest to the lowest are thus: 4.52 for organization and labor relations, 4.38 for constitution of proper job environment, 3.98 for achievement valuation, 3.68 for general job satisfaction, 2.99 for career planning and 2.82 for wages. A significant difference between gender and average rates of job satisfaction was observed ( $p > 0.05$ ).

**Key words:** Sport facility, organization, management, human resource management, labor relations.

## INTRODUCTION

This paper will review and evaluate studies from past to present on job satisfaction concept and theories as well as the relationship between gender and job satisfaction. Concordantly, first studies on job satisfaction started in 1930s. Till date, over 3000 research works have been made. There are two reasons for this. The first one is satisfaction affects important behaviors expressed in many establishments. The second one is satisfaction has

a place in increasing individuals' efficiency. Consequently, to increase the efficiency of both an establishment and an individual, the factors that affect job satisfaction should be analysed and determined (Kepoğlu, 2011). Developing oneself and efforts to satisfy oneself have become priorities throughout history. Talents and skills which people display in their job environments make them precious. Also, people improve

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themselves and their work by being satisfied with the work they do. If the work environment is better, it leads to social and economical satisfaction. Perception style of people, their expectations from what they do, value judgement, faith and manners are important for job satisfaction. This perception varies from person to person. The wages that are enough a person cannot be said to be enough for another person in the same work place. This is because a person who is satisfied with his/her wages can become unsatisfied if his/her colleagues earn more. In this situation, personal demands as well as environmental factors have an effect.

It is known that preferring right jobs where one can be more successful has an effect on increasing one's satisfaction (Karataş and Diğerleri, 2013). Different definitions have been given by various researchers on this. These definitions include: 'A job is a person's identification'. Job performance and satisfaction are the processes of this identification' (Sudak, 2013). 'Job satisfaction is a staff's reaction to job or organisation' (Kepoğlu, 2011). 'Job satisfaction which expresses being well connected to a job is a positive or negative evaluation style related to work or work position' (Gamsız et al., 2013). After a particular time, people spend a large amount of their time daily at work. In this regard, people, who acquire satisfaction from their job both economically and psychologically, are very happy. So job satisfaction plays a crucial role in one's life economically and psychologically (Can et al., 2009).

Many researchers have conducted many studies and brought theories about human behaviour. In the literature, although job satisfaction and motivation theories are discussed in different categories, generally they fall into the headings of "scope theories" and 'process theories'. Scope theories intend to explain which factors or factor groups have an effect on job satisfaction. They include Hierarchy of needs theory, ERG theory, two factors theory, Mc Clelland's achievement motivation theory, Douglas McGregor's X and Y theory and Z theory. While process theories include: Expectancy theory, equity theory and goal setting theory (Munzur, 2012). Hierarchy of needs theory developed by Maslow associates job satisfaction with needs, which are supplied hierarchally. Maslow determined human needs according to importance. The most important ones are physiological needs, followed by safety, social needs (love/belonging), esteem and self actualisation needs. Job satisfaction issue, according to Maslow's theory, is explained as follows: all needs are bounded and when a need comes up, the others do not disappear; so we must supply all needs as much as possible (Hicks and Gullet, 1981).

One of the deficiencies of Maslow is his acceptance of job satisfaction as one dimensional subject and develop-

ing his theory in this direction. According to Vroom's expectancy theory, an individual behaves to supply his needs. So behaviors tend to affect supplying needs. Considering the differences in social needs among people, unlike Maslow, Vroom decided that people can have different goals to supply their needs. Vroom developed two models: 'extraction' and 'multiplication' models. Both models consider job satisfaction as a function of environmental need and nature's eligibility degree. Like Maslow, while developing his theory, Vroom considered job satisfaction in one dimension and developed it in this direction. Equality theory developed by Adams depends on Social comparison theory by Festinger and his cognitive dissonance theory developed in 1955. In his theory, Adam determined job satisfaction as staff's balance of input-output. Also, when we compare him with Maslow and Vroom, Adams emphasized that job satisfaction is affected by social factors. According to Adams, staff bring along their personal inputs such as intelligence, information, experience, talent, health and effort. In accordance with that, staff acquire some output such as increase of statute and wage, various social welfare, promotion, job security, conditioning and executive authority. If there is inequality between input and output, there can be dissatisfaction and stress. Like Maslow and Vroom, Adams considers job satisfaction in one dimension.

The difference between Herzberg's "two factor theory" and the others is as follows. Maslow, Vroom and Adams considered their theories in one dimension and developed their theories according to this belief. But, Herzberg says that job satisfaction means that there is no job dissatisfaction. These two terms are not opposite to each others because human needs are caused by different factors. The factors which affect job satisfaction are separated into two groups as individual and organizational. Major individual factors are age, gender, educational level, marital status, work status, length of service, social cultural environment and personality structure; major organizational factors are job and its qualification, management and audit, wage, possibility of progression and relevance, physical conditions of workplace and social environment of workplace (Tözün, 2008; Aksu, 2002). Different names and numbers of factors which affect job satisfaction have been detected from various resources during the research. For example, Özdayı (1991), in his research on private and state high schools, separated job satisfaction factors into two groups: internal and external factors. Koyuncu (2004), in the research on PE teachers at state and private high schools, separated these factors into two: personal and organizational factors of work and work place. Also, another example is Jenkinson and Chapman (1990), who

based on their research on job satisfaction factors at the primary schools in Jamaica, separated these factors into three groups. The first group is type and size of the school, the second is feature about the school and the last one is personal and occupational features. From these factors, three ideas emerge from the results about age variance, which is highly correlated with job satisfaction.

According to the first opinion, the relationship between age and satisfaction can be likened to 'U' shape. It means that in early years, satisfaction is high, in middle years, it is low and then in old ages, it is high again. According to the second opinion, they are directly proportional. The older people get, the more satisfied they are. According to the last opinion, until a certain age, they have direct proportional increase and then it starts to decrease (Sıgır and Basım, 2006). While some researchers, who studied another factor (educational level), believe that there is a negative correlation between these two factors; the others believe there is no correlation at all. The reason for this is that these two factors are considered at different levels and they change according to age. Education varies according to levels (like high school graduate or university graduate). Also, being a new graduate can be very important. A young fresh university graduate can get to work and see his workmate who is a more experienced high school graduate. So, the satisfaction level can be high or low. It is not possible to give an accurate statement about the correlation between job satisfaction and education because there are many factors affecting them, such as educational level, age and experience (Aliyeva, 2001). Research on physical conditions of workplace, which is one of the organisational factors, shows that employees prefer places which are not dangerous or irritating. They do not want extreme factors such as high temperature, light and noise (Robbins, 1996).

From the viewpoint of employees, dissatisfaction can come as a result of poor conditions, instruments, lack of economical benefits and social regard. These possible problems do not only cause dissatisfaction in individuals, but also make them to look for new jobs. Naturally, negative impact of an employee's dissatisfaction reflects in his/her family and country. Thus, job satisfaction is an important subject to be considered in terms of both individual and national economy (Belli et al., 2012).

## **INSTRUMENT AND METHOD**

This work aims to reveal the correlation between job satisfaction and gender of sport managers in Anatolian part of Istanbul. The short version of "Minnesota Jobs Satisfaction" questionnaire was applied to 50 sport managers who work in the Anatolian part of

Istanbul. The questionnaire was administered to spot whether job satisfaction levels vary according to the characteristic features of sports managers and their gender. The abbreviation of the questionnaire in Turkish is MİDA and in English it is MSQ. It was developed by David et al. (1967). The questionnaire has been used numerous times both in Turkey and around the world. The validity and reliability tests of the questionnaire were conducted with Cronbach-Alpha tests, and the Alpha value was 0.9171. After evaluation of data with Spss programme, frequency analysis and average score calculations were made. Differences among satisfaction level rate according to gender groups were analysed with Kruskal Wallis test, which is one of the non parametric tests with 0.05 significance level. Besides the managers' job satisfaction scores, the five factors of human resources and job satisfaction were calculated. These factors are 'organisation and work relations', 'motivation and creating proper job environment', 'career planning', 'evaluation of success', 'wages'.

## **FINDINGS**

### **Success evaluation of general job satisfaction and the five factors of human resources management**

The private sporting establishment managers are really close to job satisfaction level in the resources management factor (Table 1).

### **Motivation and creation of proper job environment**

The private sporting establishment managers are satisfied with the motivation and proper environment at workplace and are getting closer to high level of satisfaction (Table 2).

### **Career planning**

The private sporting establishment managers are not satisfied with the career planning in their establishments (Table 3).

### **Wages**

The private sporting establishment managers are not satisfied with wage policy in their establishments (Table 4).

### **Organisation and work relations**

The private sporting establishment managers are satisfied with the organisation and work relations in their establishments (Table 5).

**Table 1.** Resources management.

<b>The scopes of human resources management</b>	<b>N</b>	<b>Avarege score.</b>
Evaluation of success.	50	3.98

**Table 2.** Motivation and creating proper job environment.

<b>The scopes of human resources management</b>	<b>N</b>	<b>Average score.</b>
Motivation and creating proper job environment	50	4.38

**Table 3.** Career planning.

<b>The scopes of human resources management</b>	<b>N</b>	<b>Average score</b>
Planning career	50	2.99

**Table 4.** Wages.

<b>The scopes of human resources management</b>	<b>N</b>	<b>Avarege score</b>
Wages	50	2.82

**Table 5.** Organisation and work relations.

<b>The scopes of human resources management</b>	<b>N</b>	<b>Avarege score</b>
Organisation and work relations	50	4.52

**Table 6.** General job satisfaction.

<b>Job satisfaction</b>	<b>N</b>	<b>Average score</b>
General job satisfaction	50	3.68

**General job satisfaction**

The private sporting establishment managers are neither satisfied nor unsatisfied with the environment of their workplace . In other words, they are neutral (Table 6).

**Mann Whitney Test related to the difference between the sport managers’ average evaluation of success scores and their gender**

Significant difference between the managers’ genders and average rates of job satisfaction has not been observed ( $p>0.05$ ) (Table 7). The point is a sport manager who is rewarded beacuse of his over-achievement can

**Table 7.** Mann Whitney Test related to difference between sport managers average evaluation of success scores and their genders.

	<b>Evaluation of success</b>
Mann-Whitney U	268,000
Wilcoxon W	439,000
Z	-,428
p	,669

see equality in awards given. We can see the importance of equality in Adams’ “Equality Theory”. The sport managers who have similar jobs with smilar inputs and outcomes want equality.

**Mann Whitney Test related to the difference between the sport managers’ average creating proper job environment scores and their gender**

There is no significant difference between the managers’

**Table 8.** Mann Whitney Test related to difference between sport managers' average creating proper job environment scores and their genders.

Motivation and creating proper job environment	
Mann-Whitney U	245,000
Wilcoxon W	416,000
Z	-,711
P	,477

genders and average rates of creating proper job environment ( $p > 0.05$ ) (Table 8). It is really important to know the kinds of factors that affect job satisfaction and the level of satisfaction. So, workers can be replaced properly based on their talents and potential, which will make their creativity and productiveness to increase. By means of such kind of guiding practice, not only workers' satisfaction but also peace and harmony would be achieved in the organisation. Conditions have an effect on job satisfaction. Sport managers should not ignore issues such as light, noise, air conditioner, cleaning and instruments.

**Mann Whitney Test related to the difference between the sport managers' average level of planning career scores and their genders**

There is no significant difference between the managers' genders and average rates of planning career ( $p > 0.05$ ) (Table 9). People learn faster by practising. So, top managers should not ignore their responsibility; they should allow their workers to work autonomously and make decisions. If it is not done, when the workers are promoted and become managers, they will not be able to make decision and so will cop out.

**Mann Whitney Test related to the difference between the sport managers' average level of wages scores and their genders**

There is no significant difference between the managers' genders and average rates of wage ( $p > 0.05$ ) (Table 10). Herzberg considers that as a motivating factor, wage is an external factor more than content of work. So, it can be said that the effect of wage can change according to internal or external motivation of managers. But, because external factors have a little effect on level of commitment, it has been proved that there is not any significant correlation between wage and job satisfaction by many researchers.

**Table 9.** Mann Whitney test related to difference between sport managers' average level of planning career scores and their genders.

Planning career	
Mann-Whitney U	235,500
Wilcoxon W	406,500
Z	-1,077
P	,282

**Table 10.** Mann Whitney test related to difference between sport managers' average level of wages scores and their genders.

Wage	
Mann-Whitney U	266,000
Wilcoxon W	437,000
Z	-,459
p	,646

**Mann Whitney Test related to the difference between the sport managers' average level of organisation and work relations scores and their genders**

There is no significant difference between the managers' genders and average rates of organisation and work relations ( $p > 0.05$ ) (Table 11). The managers are satisfied with the organisation and work relations in their establishments. In a private sport establishment, proper distribution and specification of task and responsibility are only due to good organisation. The relations among the staff and between top managers and workers can be seen obviously on schemas. Workers know who they order or whom they take order from. When the person responsible for a duty is needed, he/she is to find. Organisation lets us carry out our responsibilities easily, specifies hierarchy and arranges task and responsibility limits. A good organisation allows one to keep a close watch on innovation, and catches up technical progression. Workers at the same work place engage with one another. A worker who knows well what he does, does more valid and consistent mental study. He is motivated to be more creative and positive.

**Mann Whitney Test related to the difference between the sport managers' average level of general job satisfaction scores and their genders**

There is no significant difference between the managers' genders and average rates of general job satisfaction

**Table 11.** Mann Whitney Test related to difference between sport managers' average level of organisation and work relations scores and their genders.

<b>Organisation and work relations</b>	
Mann-Whitney U	269,500
Wilcoxon W	440,500
Z	-,376
p	,707

**Table 12.** Mann Whitney Test related to difference between sport managers' average level of general job satisfaction scores and their genders.

<b>General Job satisfaction</b>	
Mann-Whitney U	238,500
Wilcoxon W	409,500
Z	-,841
p	,401

( $p > 0.05$ ) (Table 12). In sport establishments, revealing talents, enterprising work, rotation, increasing of emotional support between co-workers, making better performance, increasing educational activities, demanding ideas from worker to solve a problem, and increasing motivation have a positive effect on managers and increase their loyalty and satisfaction.

## DISCUSSION

One of the factors which affect job satisfaction is gender. The gender of the employees can cause changes in evaluating the work atmosphere and forming behaviours towards the job. In the research on the correlation between gender and job satisfaction of the workers at Provincial Directorate of Youth and Sport in Aegean Region, there is no meaningful distinction ( $p > 0,05$ ). Bozkurt and Bozkurt (2008) did not see any meaningful distinction between job satisfaction and gender in the education sector. Bilgic (1998) saw that there was no meaningful distinction between gender and general job satisfaction from his research on personal factors and job satisfaction done with different workers from different establishments. Keser (2005) did not find any meaningful distinction between gender and job satisfaction from his research with automotive sector. Çelen et al. (2004) studied job satisfaction at Ankara Onkology Education Hospital and did not find any meaningful distinction. Gencay (2007) did not find any meaningful correlation between gender and job satisfaction from his research

with P.E teachers. Mason (1994), in a research on gender effects on job satisfaction, found there was no meaningful correlation between gender and job satisfaction. This research is in parallel with our findings. Loscocco (1990), Ozdevecioglu (2003) and Brush et al. (1987) found out important correlation between gender and job satisfaction. Keser (2006) found out high correlation between gender and job satisfaction from his research with call center workers. According to the research conducted by Clark (1993) and Bugental (1966), it was found out that the level of job satisfaction of female employees was higher than that of the male employees. This result suggests that female employees care more about the social factors related to work. These findings conflict with our findings. However, in general, there is no distinction between gender and job satisfaction. Aşık (2010) believes that the main reason why job satisfaction levels are reduced among women is the obstacle they face in their careers. In addition, the conflicts arising from their responsibilities at work and their family life are said to be other factors reducing their job satisfaction levels.

## Conclusion

Gender factor does not have an affect on sports managers' general job satisfaction as well as the five factors of human resources management. This finding supports Loscocco's (1990) finding which says both genders have same level in similar circumstances. In research, they have same workplace and similar conditions; so we can say they have similar level of satisfaction. The private sport managers are close to be satisfied with the evaluation of their success. They are satisfied with motivation and creating proper workplace and they are getting closer to high level of satisfaction. They are not satisfied with planning career in their establishments, are not satisfied with wage politics, are satisfied with organisation and relations and lastly they are neither happy nor unhappy about their workplace. They are neutral.

## RECOMMENDATION

It is a fact that satisfied administrators, who have organizational commitment to their sports establishments, no matter their gender perform well. Especially, in planning careers and wages, there must be an enhancement without looking their genders. Career planning is a process of systematically matching career goals and individual capabilities with opportunities for their fulfillment.

Career planning encourages individuals to explore and gather information, which enables them to synthesize, gain competencies, make decisions, set goals and take action. It is a crucial phase of human resource development that helps the employees in making strategy for work-life balance

Wage is important in terms of increasing attraction to work, keeping staff, increasing staff's motivation and their positive attitudes. Research shows that workers perform better when they earn due to their performance. So, when establishments have positive thoughts about fair wage, and wage satisfaction is high, we can see positive changes on performances.

### Conflict of Interests

The author(s) have not declared any conflict of interests.

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*Full Length Research Paper*

# Developing a leveling framework of mathematical belief and mathematical knowledge for teaching of Indonesian pre-service teachers

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**This study explored the characteristics of pre-service primary teachers (PSTs) influenced by mathematical belief and mathematical knowledge for teaching (MKT) PSTs'. A qualitative approach was used to investigate the levels of PSTs on mathematical belief and MKT. The two research instruments used in this study were an interview-based task and a questionnaire. Data collected from 6 (six) pre-service primary teachers which had completed all courses in teacher education and have joined the practice of teaching in elementary schools. Research results show that there are five levels of mathematical belief and mathematical knowledge for teaching, starting from 0 to 4, with different characteristics. The differences are based on belief systems and indicators of MKT.**

**Key words:** Mathematical belief, mathematical knowledge for teaching (MKT), levels, pre-service primary teachers (PSTs).

## INTRODUCTION

The philosophical view of teacher's role in teaching and learning oriented at teaching impact divides teachers into three types (Ernest, 1989). First is the role of teacher as an instructor representing the instrumentalist philosophy that emphasizes skills mastery with expected abilities, and it is the lowest level. Second is teacher with explanatory role representing the Platonist philosophy that has the orientation of conceptual understanding with holistic knowledge. Third is teacher as facilitator representing the philosophical view concerning problem solving, which is the highest level of a teacher's role. Such a role of teacher as a practitioner, according to Ernest (1989) and Philipp (2007) is affected by his or her

belief.

Educators of teachers should understand and recognize not only the belief of pre-service teachers, but also the way they obtain it because the way teachers gain their belief has influence on their belief. Hence, eventually the transformations to be made can be identified (Philipp, 2007). Considering the weakness of pre-service teachers and teachers in the contents of Arithmetic and Geometry, namely weak content knowledge (Hinton et al, 2014) and weak pedagogical knowledge, according to Thompson (as cited in Philipp, 2007), it is important then that research considers the interrelatedness of belief and knowledge simultaneously.

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The leveling of mathematical belief and MKT will be in the form of comparison of the characteristics of mathematical belief and categories of MKT. The designed categories of MKT are suited to research results demonstrating that PSTs who do not master content and cannot identify concept central to the topic are unable to identify the interrelatedness of content (connection) and to make representation, as well as having weak pedagogical knowledge (Somayajulu, 2013). Therefore, according to Moursund (2005), mathematical maturity is not basic knowledge of the special field of mathematical content; rather, it is the development of mathematical content.

## THEORETICAL FRAMEWORK

### Conceptions of Mathematical Belief

There are various definitions of belief. Ernest (1989) has defined belief as a view or conception of the nature of mathematics, a naturalistic model or perspective of teaching mathematics, and a model or perspective of mathematics learning process. Another definition says that belief is a combination of inferences on various phenomena and their nature (Törner and Pehkonen, 1999). According to Philipp (2007), in general there is no agreement for an established definition of belief. Very often, the construction of belief is related to value and knowledge. Belief is a right/wrong construction in a certain context, while value in general refers to what is desired/undesired, and knowledge is a belief assumed to be true based on facts from one's own experiences.

The categories for Mathematics teachers' belief have been formulated by Beswick (2012) to include a belief about the nature of Mathematics, a belief about Mathematics teaching, and a belief about Mathematics learning. The lowest level has the instrumentalist view of the nature of Mathematics; teaching Mathematics means focusing on content with an emphasis on results; learning Mathematics is the mastery of skills; and students take the passive attitude. In the moderate level is the Platonist view of the nature of Mathematics; teaching Mathematics focuses on content with an emphasis on experience; learning belief is that students actively construct knowledge. The highest level is the question solving view with a belief that teaching should focus on each individual ability; learning is believed as an activity of exploring knowledge independently according to interest.

Mosvold and Fauskanger (2013) add to the three categories, a belief about knowledge or epistemological belief. In addition, the instrumentalist belief views Mathematics as knowledge in the form of content memorization, the Platonist belief sees Mathematics as knowledge with content understanding, and the problem solving belief views Mathematics as knowledge with

adjustment and differentiation.

### Mathematical knowledge for teaching

Knowledge originates from belief assumed to be true (Phillip, 2007) and in educational context, teacher's practices are influenced by content knowledge (CK) and pedagogical content knowledge (PCK) owned (Shulman, 1987). CK is associated with a number of facts or concepts of subjects, including the understanding of the content of what and why as well as the facts and concepts, and how knowledge is structured in particular science. While the PCK is a special blend of content and pedagogy as a form of professional understanding, i.e. how particular topics, questions or issues are organized, presented and adapted to the diverse interests and abilities of students, and served for teaching. Shulman's theory progresses to encourage the emergence of other teaching theory, when teachers find it difficult to teach Mathematics. This is because teaching Mathematics requires special knowledge because of the scientific complexity in Mathematics. The specialties of teaching knowledge are important to identify that the duty of the teacher is unlimited, not only to provide the true or false information, but also to diagnose the fault of students and provide appropriate referrals (Ball et al., 2008), and help students develop ideas and mathematical reasoning.

The teaching knowledge according to Ball et al, (2008: 395) is called MKT, that is the "*..Mathematics knowledge that teachers need to carry out their work as teachers of Mathematics..*". This mathematical knowledge used by teachers in the classroom is to make teaching and student development. Some landslide projects are done to develop knowledge of Mathematics teaching, especially in the so-called MKT. Among them is the LMT project at the University of Michigan who develops the MKT models derived from the concept Shulman to clarify the difference between CK and PCKP and develops the measurement of MKT (Ball et al., 2008). Furthermore TEDS-M project also develops a MKT measurement with the specific terms Mathematics CK as Mathematics content knowledge (MCK) and Mathematics PCK as mathematics pedagogical content knowledge (MPCK) in teacher education to include the measurement of belief (Tatto et al., 2008). Identifying knowledge of Mathematics teaching is also carried out at the University of Cambridge with the term Knowledge Quarter (Rowland and Turner, 2007). The results of the teaching practice of teachers in the classroom generate 17 codes which are then grouped into four categories, namely foundation, transformation, connection, and contingency. According to Petrou and Golding (2011) one of the categories present in the knowledge Quarter is contingency that has combined CK and PCK as suggested by Shulman, namely to identify different interactions of teacher knowledge.

Category MKT in LMT project provides equal portions and balance between MCK and MPCK, while knowledge Quarter has been put CK mastery as a foundation towards MCK and MPCK mastery in contingency. The study of Somayajulu (2013) shows the effect on the content knowledge by pedagogical knowledge. The study makes the level based on the results of tests in analyzing students' thinking. Level of PSTs are (0) Naive, (1) Developing, and (2) Mature.

### Purpose of the research

In Indonesia, most educators of PSTs have a master degree in education. Teacher candidates study for 8 semesters and get the compulsory subjects of social sciences, pedagogy, language, art, science, and Mathematics.

The course includes the study of Mathematics, namely Mathematics I which focuses on Arithmetic, Mathematics II which focuses on Geometry, and Learning Mathematics. In the first half of semester 7, all PSTs join the practice of teaching in elementary schools by acting as a classroom teacher who administers all subjects. The class teachers must have competence as stipulated in the Regulation of the Minister of National Education of the Republic of Indonesia NO.16 2007 on Standards of Academic Qualifications and Competencies of Teachers related to professional competence. They are also required to master all subjects in elementary school.

The purpose of the research is to develop a conceptual framework of empirical level of mathematical belief and MKT which are arranged based on existing literature, including categories that emerge from each of these levels.

### RESEARCH METHOD

The study was conducted in the Tarbiyah Faculty of The State Institute in Indonesia. The students had completed all courses in teacher education and have joined the practice of teaching in elementary schools.

A qualitative approach was used to test the characteristics of the draft of the leveling of mathematical belief and MKT formulated for PSTs. Data were gathered through interview-based task conducted to last semester students and were analyzed using constant comparative method or grounded theory in order to obtain a theory (Glaser and Strauss, 1967). The method to determine the sample was purposive sampling. Finally, 6 (six) PSTs with good communication ability and heterogeneous result of study (Cohen et al., 2000) in State Institute of teacher education were selected. The tasks given were in the form of open-ended questions with the test instrument of MKT modified from Cheang et al (2007) research results and have been validated by trials with reliability value 0.755. The questionnaire to identify PSTs' mathematical belief was developed from Tatto et al. (2008). In addition, triangulation was used by conducting in-depth interview to the sample. Results of test and questionnaire distributed to pre-service teachers were analyzed by identifying the aspects of mathematical belief and MKT.

The results of tests and questionnaires were analyzed with PSTs' aspects of the mathematical belief and MKT. Level of PSTs is determined by applying the method of qualitative analysis to determine the level, and then validated by experts in Mathematics education. It is beneficial to compare the framework arranged by the existing framework in the literary source, which eventually can add new knowledge and contribute to the field (Table 1).

The research focuses on identifying mathematical belief and MKT of PSTs and describing the levels. The PSTs provide solutions showing their knowledge of mathematical content, where procedural counting ability is separated from the ability to memorize and to define (Hinton et al., 2014). Level 0 and level 1 show that PSTs do not master pedagogic knowledge because they have instrumentalist belief with an inclination to prioritize more the ability to memorize formulas than concept understanding. Level 2 and 3 have mastered the content and are in the development stage of pedagogical content knowledge. These levels believe that PSTs need to understand more the concept than to memorize it. Level 4 believes that Mathematics presented through an exploration of questions independently can develop students' mathematical knowledge corresponding with their ability.

### RESULTS

Based on data from the task-based interviews and questionnaire on 6 PST students, it is acquired conceptualization verification in every part of the level of mathematical belief and MKT. The characteristics of the levels of mathematical belief and MKT constitute different aspects for each level. The differences lie on MCK and MPCK according to the levels of mathematical belief, namely instrumentalist, platonist, and problem solving. Nevertheless, there are similar characteristics in the levels. For instance, PSTs with the same belief level have different levels of MKT. At the levels 1 and 0, PSTs tend to have instrumentalist belief, but at the level 0 it is not developing. They have difficulties in procedural counting and are unable to give representation of a mathematical idea. At level 1 with the same belief, PSTs have mastered a little mathematical concept. Ascending to the levels of 2 and 3, here PSTs tend to have the platonist belief about explaining content and understanding mathematical content as holistic knowledge. Comparing level 2 to 3, PSTs have mastered concept and are able to give representation, but not thoroughly able to connect mathematical ideas and topics. The highest level, level 4, or mature, is where PSTs have problem solving belief and master MKT. The descriptions for the characteristics of each level are as follows:

**Level 4:** PSTs believe that Mathematics can be presented by problem solving which facilitate various students' abilities.

**MCK:** Able to master counting and to define a concept, to represent a complete picture, and to identify mathematical ideas.

**MPCK:** Able to relate among the topics, to represent with the aim of explaining comprehensively and meaningfully,

**Table 1.** The draft of leveling of mathematical belief and MKT.

Mathematical Knowledge for Teaching (MKT)				Levels of Mathematical Belief and MKT	Levels of Mathematical Belief (Ernest, 1989; Beswick, 2012; Mosvold and Fauskanger, 2013)
Mathematical Content Knowledge (Ball et al, 2008; Tatto et al, 2008)	Mathematics Pedagogical Content Knowledge (Ball et al, 2008; Tatto et al, 2008)	Knowledge Quarter (Rowland and Turner, 2007)	Somayajulu (2012)		
The ability to count procedural		<i>Foundation</i>	<i>Naïve</i>	0 Not Developing	Instrumentalist
The abilities to memorize & to define				1 Not Yet Developing	
The ability to represent mathematical ideas	The ability to select examples or representations to explain	<i>Transformation</i>	Developing	2 Quite Developing	Platonist
The ability to make connection of mathematical ideas	The ability to understand mathematical structure and topic	<i>Connection</i>		3 Developing	
The ability to make connection of students' ideas and mathematical ideas	The ability to anticipate students' unexpected responses	<i>Contingency</i>	Mature	4 Mature	Problem Solving

to identify students' responses comprehensively, and to provide appropriate feedback.

**Level 3:** PSTs believe that Mathematics needs to be understood, not merely memorizing formulas. They tend to believe that teaching with contextual approach and case-study can be obstacle in teaching and learning because it makes poor students unable to compete with the good ones. MCK: Able to master counting and able to define a concept, to provide complete representation, and to identify mathematical ideas. MPCK: The connection between mathematical concept and topic is complete, able to relate it with another topic; representation to explain is completeness and meaningfulness; unexpected students' responses are not completely identified.

**Level 2:** PSTs believe that Mathematics needs to be understood, not merely memorizing formulas.

They tend to believe in teaching with contextual approach.

MCK: Able to master counting and to define a concept; picture representation is quite comprehensive; and mathematical ideas are identifiable limitedly.

MPCK: The connection between mathematical concept and topic is not quite complete and limited in connecting it to another topic; representation is almost comprehensive and meaningful; students' responses are identified less completely.

**Level 1:** PSTs believe that Mathematics is about counting and memorizing formulas. They tend to say that a collection of formulas should be memorized in order to be successful in learning.

MCK: Able to master counting and to define a concept; picture representation is not complete; and mathematical ideas are identified limitedly.

MPCK: The connection between concept and topic is very limited; representation is very limited and incomplete; students' responses are identified very limitedly.

**Level 0:** PSTs believe that Mathematics is about counting and memorizing formulas. They tend to say that Mathematics is hard to study.

MCK & MPCK: PSTs still make errors in counting, are very limited to define a concept, unable to give representation; mathematical ideas are limited, and unable to respond to students' obstacle.

A single characteristic of each level is established from constant comparison of the characteristics of two PSTs at the same level; for example, Wina, Cita, and Dina. Cita and Dina have the same belief of mathematical content to do in relation to mathematical procedure, for example  $2\frac{1}{4} : \frac{1}{2}$ . It is, however, different when doing the problem in relation to the ability of Mathematics pedagogical

**Table 2.** Results from task based interview.

Level	Participants	Results from test & questionnaire			Results from interview
		MCK Mean	MPCK Mean	Questionnaire	
0	Wina	0.2	0.7	Instrumentalist	Instrumentalist
1	Cita	1.4	0.8	Platonist	Instrumentalist
1	Wida	1.4	1.2	Instrumentalist	Instrumentalist
2	Eri	1.4	1.2	Platonist	Platonist
3	Dina	1.4	1.3	Problem Solving	Platonist
4	Nisa	1.8	2.8	Platonist	Problem Solving

content.

*Imagine you are teaching fraction division. In order to make it more meaningful to students, you relate it to the real world using word question. The story you create is concerned with the question of  $2\frac{1}{4} \div \frac{1}{2} =$*

Wina: I have 2 and  $\frac{1}{4}$  chocolate bars, then my friend comes, and I share with him a half of it. The result of the division is what my friend has got. How many has she got?

Researcher: Then, what's the result?

Wina: (drawing two bars of chocolate divided equally . . . and drawing  $\frac{1}{4}$  bar of chocolate divided equally) thus becomes  $1.\frac{1}{8}$

Researcher: Please check by calculating it directly, how does it differ from  $2\frac{1}{4} \div 2$ ?

Wina: I'm confused, Ma'am.

When checking Wina's responses to questionnaire, it is found that she has the tendency towards instrumentalist belief. The interview is followed by one with Cita.

Cita: Erik has  $2\frac{1}{4}$  of cake (with a picture), then  $\frac{1}{2}$  of it has been given to Erika. How many of the cake does he have now?

Researcher: Well, then how many of the cake do you think he has now?

Cita:  $4\frac{1}{2}$ , Ma'am (looking at the result of the calculation of  $2\frac{1}{4} \div \frac{1}{2}$ )

Researcher: Why can it be  $4\frac{1}{2}$ ? Can you explain from the case of the cake?

Cita: By dividing it into two . . .

Researcher: Can you explain the difference between the case of the cake and the equation of  $2\frac{1}{4} \div 2$ ?

Cita: When directly calculated, the result is indeed different, Ma'am, but I am confused if I have to explain it with pictures . . .

Cita's responses to questionnaire of mathematical belief have an inclination towards the Platonist belief

Dina: Andi has two pieces of cake and  $\frac{1}{4}$  of a cake. He will share  $\frac{1}{2}$  of the cake with his friends. How many kids will get the shares of the cake?

Researcher: Can you explain the question with a picture?  
Dina: (drawing a part of the cake) each cake is divided by  $\frac{1}{2}$ , Ma'am, so two pieces of cake will be received by four kids and the last one gets a smaller piece.

Researcher: So, how many kids will get the cake?

Dina: 4 kids, with the last one gets  $\frac{1}{2}$  part.

Researcher: Doesn't your question ask how many kids?

Dina: Um... then it's  $4\frac{1}{2}$  kids (confused..)

Dina's responses to the questionnaire of mathematical belief show she is inclined towards the problem solving belief.

Summary of the results of test and questionnaire for 6 PSTs is in Table 2.

The analysis of test results shows that Cita and Dina succeed in completing  $2\frac{1}{4} \div \frac{1}{2}$  procedural calculation and have same idea by equalizing the division by 2. They are difficult to provide representation between 2 and  $\frac{1}{2}$ . Dina is able to give representation, but the meaning is still rather inappropriate, namely equalizing fraction measurement with people.

## DISCUSSION

The research that was limited to 6 students who were given interview-based tasks shows that 1 person (Wina) is identified to be at level 0, 2 people (Wida, Cita) are at level 1, 1 person (Eri) is at level 2, 1 person (Dina) is at level 3, and 1 person (Nisa) is at level 4 . From the results of the test and questionnaire, Cita, Dina, and Nisa

are identified to be inconsistent. Cita and Dina have platonist and problem solving beliefs. Based on the interview, both of them belong to level 1 and level 3, which is instrumentalist and platonist; meanwhile, Nisa has platonist belief that is categorized into level 4, which is problem solving.

The above findings are consistent with Northcote (2009)'s study that inconsistencies are caused by the complexity of belief system, so that researchers can find inconsistencies between teaching belief and teaching knowledge. One of the approaches to take is checking certain belief in the more ultimate belief system, and from here it determines the role affecting knowledge, and compared to another belief through the presentation of education issues in general, such as choice of action in limited time, resources, standardized tests, and student environment. In addition, teacher's belief concerning either student, social phenomena, and education can also be considered. Thus, the research uses written test in the form of analysis of tests on MKT and perspective of student and education experience.

The characteristics of Wida and Cita are categorized under level 1. Different from Cita, Dina, and Nisa who show inconsistencies on their mathematical, Wida shows consistency that she believes that the ideal teaching and learning is one that teaches memorization first, followed by understanding. Test results on MKT also demonstrate that Wida, like Wina and Cita, still has difficulties in providing representation for the given question. Wida's perspective of mathematics is that one can be ensured to master mathematics if s/he is good at memorizing and counting. On the other hand, Cita and Eri believe that learning should begin with understanding first.

The findings show that Cita, Wida, Eri, and Dina have same results on MCK and different results on MPCK and mathematical belief. Based on interview with PSTs shown that they have different experiences on teacher education learning. This is in line with the findings of Hinton et al. (2014) that PSTs' number sense skills and computational abilities were not found to be related. Participants can solve mathematical problems using procedures; however they may not know the concepts or the reasons behind the procedures.

The lowest level the respondents achieve is level 0 for Wina. When presented with the above question, Wina provides inappropriate and incorrect representation of fraction in procedural counting. Interview results prove that Wina has a negative view on Mathematics, in which she believes that it is burdened with memorizing formula and counting, and she has bad experience with mathematics teachers. Furthermore, Wina explains that she takes teacher education program because of not her own desire. Study by Hinton et al. (2014) stated that PSTs with lower scores in beliefs also had significantly lower computation scores.

The highest level, which is level 4, is achieved by Nisa,

who has actual belief in problem solving and can provide representation for the above question. From the interview, it is found that Nisa has background of vocational high school (accounting program), and since junior high school, she has had a change in her view of how to learn mathematics. Her experiences have taught her that when mathematics is studied with conceptual approach, by exploring everything around us, then we will gain better understanding of a certain concept. This is in line with study by Somayajulu (2013) was demonstrated that education background and work experience were a constant influence on how PSTs viewed the mathematical content.

## CONCLUSION AND LIMITATION

This research shows that PSTs have been identified by leveling of formulated mathematical belief and MKT. The different levels are based on the MKT indicators (Ball et al., 2008; Tatto et al., 2008; and Rowland and Turner, 2007) and mathematical belief (Ernest, 1989; Mosvold and Fauskanger, 2013). PSTs have been observed in all levels. Learning needs to balance between mastery of content knowledge and pedagogical content knowledge to gain the highest level of mathematical belief and MKT. PSTs need to master mathematics content simultaneously to achieve mathematical maturity.

It is necessary to conduct extended research in the form of experiment to examine the change of belief and MKT. The extended research involves both instrument and qualitative method. Research using only the written test instrument to look at the relationship between belief and MKT will be difficult because it can not provide measured data validation and the deep effect of educational programs. Mixed method by combining quantitative and qualitative data can be an option.

## Conflict of Interests

The authors have not declared any conflict of interests.

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*Full Length Research Paper*

# Development of environmental knowledge, team working skills and desirable behaviors on environmental conservation of Matthayomsuksa 6 students using good science thinking moves method with metacognition techniques

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The research aimed to investigate environmental knowledge, team working skills, and desirable behaviors of students learning through the good science thinking moves method with metacognition techniques. The sample group included Matthayomsuksa 6 students from Nadoon Prachasan School, Nadoon District, Maha Sarakham Province. The research tools were (1) 6 teaching plans designed under the good science thinking moves method with metacognition techniques, entitled "Human and Sustainability of the Environment," (2) a 40-item test on environmental knowledge with the reliability index of 0.7918 and the difficulty and discrimination indexes ranging from 0.26 to 0.78 and 0.24 to 0.82, respectively, (3) a team-working observation form, and (4) a behavior observation form. The results revealed that the teaching plans designed had the effectiveness index of 0.7290. The students gained more environmental knowledge after learning with the  $p$ -value of 0.001. In addition the students gained better team working skills and presented desirable behaviors after learning with the score higher than 50% of the total score.

**Key words:** Good science thinking moves, metacognition techniques, environmental knowledge, team working skills, desirable behaviors.

## INTRODUCTION

Social and technological advancements lead to unlimited use of natural resources causing several environmental problems at the community, country, and global levels. World environment has dramatically deteriorated and this

greatly affects all living entities (Gore, 1993). To sustainably solve the environmental problems, we should focus on changing the people's attitude toward environment by educating and directing them to see the value of

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the environment, have environmental awareness, understand the relationship between people and environment, and willfully protect and conserve the environment. As a result, it is necessary to implement environmental education at every educational level (Huckle, 1991).

Environmental education involves the educational processes that study the relationship between people and environment, environmental problems, environmental conservation and development to create environmental awareness, knowledge and understanding, positive attitude, evaluation skills and involvement in environmental problem-solving of the learners (Stapp et al., 1969; UNESCO, 1976). Moreover, environmental education can be used as a tool for preventing and solving environmental problems (Wisconsin Department of Public Administration, 1991). People with environmental knowledge are likely to see the importance of the environment and are eager to help improve and conserve the environment (Federal Interagency Committee on Education, 1978).

An appropriate method is required for the effective transfer of environmental knowledge and contents to learners. The integration of the good scientific thinking moves with metacognitive techniques is among the most effective teaching methods for environmental education as this teaching method, developed by Mittlefehldt and Grotzer (2003), integrates metacognition with scientific learning and inquiry-based learning processes. The integration of the good scientific thinking moves with metacognitive techniques could not only help create the environmental knowledge understanding, awareness, and positive attitude but also develop the desirable behaviors of the learners. The learner would develop skills in environmental preservation, community involvement and awareness of sustainable environmental and natural resource conservation.

### **Purposes of the study**

1. To investigate the effectiveness index of the teaching plans entitled "Human and the Sustainability of the Environment", developed under the good science thinking moves method with metacognition techniques for Matthayomsuksa 6 students.
2. To compare the environmental knowledge of the students before and after learning through the designed teaching plans.
3. To investigate the team working skills and desirable behaviors of the students while learning through the designed teaching plans.

### **Population and sample**

The population for this research includes 189

Matthayomsusak 6 students studying in the 2013 academic year in Nadoon Prachasan School, Nadoon District, Maha Sarakham Province under the supervision of the Maha Sarakham Office of the Secondary Education Service Area 26. The sample group was 40 Matthayomsuksa 6 students from 5 classes in the second semester of the 2013 academic year, selected by using the cluster random sampling technique.

### **RESEARCH DESIGN**

This research is quasi-experimental research with one group pretest-posttest design. The research tools consist of (1) 6 teaching plans titled "Human and the Sustainability of the Environment", including the 3-h per week plans on Environment and Natural Resources, Water Resources, Soil Resources, Air Resources, Forest and Wildlife Resources, and Human and Environment and Natural Resources, (2) a 40-item test on environmental knowledge, (3) an observation form on team working skills including participation, attention, and discussion skills, and (4) an observation form on desirable behaviors in 4 dimensions: discipline, faithfulness, willingness to learn, and responsibility.

#### **Research procedure and data collection and analysis**

After using the cluster random sampling technique, 40 students from the 6/2 class were selected for the experiment. The experiment started with the pre-testing of the sample group by using the 40-item test on environmental knowledge. Then, the sample group was taught by using each of the 6 teaching plans for 3 h a week for 6 weeks and at the beginning of each plan, there was a 10-item pretest and at the end, there was a 10-item posttest. During class, the observation forms were used to collect the data on team working skills and desirable behaviors. The total time for the implementation of the 6 plans was 18 h.

At the end of the class, there was a posttest using the same 40-item test on environmental knowledge. The statistic used for data analysis was the Pair t – test.

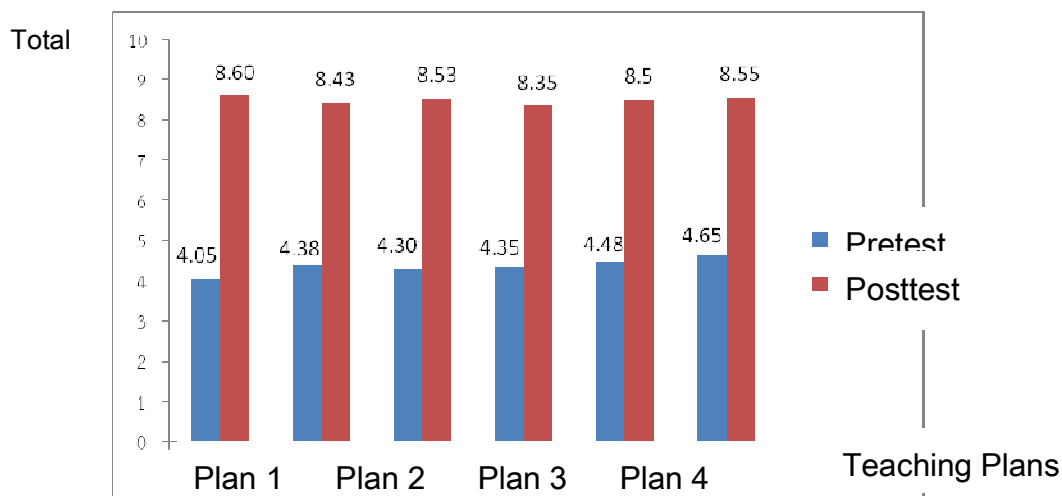
### **RESULTS**

#### **Results on effectiveness index**

It was found that the total effectiveness index of the 6 teaching plans was 0.7290 with the index in each plan ranging from 0.6321 to 0.8109.

#### **Results on environmental knowledge**

The research compared the environmental knowledge and understanding of the students before and after the implementation of the 6 teaching plans. It was found that the mean score ( ) of the students on the environmental knowledge and understanding before learning was 13.82 or 44.52% of the total score, which was lower than the 50% criterion set for measurement. However, after learning through the 6 designed teaching plans, the mean



**Figure 1.** Mean Scores on Environmental Knowledge and Understanding Before and After the Implementation of the Teaching Plans

score ( ) of the students had increased to 34.25 or 85.63%, which is much higher than the 50% criterion. When examining each plan separately, it was found that the mean scores of the 6 plans ranged from 4.05 to 4.48 or 40.50% to 44.80% of the total score, which were lower than the 50% criterion for all plans. After the implementation of the plans, the mean scores of the plans ranged from 8.35 to 8.60 or 83.50% to 86.00%, which were higher than the set criterion of 50% for all plans (Figure 1).

In addition, the students significantly had higher score after learning through the 6 designed teaching plans with the significance level of .05 ( $p < .001$ ).

### Results on team working skills and desirable behaviors

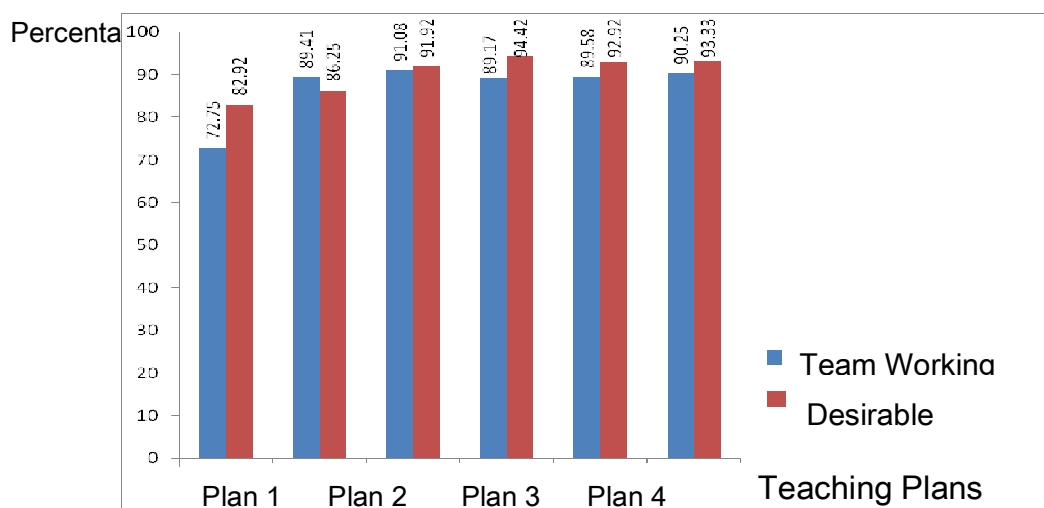
The team working skills and desirable behaviors of the students were investigated through the observation forms during the implementation of the plans. The results revealed that the mean scores on team working skills in the 6 teaching plans were from 8.73 to 10.93 or 72.75% to 91.09% of the total score, which was higher than the 50% criterion set for measurement. In terms of the desirable behaviors, the mean scores ranged from 9.95 to 11.33 or 82.92% to 94.42% of the total score, which was also higher than the 50% criterion (Figure 2).

## DISCUSSION

The effectiveness index of the 6 teaching plans was 0.7290 and this means that the students were progressive

in learning at 72.90%, which is higher than the 50% criterion set. This finding is in line with that of Siwina et al. (2009) who implemented teaching plans using good science thinking moves method with metacognition techniques for Mattayomsuksa 3 students and found that the effectiveness indexes of their teaching plans were from 50.00 to 70.97%, which were equal to or higher than the 50% criterion. The 6 designed teaching plans were highly effective probably because they were designed by integrating the good science thinking moves method with the metacognition techniques. The good science thinking moves method consists of five learning processes: connection, enquiry, reflection, truth revelation, and opinion comparison, and the metacognitive techniques include three aspects: intelligibility, plausibility, and wide-applicability. These scientific learning processes and metacognition aspects enabled the students to learn critically and provide them with an opportunity to develop their critical thinking skills (Siwina et al., 2009). While studying, the students were allowed to make an enquiry on what they were learning, search for evidence or answers for the enquiries they have, reflect their own ideas or opinions, discuss and compare their ideas or opinions to those of the others, and finally come up with the final answers or solutions (Mittlehdt and Grotzer, 2003). In short, the high effectiveness index of the plans resulting from the scientific learning process and metacognition techniques could promisingly help guarantee that the students learning through these teaching plans would have gained more environmental knowledge and understanding, better team working skills, and more desirable behaviors.

The students had significantly gained more environmental knowledge after learning through the designed



**Figure 2.** Percentage of mean Scores on Team Working Skills and Desirable Behaviors

teaching plans with the significance level of .05. This finding is similar to that of Siwina et al. (2009), Sihapong (2010) and Budtha (2012). The 5 scientific learning processes and the 3 metacognition aspects of the plans enabled the students to learn effectively in class. This teaching method focuses on the development of critical thinking skills and makes use of the inquiry-based instruction processes. In class, the students will be asked to think about the topics they have learned and are learning and then they will have to compare their opinions with others enabling them to critically express themselves and share their ideas with others. The good science thinking processes can help improve the students' critical thinking skills. The students are able to examine their understanding to see the plausibility and compare their opinions with those of the others to see similarities and differences. The designed teaching plans also enable the students to learn through argumentation and discussion (Hogan, 1999). In addition, the metacognition techniques also help improve the students' environmental knowledge and understanding. The three metacognitive aspects: intelligibility, plausibility, and wide-capability can lead to the changes of student's opinions after discussing and comparing their thought with peers and can provide the retention of the new knowledge learned (Blank, 2000; Georghiader, 2000); they can also help improve students' critical and logical thinking skills (Mittlefehldt and Grotzer, 2003).

While learning through the designed teaching plans, the students performed better team working skills (72.75% - 91.09%) and showed more desirable behaviors (82.92% - 94.42%). This means that the teaching plans designed under the good science thinking moves method with metacognition techniques can help improve students'

team working skills and influence students to have desirable behaviors. This is probably because the scientific learning processes allow the students to work in group as they have to help one another to think, create a question, express ideas, compare ideas, and find a solutions. These processes cannot be done alone, so students have to work together to complete the tasks. As the designed teaching model also makes use of cooperative learning and the learning processes are conducted through the good science thinking moves method with metacognition techniques, the students are able to work in group and conduct cooperative learning activities (Scanlon, 2000), using the five scientific learning processes and the three aspects of meta-cognitive techniques as a guideline for learning. The students, then, are able to effectively practice team working skills. They learn how to share, listen, and respect the opinions of the others. The designed teaching plans direct the students to think critically with intelligibility, plausibility, and wide-applicability (Beeth, 1998) and enable them to develop their thinking processes in relation to what they have learned and are learning (Hennessey, 1999). Finally they will develop high order thinking (Livingston, 1999) as they think and compare their ideas with others leading to desirable behaviors in class (Mittlefehldt and Grotzer, 2003). The students are willing to participate in group activities and help one another to complete the assigned task. According to the law of exercise (Thronkide, 1939), the students were able to develop their knowledge and team working skills all the time during class. The cooperative learning generates the peer pressure and the desire to complete a good task causing the students to behave themselves and reveal more desirable behaviors in class.

This is the reason why the students had more desirable behaviors in class during the experiment at a rate of higher than 50%.

## Conclusion

It can be concluded that the teaching plans designed under the good scientific thinking moves and metacognitive techniques can significantly help improve students' environmental knowledge and understanding, team working skills, and desirable behaviors and characteristics. It can be used as a tool for environmental education to improve environmental knowledge of young people so that they will use the knowledge gained to develop and conserve the environment of their communities for sustainable improvement of the country's environment and natural resources.

## RECOMMENDATION

The good scientific thinking moves method is an inquiry-based approach and the metacognitive techniques is a higher order thinking-based approach, both of which can be integrated to design teaching plans for environmental education classroom. The teaching plans can help enhance the students' learning outcomes to meet the requirement of environmental education and literacy. The teaching model should be supported by related organization and should be used as a model for learning and teaching environmental knowledge in any level of educational institutions.

## Conflict of Interests

The authors have not declared any conflict of interests.

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Full Length Research Paper

# Mainstreaming health and safety in schools: Practical insights from the teachers

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**This study presents the results from a study funded by the Directorate General of Occupational Health and Safety, an institutional body that pertains to the Employment Council of the Regional Government of Andalusia (Spain) and Ministry of Employment and Labour (Spain). The analysis focuses mainly on the teachers who work in pre-primary, primary and secondary education in Andalusia. The aim is to discover the current situation of the educational institutions in matters of occupational safety and health, establish mechanisms to orient didactic and organisational intervention to facilitate the teaching-learning process of a prevention culture, and extract basic elements to acquire training in health and safety. To do so, an inferential and descriptive analysis of quantitative data was conducted (research methodology). All of this made it possible to discover the reality of the job risk prevention culture in the schools. An especially important result in this research, in order to achieve quality education in terms of prevention, safety and health, must receive preparation in their Initial Training and later in the Teacher Centres. They must be able to evaluate the teaching-learning methodology used, the suitability of what is taught for the objective proposed, and the media and/or resources based on criteria of quality, quantity, use or interest in the classroom, as expressed in the Spanish Strategy for Occupational Safety and Health and in the Second Andalusian Plan for Occupational Health and Job Risk Prevention for teachers in public schools dependent on the Education Department of the Regional Government of Andalusia (Spain).**

**Key words:** Occupational safety and health, schools, teachers, prevention culture, quantitative research.

## INTRODUCTION

The risk prevention culture seeks excellence in the quality of working life and is based on commitment and educational participation (Nielsen, 2004). Thus, the Community Strategy on Occupational Safety and Health, 2000-2004; 2004-2008 and 2008-2012, published a document titled "*How to adapt to the changes in society*

*and in the world of work: a new community health and safety strategy*" (Jansen, 2012). This document highlights the need to produce and disseminate good educational practice codes in the areas of health and safety in schools. Thus, in order to develop a prevention culture in the educational setting, a series of aspects

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should be taken into account that must be present when teaching prevention:

1. A prevention culture can only occur as the result of a learning process that begins in early childhood and is maintained throughout life. At the lower educational levels, the instruction must be integrated into values education, specifically within the value of "health". As in teaching any value, the methodology has to be transversal and present the hazards in the school itself as the first example of occupational risks.
2. We focus especially on the modality represented by vocational education due to its special link to the world of work. Vocational education should integrate prevention activities into the curricular instruction process itself and, especially, into its practical aspects. The concept would be "a job is well done if it is done safely".
3. We understand that prevention training must be present at high levels of the educational system because of their connection to the world of work, but we make special reference to studies directed toward teacher training, due to its potential effect on children and young people's acquisition of a prevention culture.
4. Developing a prevention culture requires a collaborative effort between the employment and educational authorities, where teacher training is included as the first link.

To address the risks and accidents that can occur while performing a future job, we must recognize that integrating prevention into the set of activities and teaching models in the educational setting is fundamental and a priority, while taking into account the social, cultural and psychophysical particularities of the agents involved (Weare and Markham, 2005). Moreover, we must study the "customs" (collective behaviours), given that they form the basis for investigating why some societies resist and maintain unhealthy risky behaviours. Safety programmes that focus on intervention in behaviours as antecedents of accidents (*behaviour-based safety*), reinforcing safe behaviours and providing feedback, are not a "magic recipe" or a universal solution (Miller et al., 2002).

The prevention of emerging risks, such as stress, anxiety, depression and bullying, in the educational setting requires educational actions coordinated with public health policies. For Rivara (2001), it is necessary to study these risks in an interdisciplinary way from their diverse perspectives: educational, social, psychological and ergonomic. The integration of the health and safety objectives into the set of community policies, particularly those related to employment, public health and education, must be reinforced in order to improve synergies in common objectives. This is the framework for the general course of action.

It is evident that the so-called prevention culture must

be initiated in the schools, become integrated in their organisational structure, and be visible at all the educational levels and stages. We cannot talk about a comprehensive education in society if the school does not decisively intervene in values education (Young, 2014). Values are based on beliefs and attitudes that are learned in the early phases of life (early childhood and primary) when the learning capacity is greater. Therefore, values related to health and safety must be addressed in the classroom and school, visualised and analysed based on different patterns of behaviour, and learned by carrying out good practices that provide students with the healthiest and safest lifestyles possible. In the Rome Declaration (OSHA, 2004) on the integration of prevention into education and training, a request was made to the European Council on Social Issues, the European Parliament and the European Commission to contemplate taking special measures to apply the European employment guidelines to the member states, in order to guarantee that:

1. Education and training in health and safety principles are mentioned as a way to achieve safer and healthier jobs and as an important tool for improving the quality of work.
2. Qualified and quantified objectives are included in employment guidelines to prepare young people for their working life through education and training.
3. "Criteria" are elaborated for training, programmes, research and, especially, evaluation of the acquired knowledge and the appropriate modifications in behaviours and attitudes.
4. The teachers receive adequate training that is extended to guidance counsellors.

In any case, teachers must facilitate and energise students' learning process about healthy and safe behaviours that avoid or minimise the risks around them, as established in the Second Andalusian Plan for Occupational Health and Job Risk Prevention for the teaching personnel in public schools dependent on the Education Department (2010-2014).

Another fundamental aspect of prevention in the educational setting is professional training, including continuing professional development (CPD), directed mainly to the teachers. Thus, the training must include, as a key axis, the hazards that are present in schools and guidelines for their prevention (Azeredo and Stephens-Stidham, 2003).

Finally, to achieve the effective integration of job risk prevention in the educational setting and, therefore, work toward greater occupational health and safety, it is necessary to follow a series of lines of action that the European Occupational Safety and Health Agency (OSHA, 2012) has recommended:

1. At the end of compulsory education, students must have basic knowledge about questions of health and safety at work and their importance, and about their own rights and responsibilities.
2. Students in university courses and vocational education, including business schools and other professional disciplines, will have to receive the relevant information and training in matters of OSH (Occupational Safety and Health) as part of the course.
3. Prevention training must be a comprehensive part of the preparation and organisation of work experience programmes.
4. The people responsible for making policies in education, employment and job risk prevention must cooperate to include occupational safety and health in education.
5. In the area of Education and Professional Development:
6. Policies must be adopted to guarantee that training in the area of risks is part of the teachers' study plan for each and every student.
7. The integration of prevention in the actions, agreements and policies related to education must be promoted.
8. It is important to raise teachers' awareness that they must contribute to guaranteeing young people's safe and healthy initiation into their working life, and companies, schools and university departments must raise awareness of risks and their prevention through research projects, activities, studies and analyses of experiences.

## Purpose

Discover new channels for job risk prevention through education, determining the factors that facilitate a prevention culture in educational institutions.

## Study objectives

1. Discover the current situation of the educational institutions as training centres in matters of job risk prevention.
2. Establish patterns that clarify the didactic and organisational performance directed toward facilitating the teaching-learning process in areas of prevention.
3. Determine components and characteristics of the training directed toward preparing educational institutions in matters of job risk prevention.

## METHODOLOGY

The methodological strategy used is the "survey study" (Cohen and Manion, 2007; McMillan and Schumacher, 2006 and Cea, 2001).

## Quantitative data collection instrument: Questionnaire

According to Cea (2001), in the survey study, the basic data collection instrument is the questionnaire (standardized). In the words of McMillan and Schumacher (2006) and Flores (2003), a questionnaire has the purpose of obtaining, in a systematic and organized way, information from the population investigated about the variables under study (Table 1).

The questionnaire applied has a Likert-type format. The interviewees are asked to respond to each statement by choosing the response category that best represents their opinion. In our case, the scale we adopted is made up of four categories (1=Not at all, 2=Very little, 3=A lot and 4=Very much), in order to avoid adopting a five-category scale with a central value represented by "Average", as the respondents' tendency is to automatically choose this middle value, which would not provide much information (Morales-Vallejo et al., 2003).

The questionnaire was administered in the schools in the different provinces of the region of Andalusia that participated in the campaign "Learn to grow up safely" promoted by the Ministry of Education and Employment.

## Sample

The selected sample is composed of teachers participating in the Programme "Learn to grow up safely", promoted by the Ministry of Education and Employment and carried out in the schools (Table 2).

The type of sampling used in the study is probabilistic, specifically "simple random sampling without replacement" (Lohr, 2000). We performed the calculations considering the finite population, according to the proposal by Lohr (2000) (Table 3).

## Characteristics of the sample

Some initial information collected is related to the age of the teachers who make up the study sample (Table 4).

The data also show the "sex" of the teachers, presented in Table 5.

We also show the data corresponding to the "position held" by the teachers in the schools studied (Table 6):

Next, we present the teachers' "years of experience" and the "educational levels" of the schools where they work. Table 7 and 8 show the number of years of experience of the teachers.

The data for the "educational levels" in the schools where the teachers work are located in Table 8. They are divided into four response categories: Pre-primary, Primary, Compulsory Secondary Education and "No Answer".

In Table 9 the group of teachers is represented, organised in "teaching teams" (pre-primary and primary) and in Departments or Seminars (O.S.E).

We complete the previous information by indicating the subjects (Table 10) taught by the surveyed teachers.

We also identified the type of school, shown in Table 11. Finally, in Table 12, we present the data related to the "socioeconomic level" of the students, as perceived by the teachers in the school where they are working.

## Data analysis

The use of a quantitative analytic procedure, understood as a

**Table 1.** Research objectives vs. Intended information.

<b>Relationship between OBJS-questions on the data collection instrument</b>	
<b>Objectives of the study</b>	<b>Questions on the questionnaire</b>
1. Discover the current situation of the schools in the area of job risk prevention	(Items: 1-23). Degree of significance, need or importance, advantages and applicability in the schools
2. Patterns that clarify the didactic and organisational performance directed toward facilitating the T-L process	(Items: 24-127). In the teacher, students, educational levels, contents, subjects, methodology, activities, resources, planning-participation, information-communication, obstacles and evaluation
3. Determine components and characteristics of the training designed to prepare the institutions in job risk prevention	(Items: 128-148). Type of educational agent to train/teach JRP; contents to teach to the teacher; formulas for JRP instruction from Initial Teacher Training and Professional Development

**Table 2.** Total population of teachers.

<b>Participating teachers</b>	
<b>Population</b>	<b>N</b>
Teachers participating in the programme "Learn to grow up safely"	1270

**Table 3.** Estimated sample of the participating teachers.

<b>Sample of teachers</b>	
<b>Sample</b>	<b>N</b>
Teachers resulting from the sampling statistics	222
Teachers participating in the study	258

**Table 4.** Age of collective of teachers.

<b>AGE</b>		
<b>Categories</b>	<b>N</b>	<b>%</b>
1. 21-30	39	15.3
2. 31-40	45	17.6
3. 41 or more	174	67.1
Total	258	100

**Table 5.** Sex of the teachers in the study sample.

<b>Sex</b>		
<b>Categories</b>	<b>N</b>	<b>%</b>
1. Men	122	47.3
2. Women	136	52.7
Total	258	100

**Table 6.** Position held.

<b>Position held</b>		
<b>Categories</b>	<b>N</b>	<b>%</b>
1. Classroom Teacher	188	72.9
2. Specialist Support Teacher	16	6.2
3. School Head	23	8.9
4. Head of Studies	18	7
5. Assistant School Head	13	5
Total	258	100

**Table 7.** Years of teaching.

<b>Years of teaching</b>		
<b>Categories</b>	<b>N</b>	<b>%</b>
1. 1-10	55	21,3
2. 11-20	43	16,7
3. 21-30	87	33,7
4. 31-40	61	23,6
5. NC	12	4,7
Total	258	100

**Table 8.** Educational levels.

<b>Educational levels</b>		
<b>Categories</b>	<b>N</b>	<b>%</b>
1. Pre-primary	52	20.2
2. Primary	144	55.8
3. C.S.E.	61	23.6
4. NA	1	0.4
Total	258	100



**Table 9.** Teaching work.

<b>Work in teaching teams</b>		
<b>Categories</b>	<b>N</b>	<b>%</b>
1. Pre-primary	65	24.1
2. Primary	105	43.4
3. Stages and/or Cycles	30	13.2
<b>Work in departments</b>		
1. Language and Lit.	6	2
2. Mathematics	9	3.5
3. Foreign Languages	14	4.3
4. Technology	14	4.3
5. Philosophy	4	1.6
6. Physics and Chem.	2	0.4
7. Physical Education	6	2
8. Social Sciences	3	1.2
Total	258	100

**Table 10.** Subjects taught.

<b>Subjects</b>		
<b>Categories</b>	<b>N</b>	<b>%</b>
1. General	123	47.7
2. Physical Education	13	5
3. Foreign Languages	22	8.5
4. Technology	14	5.4
5. Religion	2	0.8
6. Philosophy	4	1.6
7. Language and Lit.	6	2.3
8. Mathematics	9	3.5
9. Physics and Chem.	2	0.8
10. NA	63	24.4
Total	258	100

**Table 11.** Type of school.

<b>Type of school</b>		
<b>Categories</b>	<b>N</b>	<b>%</b>
1. Public	215	83.3
2. Subsidised	42	16.3
3. Private	0	0
4. NA	1	0.4
Total	258	100

technique to extract information from the data and interpret its meaning, using concepts and arguments supported by numbers and mathematical structures (Flores, 2003). Thus, once the data

**Table 12.** Socioeconomic level of the schools.

<b>Socioeconomic level</b>		
<b>Categories</b>	<b>N</b>	<b>%</b>
1. High	10	3.9
2. Average	175	67.8
3. Low	65	25.2
4. NA	8	3.1
Total	258	100

from the questionnaire were obtained, the statistical calculations were performed with the help of the Statistical Package for Social Sciences (SPSS 14.0). On the one hand, at a descriptive level, we used the central tendency measures, representing the entire distribution and the variability in order to find out how the data are grouped. On the other hand, at an inferential level, we discovered which of the differences found are due to chance and which are not. Setting a confidence level of 95% for the statements made, we developed non-parametric hypothesis contrast tests (contingency tables with chi-squared for two samples). We also carried out another more complex multivariate analysis of interdependence as the factorial analysis, ratifying the existence of different variables and groups, and that the differences between them are significant. In the contingency analysis, we considered it relevant for our study objective to cross the different dimensions and dependent variables from the questionnaire with the independent variables (identification variables of the teachers surveyed) of impact in the professional trajectory of the teacher. However, only those that were statistically very significant –with a Cronbach's Alpha of less than 0.0005- are discussed (Lizosoain and Joaristi, 2003).

In the factorial analysis, it becomes necessary to verify a series of aspects that report on its adequacy or non-viability. The main verification statistics are:

1. The KMO –Kaiser-Meyer-Olkin- measure of sample fit (of the entire test)
2. The Bartlett sphericity test

The KMO value is .805, a value that is considered quite important, according to Kaiser (1974) (cited in Hofmann, 2010). Regarding the numeric value of the Bartlett sphericity test, it is associated with a chi-squared of 4493.294 and a  $p = .000$ , and, therefore, statistically very significant (Table 13). In this type of test obtained from factorial analysis, high indexes of consistency and reliability of the data collection instrument are also observed. To reinforce the reliability of our questionnaire, we use the split-half method and Cronbach's alpha internal consistency method (Table 14).

After performing the split-half test, Fox (1987) indicates that when estimating responses, correlations are acceptable from 0.70 or even 0.60, when performing estimations of opinion and criticism, which is the case in the present study. The consistency coefficient with these 148 items was = 0.920, and this is a standardised coefficient that gives us a very high index of reliability between the values Fox (1987) mentioned as desirable.

Regarding the Cronbach's Alpha internal consistency method, we obtained a Cronbach's alpha equal to 0.946, with a confidence level of 95%, which is close to one, indicating that the questionnaire is highly reliable (Table 15).

Regarding the validation of our questionnaire, a validation process was carried out by judges (Cohen and Manion, 2007). In

**Table 13.** Reliability statistics. KMO and Bartlett tests.

<b>Kaiser-Meyer-Olkin Measure of sample fit.</b>		<b>.805</b>
Approximate Chi-squared		4493.294
Bartlett Sphericity test	gl	2556
	Sig.	.000

**Table 14.** Reliability statistic. split-half test.

	<b>Value</b>	<b>.920</b>
<b>Cronbach's Alpha</b>	<b>Part 1</b>	<b>74(a)*</b>
	Value	.920
	<b>Part 2</b>	<b>74(b)*</b>
	N of elements	148
	Total N of elements	148
<b>Spearman-Brown Coefficient</b>	Equal length	.698
	Unequal length	.698
	<b>Split-half by Guttman</b>	<b>.696</b>

**Table 15.** "Cronbach's alpha" internal consistency method.

<b>Cronbach's Alpha</b>	<b>No of elements</b>
.946	148

our case, two types of judges intervened in the validation of the questionnaire: 1) experts-technicians in prevention topics (study problem) also related to the educational context; 2) consolidated researchers in the field of educational research. Moreover, the pre-test of the questionnaire was administered (Cea, 2001). We chose a small sample of individuals with the same characteristics as the study population. In our case, they were representatives of the teaching collective who perform their professional work at different levels of the educational system and have participated in or known about the prevention efforts of the educational campaign "Learn to grow up safely" funded by the Ministry of Employment and Education.

## RESULTS

The results and conclusions of our study have been divided according to the different research objectives. Thus, we will present the data obtained from the descriptive and contingencies analysis.

### Current situation of the educational institutions as centres for training in job risk prevention (JRP)

#### Objective 1

Regarding the importance and current situation of job risk

prevention in schools (descriptive level of the data), the teachers think that working on prevention in the classroom is important and necessary because, in the long term, it would be efficacious for society (90% and a mean of 3.35), and it would help to achieve the comprehensive development of the students' personality, emotional stability (79.9% and a mean of 3.13) and preparation for life (87.6% and a mean of 3.22). The advantages obtained from integrating prevention training in schools, according to the teachers, would be to reduce accidents (86% and a mean of 3.19), foment efficacy in their future job performance (80.6% and a mean of 3.11), and encourage school children's interaction with the environment outside the school, understood as a broad framework made up not only of people, but also of a variety of types of didactic-organisational elements (74.6% with a mean of 2.99). Regarding the level of real application of prevention in schools, the teachers consider that there are hardly any relationships with other schools for developing instructional activities on this topic (82.7% with a mean of 1.13). They also point out that the coordination and collaboration with the Administration in matters of financing and developing instructional plans is quite limited and not very practical (85.7% with a mean of 1.61). Continuing with the above, the teachers do not have the necessary resources to foment prevention in the school (83.3% with a mean of 1.72), which implies not having the possibility of working on prevention with the students (81.4% and a mean of 1.82). This means that there are numerous difficulties in trying to promote a prevention culture if they do not have the resources to plan and develop instructional activities, etc. In summary, the level of commitment of the entire staff in fostering job

risk prevention in the school is rather superfluous, as the current impact of the prevention culture on the daily routine in the school is not very relevant (84.8%, with a mean of 2).

With regard to the results and conclusions arising from the contingencies analysis, a series of quite significant associations are derived that show the importance and current situation of prevention in schools. These are:

1. The teachers from 31 to 40 years old think it is very important to teach prevention in the classroom, as this content is important and necessary because in the long run it would be efficacious for society.
2. The teachers think prevention would greatly facilitate the acquisition of basic tools for students' access to the job market.
3. The teachers who hold the position of classroom teacher think there is little commitment from the different agents in the school to fostering prevention in the school.
4. The teachers who perform duties as heads of studies state that there are no joint relationships with other schools to work on job risk prevention, and that the impact of the prevention culture in the school is quite low.
5. The pre-primary and primary teachers, along with those who belong to the mathematics, physics, chemistry, physical education, philosophy and technology departments, think it is quite advantageous to teach the prevention culture in schools.
6. The teachers who belong to public and subsidised schools think that the prevention culture currently has little impact on the reality of the school.

### **Keys to the development of the teaching/learning process in matters of prevention**

#### **Objective 2**

To integrate job risk prevention in the teaching-learning process, it is important to take a series of factors into account. One of the basic pillars of teaching and learning is the teacher. This figure must exemplify someone who performs and transmits prevention values, foments participation in doing preventive activities, and awakens the students' interest in contents and activities related to safety and health (90.3% and with a mean of 3.24). This means that the teacher has to facilitate, to a large extent, the students' comprehension of the basic contents of job safety and health (89.2% and with a mean of 3.22). From a more personal perspective, the teacher must be trained and prepared to teach job risk prevention in the classroom and propose procedures that allow the development, application and updating of a prevention culture from a position of flexibility and continuous improvement (89.1% with a mean of 3.21).

Another fundamental axis in the teaching-learning

process is the student. The teachers' opinions point out the importance of this process from a significant and quality perspective (active learning), where students become involved in their own training. They understand that activity, exploration and investigation are important mechanisms in the educational-prevention process (91.9% and with a non-significant response dispersion level of 0.570, indicating the homogeneity of the response to this statement). In other words, the teachers must start with previous experiences that have emerged from the students in order to determine the level of instruction in this area (83.1%, with a mean value of 3.18).

In the school, it is also important to highlight the school leadership team, which is perceived by the teachers as fundamental in supporting initiatives and lines of action, such as fomenting the awareness and involvement of all the personnel in health and safety topics in the school, facilitating adequate means and installations to better carry out the activities. In this way, steps are taken to revise and improve the effectiveness of prevention in their school and encourage creativity and innovation in prevention topics (94.1%, with a response value of 3.34 and an absolute response homogeneity of 0.531).

Regarding the most suitable educational levels to teach prevention, the majority of the teachers (85.7% with a mean of 3.77) consider that the instruction should focus mainly on secondary education. Thus, the educational level that obtains the greatest consensus and unanimity is vocational education (84.9% with a mean of 3.32), followed by compulsory secondary education (82.3% with a mean of 3.12), and finally upper secondary (78.3% with a mean of 2.91). It should be kept in mind that more than half of the teachers also think this instruction should be provided in primary school (63.2% with a mean of 2.34).

With regard to the contents, the teachers state that prevention should be taught in a transversal way (89.9%, with a mean of 3.22) in the different traditional subjects, and that the public administration should foster prevention from this perspective (90.3% with a mean of 3.54).

Regarding the teaching of prevention from the different educational levels, the teachers state that prevention should be taught through the subjects of technology and physical education and in subjects within the sciences and social sciences (88.7% with a mean of 3.32).

The teaching of prevention must be approached by focusing on the students, taking into account their interests, motivations, etc. (88.4%, with a mean of 3.25), and the contents must be taught cyclically in the cycles/stages, in order to increase the level of knowledge (86%, with a mean of 3.1). These contents must be the same ones dealt with in the job world (80.1%, with a mean of 2.95). For example, the contents to be taught must revolve around concepts such as "preventing injuries" (96.2% and with a mean of 3.53), "being trapped

or stuck”, “blows” and “falls”; “intoxication due to inhalation”, “ingestion or skin contact with toxic products”; “physical and psychological overload” and “fires and explosions”, “burns and electrocution”. These contents have consolidated percentage values ranging from 90.7% to 86.8%, with a high response value corresponding to a mean of between 3.41 and 3.30.

Regarding the way prevention should be taught in the school context, the teachers agree that the best methodology must focus on getting the students (capabilities, attitudes, etc.) to become responsible for their own actions; it must be based on a holistic (globalized) and social interpretation of prevention (90.3% with a mean of 3.56), thus rejecting prevention instruction designed in terms of “process-product”, quantifying the time employed, accountability, etc. (89.5% with a mean of 1.56) (traditional and positivistic perspective of education).

To achieve full efficacy in teaching prevention, the teachers consider that the main element is the activity, defined as a procedure that transforms the theory into elements of practical application. Thus, they coincide in pointing out that in designing an activity, it is important to emphasize the idea of prevention, safety, health, respect, awareness, consciousness, etc. (83.5% with a mean of 3.13%). Moreover, these activities must foster the participation of the family (91% with a mean of 3.45).

Resources are another aspect to highlight in teaching prevention. The teachers advocate audiovisual media through DVDs, cinema, television, video, etc. (94.3% with a mean of 3.6), and computer and technological resources, such as the Internet, multimedia software, interactive CDs, etc. (90% with a mean of 3.3).

With respect to job risk prevention planning, the perfect strategy is the School’s Educational Project (87.5% with a mean of 3.12). It must contemplate the prevention needs and expectations stemming from the work reality and, thus, establish priorities to satisfy the needs and expectations that arise. In order for prevention to be synonymous with consensus and unanimity in the schools, it is fundamental to foment participation. For the teachers, it is extremely important for the Education and Employment Administration to establish a line of mutual collaboration, support and guidance in all its actions (93.4% with a mean of 3.35).

It is important to highlight that the lack of human and material resources, the inexistence of stimuli, financing and support from the administration, the need for considerable time to do the activities, and excessive class size are factors that the teachers feel should be taken into account in the development and initiation of prevention initiatives (95.3% with a mean of 3.65).

The teachers state that to achieve an evaluation of the prevention culture and be able plan prevention projects in the school, it is important to evaluate the procedures used in the classroom, the means and/or resources

based on criteria of quality, quantity, use and interest, and the level of acceptance of the content by the students, parents and teachers (93.4% with a mean of 3.47).

Regarding the contingencies analysis, the main conclusions we extracted about the independent variables –highlighting the significant relationship with each of them-, are the following:

1. The male teachers over 41 years old think it is quite important to foment the students’ participation in doing prevention activities.
2. The teachers between 31-40 years old, with experience ranging between 11 and 20 years, state that it is quite important for the teacher-classroom teacher to be familiar with the reality of the job world the students will be entering.
3. The teachers over 41 years old highlight the need for the administration to promote job risk prevention as a subject to be taught.
4. The teachers over 41 years old, and with experience ranging between 21 and 30 years, think it is quite important for the prevention content to be taught from a perspective focused on the student, and that the activities should be designed in a comprehensive way, taking into account their interests and motivations.
5. The primary school teachers think it is quite important for the prevention activities to exemplify, as much as possible, the prevention learning context we want to transmit, based on students’ everyday situations, without omitting the basic prevention concepts (safety, health, etc.).
6. The teachers who hold the position of School Head say it is quite important for the teacher to be the facilitator of the prevention culture in the classroom, and he/she must be trained and prepared to do so.
7. The teachers who hold the position of head of studies think it is quite important for the teacher to previously diagnose the instructional needs of their students in terms of prevention.
8. The teachers who perform the job of “support teacher” think that one of the training contents for the students should be intoxication by inhalation, ingestion or skin contact with toxic products, and that the activities should be based on the students’ own experiences.
9. The teachers who are heads of studies think that the optimal resources for teaching prevention are audio-visual media such as digital cinema, television, video, DVD, etc., as these resources would help to achieve a prevention culture to a greater degree.
10. The teachers mentioned above also coincide in pointing out that it is quite important to organise joint activities with other schools in matters of prevention, and that this work should be done by the School Leadership Team.
11. These same teachers state that one of the main

obstacles to teaching prevention in the classroom is the lack of support and encouragement by the administration.

12. The teachers with teaching experience that ranges between 21 and 30 years consider it quite important that one of the contents to be taught be related to students' auditory problems due to noise abuse.

13. The teachers who work in Pre-primary Education consider it quite important for the students to learn prevention at the Vocational Education levels because the prevention contents must be the same as the ones they will need in the labour world.

14. The General Education teachers indicate that it is quite important to carry out institutional campaigns to promote prevention in schools as a resource in the compulsory levels of the educational system.

15. The Technology teachers believe strongly in the need to promote a continuous "flow of communication" in order to efficaciously manage prevention in the school.

### **Components and characteristics of the training to prepare institutions**

#### **Objective 3**

In the entire prevention training process, it is necessary to know the components and characteristics of the instruction in this subject. Thus, the teachers state that instruction by the classroom teacher, with the help of an external specialist agent in prevention, is the best way to teach prevention (94.2% with a mean of 3.33). When it is not possible to have an external agent to complete the teaching of prevention, it is necessary for the teacher-classroom teacher to be properly trained (80.1% with a mean of 2.96). For this purpose, various topics are mentioned: safety, hygiene, ergonomics and psychosociology, strategies for the transversal nature of the prevention culture, and strategies to manage prevention in the school in the case of belonging to the school leadership team (84.7% with a mean of 3.02).

Teacher training, whether initial or continuing professional development, will have to respond to a series of conditions. Regarding Initial Teacher Training, the best formulas for consolidating and fostering prevention stem from the acquisition of prevention contents through the observation of the world of work, along with a close relationship between the theoretical contents and "laboratory practice" (82.4% with a mean of 3). Finally, regarding continuing professional development, the teachers think the most attractive formulas are the training and orientation activities offered by the CEPs (Teacher Training Centres) (87.5% with a mean of 3.16), as well as the model where the school is understood as on-the-job training; that is, the training stems from experience and contact with the labour reality emerging from the socio-personal context (75.7% with a mean of 2.87).

In this dimension, the most important conclusions extracted from the contingencies analysis related to the variables –highlighting the significant association with each of them–, are the following:

1. The teachers over 41 years old think it is quite important to train the teaching staff in strategies and instruments that address prevention management in the school.
2. The teachers from 31 to 40 years old think it is quite important for teacher training in prevention to integrate strategies for developing the transversal nature of the prevention culture.
3. The male teachers, along with teachers from the departments of physical education and languages, think it is quite important for the students' prevention training to be carried out by the classroom teacher, along with an external specialist agent in prevention with a basically technical background.
4. The teachers with accumulated experience of more than 41 years consider it quite important for the teacher training to address the psycho-sociology of the teacher and the student. This topic must emphasise contents related to stress, mobbing, "burn out" or professional exhaustion, etc.
5. The teachers who belong to the mathematics department feel that it is quite important for continuing professional training in prevention to be developed through training and orientation activities offered by the CEPs (Teacher Training Centres).

### **DISCUSSION OF RESULTS: IMPROVEMENT PROPOSALS AND/OR STRATEGIES DIRECTED TOWARD TEACHERS**

The proposals extracted from this study are directed toward improvement and quality in promoting a job risk prevention culture, basically focusing on the teachers. The teachers must adopt the role of "facilitator", be committed to knowledge and the transmission of prevention values, and awaken the students' interest in contents and activities related to health and safety, coinciding with Nielsen (2004) and Burgos-Garcia (2013). Also, the author agrees with Burgos-Garcia (2013) when teachers must teach job risk prevention in the classroom by proposing procedures that allow the development, application and updating of the prevention culture from a divergent and holistic perspective.

Another improvement proposal is to programme the prevention training activities by taking the student into account. This implies adapting the actions to the needs, interests and developmental level of the students, as presented by Weare and Markham (2005).

It is important to adopt a transversal teaching methodology focused on the student, as indicated by

Young (2014), based on their interests and motivations, in the different traditional subjects, in order to efficaciously work on job risk prevention in the classroom, specifically in subjects like technology, physical education and those included in the sciences and social sciences.

The teaching of prevention must be approached in a cyclical way in the different cycles/stages, in order to progressively increase the knowledge about prevention, which is the same as in the labour world.

Moreover, organising the instruction around contents such as: “preventing injuries”, “being trapped or stuck”, “blows” and “falls”; “auditory problems due to noise abuse”; intoxication by inhalation “ingestion or skin contact with toxic products”; “physical and psychological overload” and “fires and explosions”, “burns and electrocution”, “stress”, “mobbing”, “burn out or professional exhaustion”, is related to what is manifested in the First Andalusian Plan for Occupational Health and Job Risk Prevention for teachers in public schools dependent on the Department of Education (2010-2014).

The teacher’s task must be to educate the students in an environment rich in multi-disciplinary experiences and practices that interest them, as pointed out by Rivara (2001) and Burgos-Garcia (2013), across various subjects and with teachers participating from different areas to achieve a global and comprehensive approach.

Teachers must design activities using audio-visual resources, through DVDs, cinema, television, video, etc., and computer or technological resources, such as the Internet, multimedia software, interactive CDs, etc.

Finally, we also coincide with the European Safety and Health Agency (OSHA, 2012) in highlighting an improvement proposal, where teachers, in order to achieve quality education in terms of prevention, safety and health, must receive preparation in their Initial Training and later in the Teacher Centres. They must be able to evaluate the teaching-learning methodology used, the suitability of what is taught for the objective proposed, and the media and/or resources based on criteria of quality, quantity, use or interest in the classroom.

## Conflict of Interests

The author has not declared any conflict of interests.

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*Full Length Research Paper*

## Analysis on inclusion of social studies economy concepts in coursebooks

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Having an efficient and satisfactory economy education may enable an individual to actively participate in decision making process about economy-related issues. This is very important for democratic societies. This research aims to search methods and levels of teaching "economy" concepts prepared for Turkey 2005 Social Studies Program in 6th and 7th grades. In this study, 6th and 7th grade social studies coursebooks taught at schools within 2013-2014 academic year were investigated. Document review method was used in this research within the scope of qualitative research method. In this research, primary school 6th and 7th grade social studies coursebooks were used. Content analysis method was preferred. Economy concepts used in this study were formed according to the research question; clarified via literature review and pre-reading on books and finalized following expert opinion. Approximately the same number of concepts takes place in all social studies coursebooks of 6th and 7th grades. It was seen that the repetition frequency of concepts in IMYAY Publishing is more than MoNE (Ministry of National Education) Publishing. Approximately the same number of concepts takes place in 7th grade coursebooks. As for the inclusion "economy" concepts, we can say that repetition is about two times more in coursebooks of MoNE publishing than Anittepe Publishing. Analyzing 6th and 7th grade social studies coursebooks, it was found that concepts on 6th grade level are more advanced in terms of the repetition frequency of concepts. According to the results of the research, results among countries considered to be in economically developing countries such as Croatia, Taiwan and Turkey are significant. Studies prove the presence of a positive correlation between economy education and development. It is believed that this study will bring a remarkable contribution to the literature.

**Key words:** Social studies, program, economy, concept.

### INTRODUCTION

Education is a process which ensures the continuity of social system. In this process, information, skills, attitudes and values generated by society factors are acquired by

individual and that individual's and society's development is ensured. One of the fundamental disciplines being in relationship with multi-dimensional development is

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economy. Economy-related problems are among the issues which put most pressure on people and which societies always encounter. These problems are the main reasons of the conflicts that threaten world peace between continents, nations, people, states, various institutions and organizations. The leadership of nations in political and ideological struggle mostly depends on economic power (Baker, 1950). The biggest advantage of developed countries is to have well-educated, qualified labor force that can keep up with rapid changes in production process and high knowledge generation capacity. Improvements in education increase both efficiency of labor force and knowledge generation capacity and thus positively affect economic growth. Performance of a country within development process is closely related to the efficiency of education system (Caliskan et al., 2013). Studies conducted at the beginning of 1960s via growth calculation methods revealed that the increase in economic growth mostly depends on the improvement in education level of labor force and studies conducted on various countries show that education has a significant contribution to economic growth (Cakmak, 2008). Education contributes to economic production process in terms of re-generation of knowledge, use and dissemination of new knowledge.

The activity of economy evolves out of a universal unbalance. This unbalance is derived from the fact that human needs are unlimited while the resources to fulfill these needs are limited. Human beings must order the world in order to reduce this unbalance between needs and resources (goods and services). At this point, this ordering activity consisting of production, distribution and consumption is called as economic activity. To observe, analyze, interpret and consciously steer this activity is the subject of the science of economics. Educational institutions are the production places where knowledge is generated and submitted to the demanding students. Being this close to each other in terms of fundamental concepts, education and economy is always in a relationship with each other (Dura, 1996). Knowledge on economy and the ability to apply this knowledge are required for a responsible and active citizenship. Citizens, producers, consumers, investors and people who can vote must understand and use the fundamental economy concepts in order to serve satisfactorily. A country needs people who are equipped with comprehension and using skills on economy in order to be able to have a word on world economy and protect her entity. A definition of effective citizen is to have knowledge and skill on political, social and economic issues; to apply them and realize them into life (Seiter, 1989, cited by Akhan, 2010). Economy is directly related to daily lives of people. Economy education guides students to develop responsible behaviors towards production and consumption of resources. It improves children's skill to assess alternatives in daily economy lives. It teaches how to earn, use and save money. It enables them to know

economic systems, economic models of countries. It makes students learn to what extent economic thoughts are important (Evans and Bruckener, 1990, cited by Ozturk, 2009; Turan, 2008).

Today, global changes that profoundly affect economy life and social institutions occur. The responsibility to bring up generations having skills to cope with this change smartly is undertaken by schools. The first studies conducted in America about the necessity of involving economy education in pre-university education stage were started by some academic members of Education Faculty of New York University in 1947. The question sought to be answered was bringing up young people as competent economic citizens. In the studies, it was found that schools are weak in terms of skills and tools required to understand American economic institutions, curriculum is incompetent to give place to economy institutions, problems and tools; what is more to the point, primary and secondary school students do not have sufficient education in economy. In order to solve these problems, it was recommended that program experts should meet the most competent economy experts for a few weeks and should develop a plan for teacher education in national programme and citizen competencies. The first discussion on planning was made by program experts, economists from research organizations, participants from official institutions and labor and employee organizations; a plan and program were developed. In 1948, Economy Training Workshop was organized by New York University. In this workshop, the subjects which were discussed are as follows; factors which lead to production, distribution, stability and instability, full employment, unemployment, high and low productivity, national income analysis, a commonly used technique in research, an assessment tool being used in only colleges, crucial and emergent socio-economic problems of the period, things that should be known by each citizen about economy system, required materials in classrooms, which visual aids can be used to revive the curriculum, how social resources can be useful, suitable goals for the perspective of economy at secondary school level, how a democratic policy should be. One of the outcomes of the conference has been the establishment of the Joint Council of Economic Education. The Council adopted the principles of not being interested in special interests of any group, having no relationship with propaganda activities, having no effect on code activities, imposing no economic program (Baker, 1950). The Council started planning for analysis and evaluation of economy practices in Social Studies coursebook texts used in primary and secondary schools in 1971. In the analyses, the researched subjects are as follows; which concepts, generalization and principles take place in coursebooks, how these are taught in analytic terms, how economic concepts, generalizations and principles are defined, to what extent economy content is comprehensible and interesting. At the end of the research,



recommendations were made about which concepts should be given in coursebooks at primary and secondary school levels and how these concepts should be taught (Davison et al., 1973). As a result of this kind of studies, expectations started to bring up talented people who can bring new horizons in economy system and can adapt themselves to demands related to producer, consumer and economy (Sonmez, 2005). In order to acquire these skills, Day and Ballard developed a sample practice to be applied in classroom. This practice called as "Classroom Mini Economy" offers a teaching form of a class economy of which students are a part in order to provide a similar version of economy activities in real life. This teaching form aims to fulfill the needs of citizen being educated, productive and having educational motivation in a highly dependent society with the rapid change today. Furthermore, it is aimed to ensure the effective teaching of important economic principles and life skills. Students are taught these principles and skills and they are made to apply their knowledge and experiences from other disciplines. In this practice, 1st-6th grade students earn money by various ways in a mini economy and they spend them in class canteen, class auction or a canteen created by classmates. Students apply class tasks to earn money; manage an enterprise, pay tax, rent goods and invest. Mini economy is an effective miniature economic system which functions in a regular classroom. In this way, children experience a really willing learning (Day and Ballard, 1996). This kind of study shows the importance of learning economy principles at primary school level.

A more basic practice applied in Turkey in this scope was developed by the cooperation between Ministry of National Education and Dogus Holding. The aim of the practice called as 3 Moneybox Financial Literacy Training Program is to make children learn money management, acquire the awareness of saving and make up their own budgets in early ages. In this practice for which Association of Monetary and Financial Literacy serves as practitioner and observer, it is aimed to raise awareness of saving and sharing with a moneybox for 4th grade students in Turkey and to make them financially literate. In parallel with the trainings started in Istanbul, it was planned to conduct student and parents training in 9 different provinces of Turkey (Eskisehir, Nigde, Antalya, Denizli, Kahramanmaras, Sanliurfa, Hatay, Rize and Erzurum).

In Turkey 2005 Social Studies Program, economy subjects are taught in a separate learning area. This development is an indicator of the fact that the importance of teaching economy subjects at primary school level in Turkey is comprehended. To have efficient and competent economy education may enable a person to take an active role in decision-making process. This is also important for democratic societies. Our world is getting more complex and interdependent in terms of social ties. Therefore, people need to have more economic knowledge in order to keep with the ever-changing world.

It is a must to create a competition environment in order to stand as an industrial power and to be successful in international trade. The duty of economy education is to provide necessary learning in order to build up the basis of economy and get rid of incorrect information about economy. Economy education makes people acquire thinking skills and significant economy knowledge required by citizens to be individual/social, effective and participatory citizens. Furthermore, it can contribute to critical thinking and decision making skills of people in addition to making them acquire social conscious (Staubs, 2007; Schug, 1985, cited by: Akhan, 2010).

This research aims to search the inclusion of economy concepts and levels in 6th and 7th grade social studies lesson. To this end, data were collected after the social studies coursebooks were investigated.

## METHODOLOGY

In this research, 6th and 7th grade social studies coursebooks which are taught in 2013-2014 academic year were investigated. Qualitative research method was used during the study. In this scope, document review method was used in this research within the scope of qualitative research method. Document review is a method used to collect, investigate and assess official or private records. This method ensures rich data collection (Ekiz, 2003). Qualitative research does not aim to generalize the results to a population (Yildirim and Simsek, 2008). Therefore, no population has been mentioned in this study. In order to obtain a holistic picture and get deep knowledge, sampling method was used. Coursebooks taught in 2013-2014 academic year comprise the sampling of the research. In this research, MoNE Publishing (Primary School, 6th and 7th Grade Social Studies Coursebooks) and IMYAY (Primary School, 6th Grade Social Studies Coursebooks) and Anittepe Publishing (Primary School, 7th Grade Social Studies Coursebooks) were used.

All texts, writings in figures etc. which take place in all units except for National Anthem, Ataturk's Address to the Turkish Youth, context, dictionary etc were examined.

## Sub-problems of the research

1. What are the "economy" concepts given in 6th and 7th grade social studies coursebooks? To what extent do these concepts take place?
2. What are the similar and different "economy" concepts in 6th and 7th grade social studies coursebooks?
3. What are the methods of teaching similar and different "economy" concepts in 6th and 7th grade social studies coursebooks and to what extent are they taught?
4. In quantity terms, is there any change in "economy" concepts as the grade levels increases?

## Data Analysis

First of all, content analysis method was used to analyze the data in order to determine the quantity of related economic concepts. The content analysis is a method which enables us to code and define the content, themes or patterns of text data contents within systematic classification period and interpret them in a subjective way (Hsieh and Shannon, 2005, cited by Zhang and Wildemuth); to reach concepts and correlations that can explain the collected data

and to reveal what may be hidden in the data (Yildirim and Simsek, 2008). Berelson (1952) reported that the corner stone of content analysis is categories (Gokce, 2006). The category of economy concepts used in the research was designed according to the research question and clarified by literature review and pre-reading of the books and finalized by the expert opinion. In the analysis of curriculum of 6th and 7th grade social studies, the mentioned concepts were found as follows: "budget, value, natural resources, economy, economic activity, labor, entrepreneur, customs, right, waste, unemployment, importation, market, industry, capital, contact, saving, copyright and patent, commerce, consumption, production, product, tax and investment". Teaching only above mentioned concepts during the education process might be insufficient for an effective teaching of the "economy" subject. Therefore, it was decided to emphasize on different "economy" concepts. The record unit of the analysis in this research is word. The scope unit is sentence. The reliability of the content analysis depends on whether the participants who tally understood the texts in the same way or not. As the number of tallying participants increases, the common understanding between them weakness and the reliability decreases. Reliability increases when categorization, definition and tallying are made by one person. In this case, the correlation rate between the tallies made by one person in different times must be high. In addition, tallying is controlled by experts and the consensus between them is tested. A 80% consensus shows the reliability/consistency (Inal, 2004).

This study was conducted by one researcher. During the categorization process, the opinions of 2 experts from education studies were asked and consensus was ensured. After the categorization, tallying process started. At each inconsistency during tallies or any change in tallying, the process started all over. After the consistency was ensured in tallying style, the process was repeated two weeks later. The tallying association between two tallying was found approximately 98%. The tallying process conducted to ensure the internal validity and reliability of the research was re-conducted by 3 education studies experts without any sampling. 95% consensus was ensured in tallies. Considering these rates, reliability and internal validity of the tallies were ensured. Gokce (2006) reports that there is no other validity assessment tool in definitions of categories within content analysis of coursebooks. If it is believed that definition of categories can be shared by everyone and the research scale assess what should really be assessed, the validity of research is ensured. On the other hand, Alkan (1989, cited by; Inal, 2004) states two fundamental criteria of content validity of content analysis: The first one is the convenience of scales (categories) in terms of assessment. The second criterion is related to sufficient scope and dimensions included by the sampling texts in terms of teaching subjects. The lack of sampling in the research proves that the validity is ensured in this way as well. The developed category was made after literature review and it was formed extensive and wide not to cause any problem in content. After the coding process, the coded words were collected in a separate document and saved. On this way, code lists were made to be studied in a more detailed way. The concepts in the code lists were classified and sub-categories were made. The unweighted scores of the categories were presented in frequency (f) and percentage (%). The frequency of each economy concept in the book was determined. The frequencies of the all determined concepts were collected. According to each total frequency, percentage distribution of each concept was determined. First of all, 6th and 7th grade coursebooks were compared. During the comparison, same and different concepts taking or not taking place in both books were recorded. Same concepts' level of taking place in the books was named as low, normal and high. In order to name the level of the percentage rate of the same concept, percentage distribution of the concepts was considered. Percentage rates of a same concept in the first and second book were added and the total was divided into three. The result obtained from this

part is the first result. The first result was multiplied with the second one and the second result was obtained. The level between the first and second results was considered normal. The values smaller than the first result were named low and those bigger than the second result were named high level. In this way, books were compared to each other and whether the distribution of concepts in the books is normal or balanced or not.

## FINDINGS

The frequency and percentage distribution of economy concepts given in 6th grade coursebooks published by MoNE and IMYAY Publishing are presented in Table 1.

According to Table 1, 69 economy concepts are detected in 6th grade coursebook published by MoNE Publishing. These concepts are repeated 505 times. According to the analysis of the concepts, frequency and percentage rates of concepts which take place in the first 2% are as follows: Product 84 (16.63%), economy, economic, commerce and tax 39 (7.72%), production 37 (7.32%), exportation 20 (3.96%), buying-shopping, money and commercial (2.17%).

A total of 72 concepts were detected in relation with economy concept in 6th grade coursebook of IMYAY Publishing. These concepts are repeated 586 times. According to the analysis of the concepts, frequency and percentage rates of concepts which take place in the first 2% are as follows: Product/produced 123 (21.65%), economic 44 ( 7.74%), production 34 (5.98%), commerce 31 (5.45%), economy 27 (4.75%), shopping/buying 25 (4.40%), consumer 24 (4.22%), producing 16 (2.81%), sales 15 (2.64%), exportation, money and selling 14 (2.46%), goods and commercial 12 (2.11%).

Different "economy" concepts in 6th grade social studies coursebooks of different publishing houses are presented in Table 2.

According to Table 2, 37 different "economy" concepts were used in one other coursebook among 6th grade social studies coursebooks. It was detected that 20 different economy concepts were used in MoNE Publishing and not used in IMYAY Publishing while 17 economy concepts were used in IMYAY Publishing and not used in MoNE Publishing.

The findings obtained following the comparison of 6th grade coursebooks in terms of common economy concepts are presented in Table 3.

According to Table 3, there are 44 concepts commonly given in 6th grade social studies coursebooks (MoNE, IMYAY). Of these concepts, 7 take place in MoNE Publishing coursebooks in lower rates compared to IMYAY Publishing. These are as follows: "shopping/buying, seller/salesman, sales/selling, company, consumer, producer/manufacture and producing". 11 concepts have high rates. These are as follows: "invoice/receipt, livelihood, income, expense, entrepreneur, factory, waste, saving, merchant, cheap and investment". A total of 18 concepts have unbalanced distribution and the rest 26 concepts have normal distribution. These are as follows:

**Table 1.** Distribution of "economy" concepts given in 6th grade social studies coursebook published by different publishing houses.

<b>Concepts (MoNE)</b>	<b>f</b>	<b>%</b>	<b>List of concepts (IMYAY)</b>	<b>f</b>	<b>%</b>
Product/Produced	81+3	16.63366	Product/Produced	121+2	21.6549296
Economy	39	7.722772	Economic	44	7.74647887
Economic	39	7.722772	Production/Manufacturing	34+2	6.33802817
Commerce	39	7.722772	Commerce	31	5.45774648
Tax	39	7.722772	Sales/Selling	15+14	5.1056338
Production	37	7.326733	Economy	27	4.75352113
Importation	20	3.960396	Shopping/Buying	3+2+20	4.40140845
e-Invoice/Invoice/Receipt	2+7+6	2.970297	Consumer	24	4.22535211
Purchasing/Buying/Shopping	2+3+6	2.178218	Producing	16	2.81690141
Money	11	2.178218	Exportation	14	2.46478873
Commercial	11	2.178218	Money	14	2.46478873
Merchant	9	1.782178	Producer/Manufacturer	2+8+4	2.46478873
Income	8	1.584158	Value/Price/Fee	7+1+2+2	2.11267606
Importation	8	1.584158	Goods	12	2.11267606
Marketing	4+3	1.386139	Commercial	12	2.11267606
Producing	2+5	1.386139	Seller/Vendor	3+7	1.76056338
Investment	7	1.386139	Export	8	1.4084507
Price/Fee	4+2	1.188119	Importation	8	1.4084507
Goods	6	1.188119	Firm	7	1.23239437
Paying	3+3	1.188119	Paying	2+5	1.23239437
Export	5	0.990099	Marketing	6+1	1.23239437
Consuming	4+1	0.990099	Company	7	1.23239437
Labor	4	0.792079	Tax	7	1.23239437
Firm	4	0.792079	Import	6	1.05633803
Entrepreneur	4	0.792079	Development	4	0.70422535
Import	4	0.792079	Loss	4	0.70422535
Cheap	4	0.792079	Labor	3	0.52816901
Producer/Manufacturer	2+2	0.792079	Invoice/Receipt	2+1	0.52816901
Craft	3	0.594059	Merchant	3	0.52816901
Customer	3	0.594059	Consuming	1+2	0.52816901
Seller	3	0.594059	Investment	3	0.52816901
Wealthy	3	0.594059	Wealthy	3	0.52816901
Bartering/exchange	1+1	0.39604	Bank	2	0.35211268
Foreign trade	2	0.39604	Storage	2	0.35211268
Livelihood	2	0.39604	Income	2	0.35211268
Expenditure	2	0.39604	Profit	2	0.35211268
Spending	2	0.39604	Credit Card	2	0.35211268
Treasure	2	0.39604	Market	2	0.35211268
Factory	2	0.39604	Competition	2	0.35211268
Waste	2	0.39604	Consumption	2	0.35211268
National Income	2	0.39604	Cheap	2	0.35211268
Taxpayer	2	0.39604	Budget	1	0.17605634
Sold	2	0.39604	Currency	1	0.17605634
Selling	1+1	0.39604	Poor	1	0.17605634
Saving	2	0.39604	Livelihood	1	0.17605634
Consumption	2	0.39604	Expenditure	1	0.17605634
Richness	2	0.39604	Entrepreneur	1	0.17605634
Storage	1	0.19802	Customs	1	0.17605634
Debt	1	0.19802	Account	1	0.17605634
Customs	1	0.19802	Account Number	1	0.17605634

**Table 1.** Cont'd

Allowance	1	0.19802	Factory	1	0.17605634
Domestic Market	1	0.19802	Discount	1	0.17605634
Exporter	1	0.19802	Waste	1	0.17605634
Business	1	0.19802	Importer	1	0.17605634
Development	1	0.19802	Loan	1	0.17605634
Gain	1	0.19802	Financial	1	0.17605634
Loan	1	0.19802	Property	1	0.17605634
Financial	1	0.19802	Welfare	1	0.17605634
Property	1	0.19802	Saving	1	0.17605634
Market	1	0.19802	Compensation	1	0.17605634
Advertisement	1	0.19802	Being consumed	1	0.17605634
Free Trade Zone	1	0.19802	Consumed	1	0.17605634
Capital	1	0.19802	Free	1	0.17605634
Company	1	0.19802	Investor	1	0.17605634
Demand	1	0.19802	Needy	1	0.17605634
Consumer	1	0.19802	Total	568	100
Needy	1	0.19802			
Total	505	100			

**Table 2.** The methods to teach "economy" concepts in 6th grade social studies coursebooks of different publishing houses.

<b>Concepts included in MoNE and not included in IMYAY</b>	<b>Concepts included in IMYAY and not included in MoNE</b>
Debt	Bank
Foreign Trade	Budget
Craft	Currency
Spending	Poor
Allowance	Account
Treasure	Account Number
Domestic Market	Discount
Exporter	Importer
Business	Profit
Earning	Credit Card
National Income	Welfare
Taxpayer	Competition
Customer	Compensation
Advertisement	Free
Sold	Being consumed
Free Trade Zone	Investor
Capital	Loss
Bartering/Exchange	
Demand	
Richness	

"storage, economy, economic, labor, firm, exportation, export, importation, import, loan, mal, financial, property, paying, money, market, marketing, commerce, commercial, consumption, consuming, production/manufacturing, product/produced, needy and rich".

The frequency and percentage distribution of economy concepts given in 7<sup>th</sup> grade coursebooks published by

MoNE and IMYAY Publishing are presented in Table 4.

According to Table 4, 60 "economy" concepts are detected in 7th grade coursebook of MoNE Publishing. These concepts are repeated for 423 times. According to the analysis of the concepts, frequency and percentage rates of concepts which take place in the first 2% are as follows: production / producing / manufacturing 75

**Table 3.** Comparison of common "economy" concepts given in 6th grade social studies coursebooks according to different coursebooks.

Concepts	Lower-upper value range %	MEB result	IMYAY result
Shopping/Buying	2.19-4.38	Low	High
Seller/Salesman	0.78-1.56	Low	High
Sales/Selling	1.83-3.66	Low	High
Company	0.47-0.95	Low	High
Consumer	1.47-2.94	Low	High
Producer/ Manufacturer	1.08-2.17	Low	High
Producing	1.40-2.80	Low	High
Storage	0.18-0.36	Normal	Normal
Economy	4.15-8.31	Normal	Normal
Economic	5.15-10.31	Normal	Normal
Labor	0.44-0.88	Normal	Normal
Firm	0.67-1.34	Normal	Normal
Customs	0.12-0.24	Normal	Normal
Exportation	2.14-4.28	Normal	Normal
Export	0.79-1.59	Normal	Normal
Importation	0.99-1.99	Normal	Normal
Import	0.61-1.23	Normal	Normal
Loan	0.12-0.24	Normal	Normal
Mal	1.10-2.20	Normal	Normal
Financial	0.12-0.24	Normal	Normal
Property	0.12-0.24	Normal	Normal
Paying	0.80-1.61	Normal	Normal
Money	1.54-3.09	Normal	Normal
Market	0.18-0.36	Normal	Normal
Marketing	0.87-1.74	Normal	Normal
Commerce	4.39-8.78	Normal	Normal
Commercial	1.43-2.86	Normal	Normal
Consumption	0.24-0.49	Normal	Normal
Consuming	0.50-1.01	Normal	Normal
Production/Manufacturing	4.55-9.10	Normal	Normal
Product/Produced	12.76-25.52	Normal	Normal
Needy	0.12-0.24	Normal	Normal
Rich	0.37-0.74	Normal	Normal
Invoice/Receipt	1.16-2.33	High	Low
Livelihood	0.19-0.38	High	Low
Income	0.64-1.29	High	Low
Expense	0.19-0.38	High	Low
Entrepreneur	0.32-0.64	High	Low
Factory	0.19-0.38	High	Low
Waste	0.19-0.38	High	Low
Saving	0.19-0.38	High	Low
Merchant	0.77-1.54	High	Low
Cheap	0.38-0.76	High	Low
Investment	0.63-1.27	High	Low

(17.73%), commerce 61 (14.4208%), economic 49 (11.58392%), product 34 (8.037825%), craft 22 (5.200946%), economy 21 (4.964539%), goods,

purchasing/shopping/buying 11 (2.600473%), merchant 9 (2.12766%).

A total of 57 "economy" concepts are detected in 7th

**Table 4.** Distribution of "economy" concepts given in 7th grade social studies coursebooks of different publishing houses.

<b>Concepts (MoNE)</b>	<b>F</b>	<b>%</b>	<b>Concepts (Anittepe)</b>	<b>f</b>	<b>%</b>
Production/Producing/Manufacturing	55+1+17+2	17.7305	Commerce	42	15.32846715
Commerce	61	14.4208	Product	30	10.94890511
Economic	49	11.58392	Economic/Financial	25+1	9.489051095
Product	34	8.037825	Production /Producing	12+2+5	6.934306569
Craft	22	5.200946	Economy	18	6.569343066
Economy	21	4.964539	Banka	13	4.744525547
Goods	13	3.073286	Tax	11	4.01459854
Purchasing/Shopping/Buying	1+6+4	2.600473	Income	8	2.919708029
Merchant	9	2.12766	Goods	8	2.919708029
Colony	8	1.891253	Merchant	8	2.919708029
Tax	8	1.891253	Debt	7	2.554744526
Selling	7	1.654846	Commercial	7	2.554744526
Market	6	1.41844	Shopping/Buying	2+3	1.824817518
Consumption	6	1.41844	Colony	5	1.824817518
Rich	6	1.41844	Poor/Needy	5	1.824817518
Price	4	0.945626	Exportation	4	1.459854015
Salary	4	0.945626	Financial	4	1.459854015
Paying	2+2	0.945626	Money	4	1.459854015
Cheap	4	0.945626	Salary	3	1.094890511
Fee	4	0.945626	Borrowing	2	0.729927007
Debt	3	0.70922	Generous	2	0.729927007
Poor	3	0.70922	Unemployment	2	0.729927007
Livelihood	3	0.70922	Development	1+1	0.729927007
Revenue	3	0.70922	Selling	2	0.729927007
Money	3	0.70922	Colonialism	2	0.729927007
Capital	3	0.70922	Fee	2	0.729927007
Richness	3	0.70922	Produced	2	0.729927007
Bank	2	0.472813	Investment	2	0.729927007
Budget	2	0.472813	Rich	2	0.729927007
Mall	2	0.472813	Banking	1	0.364963504
Foreign Trade	2	0.472813	Budgetary Deficit	1	0.364963504
Currency	2	0.472813	Foreign Debt	1	0.364963504
Unemployment	2	0.472813	Labor	1	0.364963504
Development	2	0.472813	Craft	1	0.364963504
Loan	2	0.472813	e-Commerce	1	0.364963504
Cost	2	0.472813	Price	1	0.364963504
Commercial	2	0.472813	Livelihood	1	0.364963504
Producer	1+1	0.472813	Expense	1	0.364963504
Needy	2	0.472813	Treasure	1	0.364963504
Enrichment	2	0.472813	Export	1	0.364963504
Supply	1	0.236407	Waste	1	0.364963504
Banking	1	0.236407	Employer	1	0.364963504
Interest	1	0.236407	Importation	1	0.364963504
Poorness	1	0.236407	Revenue	1	0.364963504
Prize	1	0.236407	Income per Capita	1	0.364963504
Exportation	1	0.236407	Finance	1	0.364963504
Waste	1	0.236407	Cost	1	0.364963504
Renting	1	0.236407	Paying	1	0.364963504
Financial	1	0.236407	Expensive	1	0.364963504
Officially Fixed Price	1	0.236407	Broke	1	0.364963504
Expensive	1	0.236407	Capital	1	0.364963504

**Table 4.** cont'd

Marketing	1	0.236407	Collection	1	0.364963504
Seller	1	0.236407	Cheap	1	0.364963504
Colonialism	1	0.236407	Cheapening	1	0.364963504
Saving	1	0.236407	Free	1	0.364963504
Compensation	1	0.236407	Producer	1	0.364963504
Consumerism	1	0.236407	Total	274	100
Free	1	0.236407			
Productivism	1	0.236407			
Poverty	1	0.236407			
Total	423	100			

**Table 5.** The methods to teach "economy" concepts in 67h grade social studies coursebooks of different publishing houses.

<b>Concepts included in MoNE and not included in Anittepe</b>	<b>Concepts included in Anittepe and not included in MoNE</b>
Supply	Borrowing
Budget	Budgetary deficit
Mall	Generous
Foreign Trade	Foreign debt
Currency	Labor
Interest	e-Commerce
Poorness	Income
Prize	Expense
Renting	Treasure
Loan	Export
Cost	Employer
Officially Fixed Price	Importation
Market	Income per Capita
Marketing	Finance
Seller	Cost
Saving	Broke
Compensation	Collection
Consumerism	Cheapening
Consumption	Produced
Productivism	Investment
Needy	
Poverty	
Getting rich	
Richness	

grade coursebooks of Anittepe Publishing. These concepts are repeated for 274 times. According to the analysis of the concepts, frequency and percentage rates of concepts which take place in the first 2% are as follows: commerce 42 (15.32%), product 30 (10.94%), economic/financial 26 (9.48%), production/producing 19 (%6.93), economy 18 (6.56%), bank 13 (4.74%), tax 11 (4.01%), income 8 (2.91%), goods 8 (2.91%), merchant 8 (2.91%), debt (2.54%) and commercial 7 (2.55%).

Different "economy" concepts given in 7th grade coursebooks of MoNE and Anittepe Publishing are

presented in Table 5.

According to Table 5, 44 "economy" concepts are not used in one other coursebook. There are 24 different economy concepts which are used in MoNE and not used in Anittepe while there are 20 different economy concepts being used in Anittepe Publishing and not used in MoNE.

Common "economy" concepts given in 7th grade social studies coursebooks of MoNE and Anittepe Publishing were compared and the obtained findings are presented in Table 6.

According to Table 6, there are 37 common concepts

**Table 6.** Comparison of common "economy" concepts given in 7th grade social studies coursebooks according to different coursebooks.

Concepts	Lower-Upper Value Range %	MoNE Result	ANITTEPE Result
Economy	2.82-5.64	Low	High
Economic/Financial	3.79-7.58	Low	High
Goods	1.20-2.41	Low	High
Financial	0.64-1.28	Low	High
Money	0.64-1.28	Low	High
Colony	0.76-1.53	Low	High
Commerce	5.18-10.37	Low	High
Commercial	0.93-1.86	Low	High
Merchant	1.05-2.10	Low	High
Fee	0.32-0.64	Low	High
Production/Producing/Manufacturing	2.39-4.78	Low	High
Product	3.77-7.45	Low	High
Tax	1.41-2.83	Low	High
Needy	0.32-0.64	Low	High
Rich	0.32-0.64	Low	High
Poor/Needy	1.08-2.16	Normal	Normal
Exportation	0.80-1.60	Normal	Normal
Unemployment	0.47-0.95	Normal	Normal
Development	0.47-0.95	Normal	Normal
Revenue	0.35-0.71	Normal	Normal
Salary	0.60-1.20	Normal	Normal
Paying	0.27-0.55	Normal	Normal
Expensive	0.27-0.55	Normal	Normal
Selling	0.40-0.80	Normal	Normal
Capital	0.27-0.55	Normal	Normal
Colonialism	0.40-0.80	Normal	Normal
Cheap	0.20-0.40	Normal	Normal
Free	0.20-0.40	Normal	Normal
Producer	0.20-0.40	Normal	Normal
Purchasing/Shopping/Buying	6.51-13.03	High	Low
Bank	5.44-10.88	High	Low
Banking	2.80-5.60	High	Low
Debt	2.58-5.17	High	Low
Craft	0.67-1.34	High	Low
Price	0.43-0.87	High	Low
Livelihood	0.43-0.87	High	Low
Waste	0.43-0.87	High	Low

given in 7th grade social studies coursebooks (MoNE, ANITTEPE). Of these concepts, 15 are used in lower rates in coursebooks of MoNE Publishing compared to Anittepe Publishing. These are as follows: "economy, economic/ financial, goods, financial, money, colony, commerce, commercial, merchant, fee, production/ producing/manufacturing, product, tax, needy and rich". 8 of them are on "high" level. These are as follows: "purchasing/shopping/buying, bank, banking, debt, craft, price, livelihood and waste". The rest 14 concepts take

place in the books with a normal distribution.

These concepts are as follows "poor/needy, exportation, unemployment development, revenue, salary, paying/, expensive, selling, capital, colonialism, cheap, free and producer".

Different "economy" concepts given in 6th and 7th grade social studies coursebooks are presented in Table 7.

According to Table 7, it can be seen that some economy concepts such as "banking, credit card,



**Table 7.** Economy concepts given in 6th and 7th grade social studies coursebooks.

Concepts of 6th Grade	Concepts of 7th Grade
Storage	Supply
Invoice/Receipt	Banking
Firm	Borrowing
Entrepreneur	Budgetary deficit
Customs	Generous
Expense	Mall
Allowance	Foreign debt
Account	e-Commerce
Account number	Interest
Domestic Market	Poorness
Exporter	Price
Factory	Prize
Discount	Employer
Business	Unemployment
Import	Development
Importer	Renting
Profit	Income per Capita
Credit Card	Salary
National Income	Finance
Taxpayer	Cost
Property	Cost
Customer	Officially Fixed Price
Welfare	Expensive
Competition	Broke
Advertisement	Capital
Sold	Colony
Free Trade Zone	Colonialism
Capital	Collection
Company	Consumerism
Bartering/ exchange	Cheapening
Demand	Fee
Being consumed	Productivism
Consumer	Produced
Consuming	Tax
Producing	Needy
Investor	Poverty
Loss	Richness

account, account number" related to fundamental economic concepts like "supply, demand, enterprise, storage, capital, employer, consumer, cost" take place in some grade levels, yet do not take place in coursebooks of other grade levels.

The distribution of "economy" concept in 6th and 7th grade social studies coursebooks in terms of quantity is presented in Table 8.

In Table 9, distribution of "economy" concepts in 4 different social studies coursebooks (6th and 7th grade) is analyzed.

According to the research, it was found that 20 same "economy" concepts are given in 4 different coursebooks. Out of these concepts, "financial, commerce, merchant and needy" take place in 6th grade coursebooks less while, "exportation, money, selling, producer and product" take place more. The concepts which are included balancedly in both grade level coursebooks are as follows: "purchasing/shopping/buying, economy, economic/financial, livelihood, waste, mal, paying, commercial, production/ producing/manufacturing cheap and rich".

The quantity of economy concepts by grade levels is presented in Table 9.

According to Table 9, it can be seen that "economy" concepts are mentioned for 1073 times in 6th grade, this quantity falls to 701 in 6th grade coursebooks.

## DISCUSSION

Various 'economy' concepts given in 6th and 7th coursebooks of Social Sciences are presented in Table 7.

69 'economy' concepts were detected in 6th grade coursebook of MoNE Publishing. These concepts are repeated for 505 times. In the analysis of the concepts, percentage based ranking is as follows; concepts taking place in 2% are "Product (16,63%), Economy/Economic/Commerce/Tax (7.72%), Production (7.32%), Exportation (3.96%), Purchasing/Shopping/Money/Commercial (2.17%). A total of 72 concepts were detected in relationship with the economics concept in 6th grade coursebook of IMYAY Publishing. These concepts are repeated for 568 times. In the analysis of the concepts, percentage based ranking is as follows; concepts taking place in 2% are "Product/Produced (21.65%), Economic (7.74%), Production (5.98%), Commerce (5.45%), Economy (4.75%), Shopping/Purchasing (4.40%), Consumer (4.22%), Producing (2.81%), Sales (2.64%), Exportation, Money and Selling (2.46%), Goods and Commercial (2.11%).

6th grade social sciences coursebooks were examined and it was found that 37 different "economy" concepts were not used in another coursebook. In MoNE Publishing, there were 20 different economy concepts which were not used in IMYAY Publishing. On the other hand, in IMYAY Publishing, there were 17 different "economy" concepts which were not used in MoNE Publishing. There were 44 mutually-used concepts in 6th grade social sciences coursebooks (MoNE, IMYAY). Of all these concepts given in the coursebook of MoNE Publishing, 7 concepts are included in lower rates compared to IMYAY publishing. These are; "Shopping/Purchasing/Buying, Seller/Salesman, Company, Consumer, Producer/Manufacturer and Producing". 11 of these concepts are given in high level. These concepts are as follows; "Invoice/Receipt, Livelihood, Income, Expense, Entrepreneur, Factory, Waste, Saving, Merchant,

**Table 8.** Distribution of economy concepts between 6th and 7th grade coursebooks

<b>Concepts</b>	<b>Lower/Upper Value</b>	<b>Values</b>	<b>6th Grade Result</b>	<b>7th Grade Result</b>
Financial	Lower Value Upper Value	0.345056226 0.690112	Low	High
Commerce	Lower Value Upper Value	7.154964272 14.30993	Low	High
Merchant	Lower Value Upper Value	1.22628584 2.452572	Low	High
Needy	Lower Value Upper Value	0.484685643 0.969371	Low	High
Purchasing/Shopping/ Buying	Lower Value Upper Value	1.834152828 3.668306	Normal	Normal
Economy	Lower Value Upper Value	4.001695866 8.003392	Normal	Normal
Economic/ Financial	Lower Value Upper Value	6.090370328 12.18074	Normal	Normal
Livelihood	Lower Value Upper Value	0.274379974 0.54876	Normal	Normal
Waste	Lower Value Upper Value	0.195577807 0.391156	Normal	Normal
Mal	Lower Value Upper Value	1.548964848 3.09793	Normal	Normal
Paying/	Lower Value Upper Value	0.621850479 1.243701	Normal	Normal
Commercial	Lower Value Upper Value	1.219741931 2.439484	Normal	Normal
Cheap	Lower Value Upper Value	0.409130197 0.81826	Normal	Normal
Production/Producing/ Manufacturing	Lower Value Upper Value	6.38826129 12.77652	Normal	
Rich	Lower Value Upper Value	0.54509917 1.090198	Normal	Normal
Exportation	Lower Value Upper Value	1.353574291 2.707149	High	Low
Money	Lower Value Upper Value	1.135346791 2.270694	High	Low
Selling	Lower Value Upper Value	1.314407801 2.628816	High	Low
Producer/	Lower Value Upper Value	0.682440706 1.364881	High	Low
Product	Lower Value Upper Value	9.545886618 19.09177	High	Low

**Table 9.** The quantity distribution of repetition levels of concepts by 6th and 7th grade levels.

6th Grade		7th Grade	
505	568	423	274
	1073		701
	1774		

Cheap and Investment". In total, 18 concepts show unbalanced distribution and the rest 26 concepts show normal distribution. These are as follows; "Collecting, Economy, Economic, Labour, Company, Export, Import, Exportation, Importation, Loan, Goods, Financial, Property, Paying/Payment, Money, Market, Marketing, Commerce, Commercial, Consumption/Consuming, Production/Manufacturing, Product/Producing, Poor and Rich".

Analyzing MoNE Publishing, 60 "economy" concepts were detected in 7th grade coursebooks. These concepts are repeated 423 times. In the analysis of the concepts, percentage based ranking is as follows; concepts taking place in 2% are "Production/Producing/Manufacturing (17.73%), Commerce (14.4%), Economic (11.5%), Product (8.03%), Craftsmen (5.2%), Economy (4.9%), Goods/Purchasing/Shopping/Buying (2.6%), Merchant (2.1%). In 7th grade coursebooks of Anittepe Publishing, 27 "economy" concepts were detected. It was found that these concepts are repeated for 274 times. In the analysis of the concepts, percentage based ranking is as follows; concepts taking place in 2% are "Commerce (15.32%), Product (10.94%), Economic/Financial (9.48%), Production/ Producing (6.93%), Economy (6.56%), Bank (4.74%), Tax (4.01%), Income (2.91%), Goods (2.91%), Merchant (2.91%), Debt (2.54%) and Commercial (2.55%). 44 "economy" concepts are not used in another coursebook. In MoNE Publishing, there were 24 different "economy" concepts which were not used in Anittepe Publishing. On the other hand, in Anittepe Publishing, there were 20 different "economy" concepts which were not used in MoNE Publishing.

There are 37 mutually-used concepts in 7th grade social sciences coursebooks (MoNE, ANITTEPE). Of these concepts, 15 concepts used in coursebooks of MoNE Publishing take place in lower rates compared to Anittepe Publishing. These are "Economy, Economic/ Economical, Goods, Financial, Money, Colonial, Commerce, Commercial, Merchant, Price, Production/Producing/ Manufacturing, Product, Tax, Poor and Rich". 8 of these concepts are in "high" level. These concepts are as follows; "Purchasing/Shopping/Buying, Bank, Banking, Debt, Craftsmen, Price, Livelihood and Waste". The rest 14 concepts take place in the books with normal distribution. These concepts are as follows;

"Poor, Exportation, Unemployment, Development, Revenue, Salary, Payment/Paying, Expensive, Selling,

Capital, Colonialism, Cheap, Free and Producer" concepts. According to the research; fundamental concepts such as "Supply, Demand, Enterprise, Collecting, Capital, Worker, Consumer, Cost" and some economy concepts used by almost every employee in relationship with daily life such as "Banking, Credit Card, Account, Account Number" take place in social sciences coursebooks of some grades, yet do not take place in coursebooks of other grades. The distribution of "economy" concepts in 4 different social sciences coursebooks of 6th and 7th grades is balanced. According to the research, 20 same "economy" concepts are included in 4 different coursebooks. Of all these concepts, "Financial, Commerce, Merchant and Poor" occupy less place in 6th grade coursebooks while "Exportation, Money, Selling, Producer and Product" concepts are found in more places. The concepts given balancedly in coursebooks of both grades are "Purchasing/Shopping/Buying, Economy, Economic/ Financial, Livelihood, Waste, Goods, Payment, Paying, Commercial, Production/Producing/Manufacturing, Cheap and Rich". According to this research, "economy" concepts are included 1073 times in 6th grade coursebooks while this figure falls down to 701 in 7th grade coursebooks.

Not only the way economy concepts are included in coursebooks but also the way they are included in curriculum is important. Investigating curriculum of 6th and 7th grade social sciences, it was observed that "economy" topics are distributed in different unites. In curriculum of 6th grade, it was observed that different perspectives are adopted towards "economy" concepts in "Life on Earth" unit of "People, Places and Environment" learning field, "Turks on Silk Road unit of "Culture and Heritage" learning field, "Resources of Turkey" unit of "Production, Distribution and Consumption" learning field and "Our Country and the World" unit of "Universal Connections" learning field. In the curriculum of 7th grade, "economy" topics are analyzed in "Population in Our Country" unit of "People, Places and Environment" learning field, "Travelling in Turkish History" unit of "Culture and Heritage" learning field, "Economy and Social Life" unit of "Universal Connections" learning field (MoNE, 2005).

Considering all these issues, it can be seen that "economy" concepts are included in National Education perception of Turkey. However, we can say that there are some deficiencies/problems in the way these "economy" concepts are given in curriculum of Social Sciences and in the way these concepts are applied at schools. As a matter of fact, some problems are encountered in different countries as well. As reported in some sources (Zachlod, 2006), this fact could result from many factors. Considering the problems particularly underlined in these sources, we can mention the reasons of these problems as the fact that teacher are not trained efficiently on economy concepts and thus they quickly forget economy concepts taught in lessons as they do not use them in

practical life; not sufficient attention is paid to concepts and teachers do not feel comfortable during the presentation of concepts. In addition, the reasons of why economy concepts and topics are not taught well can be the fact that teachers who are the practitioners of the curriculum and the lesson do not have a positive approach to the economy concepts (Morgan, 1991; Meszaros and Suiter, 1998).

It was found that there are some studies in parallel with the results of this study (Ivković, 2013; Tsai, 2000). In the study conducted by Ivković (2013), it was reported that there are some deficiencies in concepts related to entrepreneurship, innovation and market economies; but it was concluded that there is a lack of a planned and determined organization in the use of concepts in coursebooks of the same or different grades; concepts given in a coursebooks are not included in another one and thus there are some deficiencies in the use of concepts.

Similarly, Tsai (2000) reported differences and deficiencies in the use of economy concepts in Taiwan coursebooks. These common results in coursebooks of Croatia, Taiwan and Turkey which have the status of economically underdeveloped countries are significant. The presence of positive correlation between economy education and development can be understood from these studies.

## RECOMMENDATIONS

Societies which are ready to make any kind of investment economically and want to preserve their presence within interstate competitions in the future must put special emphasis on economy education. In this scope, common policies should be determined towards the use of "economy" concepts in coursebooks of both state and private publishing houses; detailed studies should be conducted to this end and the good examples from the world should be investigated. In addition, implementation processes of these policies should be seriously followed, a strict tie should be built between theory and practice in these issues, the use of visual and audio materials that can attract students' attention at schools should be more emphasized. Furthermore, methods and techniques used by other countries during education process should be analyzed and different practice samples should be considered. Within the scope of this policy, in order to resolve most frequently encountered economy problems and prevent the losses related to the wrong use of capital and income at the very point of the prerequisite of active citizenship; economy concepts should be rated and placed in coursebooks and correct subjects in an efficient and quality way, students should be trained as "economy" literates even at this early stages of their lives. As stated by Akhan (2010), students can be conscious producers, consumers and entrepreneur in the future on condition that they learn "economy" concepts and the functions of

these concepts efficiently. For that reason, each and every student should pass through a quality education process in terms of economy literacy.

Such studies conducted on coursebooks should be more extensive, the attention of researchers should be attracted in order to conduct up-to-date and effective research on these issues, more emphasize should be given to project activities under the support of official/scientific research boards. In addition, giving more importance to use of mass communication tools and social media can be important for an effective "economy literacy".

Apart from this, recommendations of scientific research should be considered more and studies conducted on this issue in different countries should be taken into consideration. Success and failure reasons revealed by such studies in our country and in the world should be examined well; more effective field studies should be conducted on this issue in order to determine the social preparedness level and then related measures should be taken.

## Conflict of Interests

The authors have not declared any conflict of interests.

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*Full Length Research Paper*

# Effect of use of caricatures on teaching vocabulary in teaching Turkish as foreign language

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**Teaching vocabulary in teaching Turkish as Foreign language is important. Different methods are employed in teaching vocabulary. In this study the pre- and post-test results of experimental group where caricatures were used to teach vocabulary and control group where vocabulary items were taught without use of caricatures when teaching Turkish vocabulary items to foreign students are compared statistically. Two groups are compared at the end of the application and a statistically significant difference in favor of experimental group was found out. This difference indicates that use of caricature in teaching Turkish vocabulary to foreign students increase students' success.**

**Key words:** Caricatures, Turkish vocabulary, visual art, teaching.

## INTRODUCTION

Caricature is a material used in training for multi-way thinking, association, analysis and assessment. Considering that language training is interconnected with life, one of the most effective ways of life, art of caricature is inevitably used in language training. Particularly, the meaning of the vocabulary item in which they are used will be taught by use of this visual art.

Employment of new methods to teach vocabulary is as old as language teaching. Teachers use body language, drama, visual aids to teach vocabulary items and they make descriptive sentences and show use of vocabulary in examples to teach them. Although caricatures are a kind of visual aids, they differ from other visual aids as they have sense of humor and a special technique.

“Caricature is a funny description of a person, idea or event by means of picturing. It is picturing of a person or an event in striking manner without going into details but to give a short, leading to think and brief view or to make

the audience laugh” (Mürsel, 2009: 4).

For development of individual's comprehension and describing skills, multi-way thinking, association, analysis-synthesis, assessment, critical thinking skills are needed. With its characteristics caricature may offer multi-way thinking to learners. With help of all of those and other similar features, caricature should find place in education.

Language teaching is a process covering mental maturing as well. By time individual starts to think with the words of the language, Supported with visual elements, language teaching makes such mind exercise more effective.

Visual factors remind firstly “caricature” which is frequently referred to in language teaching. As caricature is a multi-functional communication means and is a material leading learners to think, enabling them to suggest new and useful ideas in addition to its functions

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to develop creativity, it is fundamental visual material frequently used in education and particularly in language teaching,

Teacher and course book have been foundation of multi-media teaching for years in education. Today as modern technology facilities are employed, teacher-course book pairs as well as various resources are helping multi-media teaching in classroom. Such resources are usually audio and visual means. It is known that the more such materials are used in classroom the higher the motivation of students (Demirel, 2007: Transferred from Barın, 2007: 191). Such instruments should be effectively employed in teaching Turkish as foreign language (Barın, 2007: 191).

The purpose of this study is to find out whether or not the caricatures as visual aids are useful in foreign language teaching and particularly in vocabulary teaching.

### **Use of caricatures in teaching Turkish as foreign language**

General assumption studied in respect to purpose of method of language teaching is that language teaching should be functional. Language teaching cannot be considered independent of them while our era is information, technology and communication era. Use of information and technology will only be possible by means of providing communication.

In study conducted on use of concept of communication in different fields in different meanings, it is indicated that the term is used in 15 separate meanings but the first recalling of communication means conveying emotions, thoughts and information among people via any means (Kuzu, 2008).

As it is understood from this process of transmission by communication, we use language consisting of unity of symbols in our communication that is speaking, listening, perception and thinking.

While coding information during communication several means are employed. Coding of the message should be very short, striking, notice attracting, easy to remember (Kuzu, 2008). The information not carrying such characteristics may not be perceived correctly and fully by the receiving person. For that reason, the most effective way of coding information in communication is visual coding.

Ülker (2008) says "Maybe caricature is the core of word; it just tells in a couple of seconds the message that we tell in hundreds of pages. One single line, one dot, one small circle just becomes symbol for several complicated status and feelings of a person. What is essential is to put forward the conflict with a couple of lines or words. We can also call it a sign language. A couple of simple lines just tell the same thing to any person in any part of the world. Caricature is so far from

side meanings and details that can be interpreted in different meanings that it just gives the message to everybody in the same way. Only one single path is described no matter if made by means of a couple of lines or scratching technique" (Ülker, 2008: 51). Topuz defines caricature as follows: "Caricature is a message, that is a visual description with humor based on iconic design in terms of communication" (Topuz, 2001: 58). Gökçe defines caricature as "Caricature is the art of making more visible the ugliness, extremes, funny things, faults not attracting attention at first glance, by means of exaggeration" (Gökçe, 2007: 32). Efe "emphasizing that as long as abstract is made concrete it becomes permanent in man's mind and thus defines caricature as a visual text subject of displaying" (Efe, 2007: 22).

"Visual learning" ranks number one among the learning styles of students as indicated by the studies conducted in the field, and thus use of visual materials becomes necessary not only as a requirement of our era but also "structuralist approach" putting learner in the center in education. Maybe the most preferred visual material among all visual materials is caricature which is inevitable part of education system in many countries while it has just started to find place in program and course books.

According to a study conducted by Carr et al. (1982), pictures are more effective than words in giving meaning. Both words and pictures can be used as visual teaching materials in education. However, the material to be employed should be designed to provide recalling and helping learners associate those learnt before.

"Caricature has become a communication means entirely in the 20<sup>th</sup> century" (Özer, 2005). In addition to its aspect of being communication means, "fundamental aim of education is to grow good human being, good citizen. The fundamental purpose of humor is to display the inconsistency between the identities persons and entities intend to have and their real identities, and thus to warn the society and therefore humanity." And with such mission, caricature deserves to be used in education (cited: Atila Özer).

Caricatures can be used to attract attention in the beginning of the course, to transfer the information during covering the course and to make assessment at the end of course. During presentation/teaching stage in all courses caricature is the closest assistant of teacher in learning environment where teacher acts as guide.

Used for teaching skills in Turkish course, caricatures may provide permanency of what has been learnt as well as contribute to upper level skills of critical thinking and thus will provide development of reading-comprehension writing skills. In conclusion it must achieve the value it deserves for use in education not only in terms of a communication means but also in respect to its attention attracting characteristics (Dönmez, 2013, p.8).

"The origin of caricature means to fill, to load in Italian and comes from "caricare" metaphorically meaning to exaggerate, to mock (Baran, 2009). Caricature is a

means of establishing communication via indicators. Caricature artist sends his/her message to the receiver by use of symbols.

The issue of teaching its language is a matter paid much attention to by states in their education policies. Transfer of culture by means of language, being used as the most effective communication means and being highly important in preservation of national identity, language teaching and learning has been given a special importance by states. "Common language contains society specific interactions and reinforces group ties. Each community has a language specified legally by the authority or recognized officially. Use of official language makes necessary to have a school where legitimately adopted language is valid. In addition, the school is the place assigned for placement of it" (Lazar, 1993).

The instruments prepared to create opportunity to influence more than one senses of learner at one time and enhance the effect of teaching-learning process are not core of education but just means. Visual aids help in several aspects such as raising attention, keeping interest constant, enhancing and supporting thinking. Such support to be provided in classroom will lead to better learning. As an another example to describe benefits of visual aids in achievement of visual reading or target in daily life other than learning-teaching process in the world surrounded by visuals, we can mention the following event:

Just as some more samples to prove pictures, drawings and painting that is visual components may create stronger effects than verbal description; the following examples can be given: A traffic accident picture describes feeling pain faster than written description and thus campaign against alcohol and driving under alcohol effects can be much more effective. In advertisement sector, advertisement of a product to be advertised not only in verbal descriptions but also visual components prove that line is very effective in giving strong political messages.

For instance, cartoons, television and video have more roles in business communication. Today many specialized organizations prepare video programs in various business branches and industrial training subjects. Rather than receiving information from a memo or notice, people prefer a short video film. The main advantage of using such communication medium is speed as it is the case in all visual communication types. For instance, a table indicating changes in temperature of a patient in hospital room or arrival-departure times of train give much clearer information than a long written text.

## METHOD

### Research pattern

In this study an experimental study is conducted on 67 students studying at Department of Turkish Language and Literature at Kabil University. While selecting the groups, two classes were specified,

which can be deemed equal in success levels in line with information from course instructor and course notes. Drawing was made for the classes and 33 students were in control group and 34 in Experimental Group, and conventional language teaching was given to control group, and caricatures were used in Experimental Group for teaching each vocabulary item. Such semi-experimental design applications are called matched design (Büyüköztürk et al., 2011: 206).

As pre- and post- test, a test consisting of 20 questions each with 2 points was prepared and required reliability and validity study was conducted for the test. The reliability coefficient of the test consisting of 20 questions administered to students is 0.85. Pre- and post- test points were compared by means of t test in SPSS 19.0 package program.

### Application process

The study was completed in 14 teaching sessions. Application was made in order to find out the effect of technique of description by use of caricature on success of foreign students in learning Turkish vocabulary items, and success points of the class before and after use of technique were compared.

### Analysis of data

The data obtained in the study were analyzed taking into account the experimental process on question basis. SPSS 19.0 statistics program was used for dependent and independent sampling performed according to success averages of experimental and control groups, and t test results are shown in tables in respect to 05 significance level.

## FINDINGS

### Descriptive values of pre- and post- test points of experimental and control groups students

Pre- and post- test average and standard deviation points of total students (N=67) in experiment and control groups are shown in Table 1. The results indicate that there is 1 point difference in favor of Experimental Group when average points of experiment and control group students gained in pre-tests are compared, and it is not statistically significant. The difference between the groups in post-tests is about 7 points also in favor of Experimental Group and this is statistically significant.

### Values of data (pre-test-post-test) obtained from experimental group in teaching Turkish vocabulary items by use of caricatures

The data in Table 2 indicate that there is a significant difference in favor of post -test between the pre- test and post- test success points of Experimental Group. (t: - 8,657,  $p(0,000) < 0,05$ ). Examination of average points of success points of pre-test (X=25,26) – post- test (X=34,41) indicates that application process created a specific effect on Experimental Group students (about 9 points) and that the teaching Turkish vocabulary items to foreign students by use of caricature has been effective.



**Table 1.** Pre- and post- test average and standard deviation points of total students (N=67) in experiment and control groups

Tests	Group	N	X	S	Sd	t	p
Pre-test	Control	34	24,38	6,44	34	-3.782	,258
	Experimental	33	25,26	5,86			
Post-test	Control	34	27,94	7,55	37	-3.154	,000
	Experimental	33	34,41	8,43			

**Table 2.** t test values of Experimental Group according to pre-test and post- test averages.

Experimental Group	N	X	S	t	p
Pre-test	33	25,26	11,34	-8.657	,000
Post-test	33	34,41	9,56		

**Table 3.** t test values of control group according to pre-test and post- test averages.

Control Group	N	X	S	t	p
Pre-test	34	24,38	10,65	-3.446	,267
Post-test	34	27,94	9,88		

**Table 4.** t test value of experiment and control group according to pre- test points.

Pre tests	N	X	S	t	p
Control	34	24,38	6,44	-,546	,785
Experiment	33	25,26	5,86		

#### Current teaching program, pre-test post- test t test values obtained from control group in teaching Turkish vocabulary items to foreign students

Examining Table 3 indicates that there is no significant difference between pre-test and post- test success points of control group (t: 3,446; p(0,267) > 0,05). Examination of success points averages of Pre-test (X=24,38) – post-test (X=27,94) indicate that the application has not created a statistically significant effect on control group students.

#### Pre- test t test values of data collected from teaching proverbs and phrasal items to control group where caricatures were not used in teaching and experimental group where caricatures were used in teaching

When Table 4 is examined, it is seen that there is no

significant difference between pre- test success points of experiment and control groups (t: -,546; p (0,785) > 0.05). This indicated that groups have similar properties at the beginning of application process.

#### Comparison of values of experimental group where caricature is used for teaching Turkish vocabulary items and control group where conventional teaching method is employed

Examination of Table 5 indicates that post -test points of experimental group where Turkish vocabulary items were taught by use of caricatures are significantly different (t: -,546, p (0,000) < 0,05). It is seen that averages of post-test success points of experimental group (X=34,41) are higher than averages of post- test success points of control group (X=27,94). This suggests that teaching Turkish vocabulary to foreign students by use of caricature is more successful than the approaches in which caricatures are not used.

#### DISCUSSION AND CONCLUSION

1. Results of pre-test and post-test indicate that teaching Turkish vocabulary items by use of caricature is effective in teaching. At the end of 14-teaching session (7 weeks), it is concluded that students in experimental group are

**Table 5.** T test value of post- test points for experiment and control groups.

Post tests	N	X	S	t	p
Control	34	27,94	7,55	-2,482	,000
Experiment	33	34,41	8,43		

more successful than students in control group. The results are statistically significant.

2. Showing caricatures to students in classroom has made the teaching environment more attractive. And it has been seen that use of caricature has affirmative effect on students' concentration. It is believed that such factor has been reflected into the students' success.

3. It is found out that process of language teaching supported with visual elements creates more permanent learning and students animate words concretely in mind.

4. Explanation of vocabulary items in experimental group and use of them in example sentences sometimes made students bored. However, it has been observed that students are not bored in foreign language teaching model supported with caricatures.

5. Use of various caricatures to teach Turkish vocabulary items to students and use of the vocabulary in example sentences has been seen as an effective method.

6. Students of experimental group were asked to comment on the caricatures used to give meaning of vocabulary items and such comments were assessed by other students. The same procedure was also applied in control group but number of students making comments is less than number of the students in experimental group.

7. All the observations and data suggest that use of caricature to teach Turkish vocabulary items to foreign students is an effective method.

8. It is believed that trying different methods for teaching Turkish to students learning Turkish as Foreign Language, for instance, drama method can be effective.

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## Conflict of Interests

The author has not declared any conflict of interests.

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