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# Analysis of the relationship between the emotional intelligence and professional burnout levels of teachers

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The purpose of this study is to analyze the relationship between the emotional intelligence and professional burnout levels of teachers. The nature of the study consists of high school teachers employed in city center of Kirsehir Province; 563 volunteer teachers form the nature of sampling. The statistical implementation of the study is performed using SPSS.16.0 software. T-test was applied in percentage frequency and dual groups, and One-Way Anova test was applied for the comparison of more than 2 members in a group together with Pearson Product Correlation Test. Consequently, a negative relation was found between emotional intelligence and burnout levels of teachers.

**Key words:** Teachers, emotional intelligence, burnout.

## INTRODUCTION

We are informed that emotional intelligence is rooted in the abilities enabling individuals to understand other individuals and personality, establish relations with other individuals, conform to the surrounding environment and deal with stated environment; but this type of intelligence succeeds in providing individuals the capacity to meet the demands received from surrounding (Izard, 2001).

The teachers stand as one of the most important part of education system since they are exposed to use many social or emotional abilities with regard to the professions and social status. It is vital for teachers to use emotional abilities in relationships with students and colleagues within social lives (Adilogulları, 2011a).

The most important name in modern day among the renowned researchers of burnout is Christina Maslach, the developer of Maslach Burnout Inventory (Budak and Sürgevil, 2005). He stated that long-term professional stress causes burnout. Maslach (1976) defines persona-lity as: "the alienation of an official from original meaning and purpose of the work and total ignorance of other

individuals receiving services" (Kacmaz, 2005). Additionally, Maslach and Jakson (1986) defined burnout as a chronic reaction against the stressed working con-ditions and a three dimensional syndrome suffered by individuals working with other individuals closely and continuously (Mikolajczak et al., 2007).

It is realized that professional employees experience the burnout syndrome recently in many professional branches and many countries. The psychological and physical damages of this syndrome stand in greater levels. It is vital to conduct the studies required especially for the teachers employed in educational fields to avoid experiencing the burnout syndrome. On the other hand, emotional intelligence started to draw attention of individuals gradually in recent years. In addition to EQ (Emotional Quotient), the importance of EI (Emotional Intelligence) is also clear for individuals in order to become happy and successful both in social and in business life. This study is important while considering the stated two concepts reflected in professional and

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social lives of teachers.

## THEORETICAL FRAMEWORK

### Concept of emotional intelligence

Salovey and Mayer (1990) suggested that emotions are organized reactions including physiological, cognitive, motivational and experimental systems by exceeding the borders of many psychological sub-systems. According to Mayer and Salovey (1995), emotional intelligence considers the intersection between two fundamental components of personality: the cognitive and the emotional systems. Mayer and Salovey (1997) defined emotional intelligence as perceiving emotions, reaching emotions and regulating them to understand the emotions reflectively, and helping thoughts, understanding emotions and emotional knowledge to enhance emotional and intellectual development. According to Mayer and Beltz (1998), individuals should perceive the emotions in themselves and the emotions in others (for example; defining and using present emotions), understand emotional meanings and manage emotions. Ameriks et al. (2009) stated that an emotional person could feel and/or behave more intensive than others do; emotionally intelligent is an individual who defines emotions and use them productively.

Mayer and Slovey (1993) suggested that scope of emotional intelligence includes verbal and nonverbal evaluation of emotions, regulations of emotions in oneself and others, and utilizing emotions to solve problems. Bar-On (2006) emphasized that emotional intelligence, above all, bases on the ability of being aware of emotions and oneself, understanding weak and powerful aspects and expressing emotions non destructively.

There have been different models on emotional intelligence. Ability emotional intelligence model of Mayer and Salovey consists of four sub-dimensions that are perceiving emotions, supporting thoughts with emotion, understanding emotions and managing emotions (Mayer and Salovey, 1993; Yüksel, 2006; Yan, 2008; Gürbüz and Yüksel, 2008; Doğan and Şahin, 2007). The Bar-On model of emotional intelligence includes intrapersonal abilities, interpersonal abilities, adaptability, stress management and general mood dimensions (Bar-On, 2006, Yan, 2008). Cooper and Sawaf model of emotional intelligence is a mixed model because it includes mental abilities like Bar-On model and some concepts out of these. This model especially focuses on relation between emotional intelligence and leadership by examining emotional intelligence in an organizational context. This model consists of four building block including emotional literacy, emotional fitness, emotional depth and emotional alchemy. Finally, Goleman presents an emotional intelligence model based on performance. Self-awareness, managing emotions, motivation, empathy and managing relations create the sub-dimensions of Goleman model (Goleman, 1996).

### Burnout syndrome

Maslach and Leiter (2005) suggested that burnout is a chronic condition about being inconsistent with job and can be an important crisis in our lives by emphasizing it is more than being upset or having a bad day. Burnout is an array of deterioration between what people do and what they actually want to do. Corrosion occurs in values and desires. This corrosion is the corrosion of human spirit. This condition is an illness that spreads gradually and continually in time by causing people to have psychological depression from which is difficult to recover (Maslach and Leiter, 1997). It has symptom like other psychological illness. Discomforting exhaustion, disappointment, anger and cynicism, sense of ineffectiveness, and failure factors constitute main characteristics. This condition shatters both personal and social functioning (Goldberg and Masclah, 1998).

Emotional Exhaustion is the first sub-dimension of burnout. When people feel that they are emotionally exhausted, they do not want to do anything; they feel exhausted both physically and emotionally. Individuals do not want to face different work and do not want to start for new one (Maslach and Leiter, 1997).

Depersonalization/Cynicism is another sub-dimension of burnout. When depersonalization, defined by Maslach and Leiter (1997) as cynicism occurs, people having this situation maintain a cold and distal attitude towards their colleagues. Individuals having depersonalization give up their future ideals. Working abilities of people showing negative manner because of depersonalization come to harm seriously.

Reduced Personal Accomplishment is the last sub-dimension of burnout. People feel inefficacious and accordingly an increasing sense of inefficaciousness occurs. This condition causes a loss in confidence to make difference (Maslach and Leiter, 1997).

### METHOD

563 volunteer teachers working in various branches in Kirsehir District have participated in the study.

The original scale refers to the scale consisting of 12 clauses developed by the study of Schutte and colleagues (1998) including 33 clauses. The answers have been graded in 5 point likert scale (1 = definitely not agree, 5 = definitely agree). The same scale has been applied by Aslan and Ozata (2008) for medical officials. In Chan's study (2004; 2006), it has been realized that the survey form prepared in total of 4 dimensions is considered in 12 clauses and 4 dimensions as it is included in the original form by the end of factor analysis. In our study, Cronbach's alpha was found as 0.86.

The Maslach Burnout Scale (Maslach Burnout Inventory – MBI) including 22 clauses and developed by Maslach and Jackson (1981) shall be used for the burnout levels of participants. The burnout scale consisting of 22 clauses is assessed in three sub-

**Table 1.** The relationship of emotional intelligence of teachers with the burnout level.

|  | Mean | Standard deviation |  | Emotional Intelligence | Burnout |
|---|---|---|---|---|---|
| Emotional Intelligence | 4.07 | 0.64 | r | 1 | -0.28[*] |
|  |  |  | p |  | 0.00[*] |
|  |  |  | N | 563 | 563 |
| Burnout | 2.41 | 0.55 | r | -0.28 | 1 |
|  |  |  | p | 0.00[*] | 563 |
|  |  |  | N | 563 |  |

[*]P<0.05.

dimensions as Emotional Exhaustion (EE), Depersonalization (D) and Personal Accomplishment (PA). The Turkish revision of MBI has been performed by Ergin (1992) whereas the validity and credibility analysis of scale in sampling of teachers was conducted first by Girgin (1995) together with Sucuoglu and Kuloglu (1996) separately. Inventory's Cronbach's alpha was found as 0.80.

In the assessment of findings collected from the study, SPSS.16 is used for statistical analyses. On the other hand, the definitive statistical methods (Frequency, Percentage, Mean and Standard Deviation), T-test and One-Way Anova tests are applied in the assessment of study data. Pearson Correlation analysis is used to determine the interrelations of scales. The results are graded in dual size as 95% credibility range and p<0.05 relevance level.

## RESULTS

The distribution of age range is as follows: 20-25 ages (n=63, 11.3%), 26-31 ages (n=142, 25.2%), 32-37 ages (n=132, 23.4%), 38-43 ages (n=131, 23.3%), 44-49 ages (n=61, 10.8%) and 50 ages and over (n=34, 6%). The ratio of female participants is (n=229, % 40.7) and male participants are (n=334, % 59.3); whereas the ratio of married teachers is (n=361, % 64.1) and single teachers are (n=202, % 35.9). The professional burnout mean of teachers is M=2.41 and the emotional intelligence mean is M=4.07.

## DISCUSSION

As it is seen in Table 1, the adverse difference (r=-0.28, p<0.05) in relations between the emotional intelligence and burnout levels has appeared in our study. Güllüce (2006) and Aslan et al. (2008) stand in parallel with our study due to reaching adverse difference. It is realized that the professional burnout levels decrease as the emotional intelligence level of teachers increases. The professional burnout level of teachers shall be expected to decrease as the teachers use their emotions positively in work places, perform emphatic personalization, balance the emotional assessments and manage emotions in positive respect since it is included in literature that the emotional intelligence and its sub-dimensions shall contribute to peace and happiness of individuals in social and professional manners.

As it is seen in Table 2, the considerable difference (p<0.05) is found in the emotional intelligence level of teachers with regard to the age variable. The emotional intelligence level increases in parallel with the age level. Birol (2009), Lane et al. (2009), Serdengecti (2003), Ulucan (2012), Adilogulları (2011b), Kum and colleagues (2011), Gürbüz and Yüksel (2008) and Canbulat (2007) reached similar results in their studies. According to the professional years variable in Table 4, the considerable difference (p<0.05) is realized in emotional intelligence manner. It is also realized the emotional intelligence level increases in parallel with the increase of professional years. Ozan (2009) and Dolunay and Piyal (2003) reached similar results in the studies applied to teachers.

It is known the experiences gained in social and professional lives as a result of growing up as well as learning lessons by mistakes enable the individuals and teachers to reach maturity to assess incidents in various viewpoints and behaviors. Therefore, it shall be assumed the emotional intelligence to be influenced by this process in positive respect. By positive emotions management, the improvements in empathic ability and emotional assessment shall be realized as well as the assessment of emotions in accurate manner. The improvements in stated skills shall provide advantages for teachers in professional and social lives.

As it is seen in Table 3, the considerable difference (p<0.05) appears in emotional intelligence level of teachers with regard to the gender variable. The emotional intelligence of female teachers is in greater value than the male teachers. It is shown in Table 3 that women have higher scores than men in terms of all the sub-dimensions of emotional intelligence; there is significant difference between men and women in emphatic sensitivity. In the literature, different results have been found in terms of gender differences of emotional intelligence. While some research suggested that men have higher emotional intelligence score, some propounded exact opposite. It is not possible to comment on this issue. Findings of Arlı et al. (2011) and Börekci (2002) are parallel with our results.

The analysis of the status of professional burnout level of teachers who participated in the study with regard to the professional working period variable is seen in Table

**Table 2.** The status of emotional intelligence level of teachers with regard to the age variable.

|  | Age | N | Mean | SD | F | p |
|---|---|---|---|---|---|---|
|  | 20- 25 | 63 | 3.96 | 0.64 |  |  |
|  | 26-31 | 142 | 4.07 | 0.68 |  |  |
|  | 32-37 | 132 | 4.00 | 0.82 |  |  |
|  | 38-43 | 131 | 4.13 | 0.72 |  |  |
| Emotional Assessment | 44-49 | 61 | 4.04 | 0.84 | 1.21 | 0.30 |
|  | 50 and over | 34 | 4.27 | 0.69 |  |  |
|  | 20- 25 | 63 | 4.09 | 0.54 |  |  |
|  | 26-31 | 142 | 4.16 | 0.73 |  |  |
|  | 32-37 | 132 | 4.03 | 0.77 |  |  |
|  | 38-43 | 131 | 4.14 | 0.69 |  |  |
| Emphatic Sensitivity | 44-49 | 61 | 3.97 | 0.84 | 1.00 | 0.41 |
|  | 50 and over | 34 | 4.17 | 0.55 |  |  |
|  | 20- 25 | 63 | 3.81 | 0.76 |  |  |
|  | 26-31 | 142 | 3.93 | 0.69 |  |  |
|  | 32-37 | 132 | 3.94 | 0.72 |  |  |
| Positive Emotions Management | 38-43 | 131 | 3.97 | 0.71 |  |  |
|  | 44-49 | 61 | 3.87 | 0.85 | 1.05 | 0.38 |
|  | 50 and over | 34 | 4.13 | 0.53 |  |  |
|  | 20- 25 | 63 | 4.06 | 0.72 |  |  |
|  | 26-31 | 142 | 4.21 | 0.69 |  |  |
|  | 32-37 | 132 | 4.14 | 0.74 |  |  |
| Positive Usage of Emotions | 38-43 | 131 | 4.25 | 0.69 |  |  |
|  | 44-49 | 61 | 4.03 | 0.98 | 2.437 | **0.03**[*] |

[*]$P< .05$ **$P< .01$.

**Table 3.** The status of emotional intelligence level of teachers with regard to the gender variable.

|  | Gender | N | Mean | SD | t | p |
|---|---|---|---|---|---|---|
| Emotional Assessment | Female | 229 | 4.08 | 0.71 | 0.37 | 0.70 |
|  | Male | 334 | 4.05 | 0.76 |  |  |
| Emphatic Sensitivity | Female | 229 | 4.18 | 0.69 | 2.14 | **0.03**[*] |
|  | Male | 334 | 4.04 | 0.73 |  |  |
| Positive Emotions Management | Female | 229 | 3.94 | 0.73 | 0.18 | 0.85 |
|  | Male | 334 | 3.93 | 0.72 |  |  |
| Positive Usage of Emotions | Female | 229 | 4.21 | 0.69 | 0.64 | 0.51 |
|  | Male | 334 | 4.17 | 0.78 |  |  |

[*]$P< .05$ **$P< .01$.

4. It is seen that there is significant difference between sub-dimensions of emotional exhaustion and depersonalization (p<0.05). According to this analysis, teachers working for 4-9 years feel emotionally exhausted than those working for 15 years or more. Similarly, teacher working for 5-9 years feel more desensitized than

**Table 4.** The status of professional burnout level of teachers participated in the study with regard to the professional working period variable.

|  | Prof. W. Period | N | Mean | SD | f | p |
|---|---|---|---|---|---|---|
| Emotional Exhaustion | 1-4 years | 87 | 2.62 | 0.71 |  |  |
|  | 5-9 years | 107 | 2.82 | 0.83 |  |  |
|  | 10-14 years | 203 | 2.74 | 0.86 | 2.93 | **0.03**[*] |
|  | 15 years and more | 166 | 2.55 | 0.79 |  |  |
| Depersonalization | 1-4 years | 87 | 2.22 | 0.80 |  |  |
|  | 5-9 years | 107 | 2.36 | 0.84 |  |  |
|  | 10-14 years | 203 | 2.20 | 0.84 | 4.40 | **0.00**[*] |
|  | 15 years and more | 166 | 2.01 | 0.72 |  |  |
| Personal Accomplishment | 1-4 years | 87 | 2.42 | 0.58 |  |  |
|  | 5-9 years | 107 | 2.42 | 0.69 | 0.65 | 0.58 |
|  | 10-14 years | 203 | 2.33 | 0.62 |  |  |
|  | 15 years and more | 166 | 2.35 | 0.67 |  |  |

[*]P< .05 **P< .01.

**Table 5.** The distribution of burnout level of teachers participated in the study with regard to the marital status variable.

|  | Mar. Status | N | Mean | SD | t | p |
|---|---|---|---|---|---|---|
| Emotional Exhaustion | Married | 361 | 2.64 | 0.84 | -1.49 | 0.13 |
|  | Single | 202 | 2.75 | 0.77 |  |  |
| Depersonalization | Married | 361 | 2.08 | 0.79 | -3.62 | **0.00**[*] |
|  | Single | 202 | 2.34 | 0.82 |  |  |
| Personal Accomplishment | Married | 361 | 2.35 | 0.64 | -0.78 | 0.43 |
|  | Single | 202 | 2.39 | 0.64 |  |  |

[*]P< .05 **P< .01.

teachers working for 15 years or more.

## Conclusion

Teachers begin their working life with great dreams and idealistically. They work harder, decisively and single-mindedly to live out their dreams. This situation may initially have a positive impact on their success feelings (Adilogulları, 2013). However, with the anxiety of being unable to reach their goals, teachers can have a period of stagnation because of environmental, social and economical factors. It can be said that this situation starts to be normal in the last period of working life, and the level of having emotional burnout becomes lower as they gain experiences. Danylchuk (1993), Pastore and Judd (1993), Yılmaz and Karahan (2009) found no differences between professional working period and burnout level.

As it is seen in Table 5, the considerable difference (p<0.05) is found in the burnout level of teachers with regard to the marital status variable. It is realized single teachers suffer burnout more. Similarly, the studies of Özdogan (2008) and Cemaloglu and Erdemoğlu (2007) stand in parallel with our study. The profession of teaching is really challenging. The problems in social life challenge teachers in addition to the professional problems. It is assumed married teachers have lower burnout levels due to overcoming problems in professional and social life by gaining support from spouses. The teachers overcome this negative process through gaining support from their spouses in case they reach burnout by the challenging periods of profession.

It can be seen that research into emotional intelligence concept shows that there are positive impacts of emotional intelligence in working life. When relation between emotional intelligence and burnout is considered, programs concerning emotional intelligence development of teachers should be designed and teachers should be prevented to have burnout. These must be done in public institutions and non-governmental organizations should implement them.

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**Appendix**

**Maslach burnout ınventory ıtems of englısh versıon**

1) I feel emotionally drained from my work
2) I feel used up at the end of the day
3) I feel tired when I get up in the morning and have to face another day at work
4) I can easily understand how clients feel about things
5) I feel I treat some clients as if they were impersonal objects.
6) Working with people all day is a real strain for me
7) I deal effectively with the problems of clients
8) I feel burned out from my work
9) I feel I am positively influencing other peoples' lives through my work
10) I have become more callous toward people since I took this job
11) I worry that this job is hardening me emotionally
12) I feel very energetic
13) I feel frustrated by my job
14) I feel I am working too hard on my job
15) I don't really care what happens to some clients
16) Working with people directly puts too much stress on me
17) I can easily create a relaxed atmosphere with clients
18) I feel exhilarated after working closely with clients
19) I have accomplished many worthwhile things in this job
20) I feel like I am at the end of my tether
21) In my work, I deal with emotional problems very calmly
22) I feel clients blame me for some of their problems

**SCHUTTE EMOTIONAL INTELLGENCE SCALE SHORT VERSION ADAPTED BY DAVID CHAN**

1.      Recognize emotions from facial expressions
2.      Know what others feel by looking
3.      Aware of others_ non-verbal messages
4.      Use good moods to keep trying
5.      Know how to make a positive emotion last
6.      Expect good things to happen
7.      New ideas when in a positive mood
8.      See new possibilities when mood changes
9.      Problem solving is easy when in a positive mood
10.     Aware of emotions as experienced
11.     Emotions make life worth living
12.     Easily recognize emotions as experienced

Note: Turkish versions of these scales were used and it was mentioned in method section.

*Full Length Research Paper*

# The instrument for determining the levels of reflective thinking among elementary school students

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The purpose of this research is to develop a reliable and valid instrument in order to determine the elementary school students' levels about reflective thinking. A total of 320 students of 6th, 7th and 8th grades from 6 different primary schools participated in the study. It was identified that the instrument was composed of totally 17 items with one factor and the whole instrument has a reliability coefficient of Cronbach α=0.86. At the same time, this instrument is also the first original instrument developed for determining the elementary school students' levels of reflective thinking in Turkey.

Key words: Elementary students, reflective thinking, science education.

## INTRODUCTION

Science is not only a total of facts about the earth, but also a way of thinking and continuous research based on experimental criteria, logical thinking and inquiry. Scientific methods include the processes of observation, hypothesis building, testing, data collection, data interpretation, and presentation of findings. Imagination, creativity, openness to new ideas, mental objectivity and inquiry are very important in scientific studies. Therefore, in the teaching of science and technology, the goal is learning to reach accurate information of individuals through directly discovery, revised in view of the world and the configuration and gradually learning to develop enthusiasm for learning (MEB, 2005). Individuals must gain experience to reach accurate information through discovery. But gaining experience alone will not be enough, because we are expected to reach scientific knowledge through experience from individuals. It is possible to reflect on the experience. In this way, individuals will know what, why and how they do something and will discover scientific knowledge on their own.

One of the most important conceptions of century and qualifications that individuals need to have is life-long learning skill. Life-long learning skills require using reflective thinking skills and adapting learning to new situations with a flexible manner for making knowledge understandable (Herrington and Oliver, 2002; cited in Kızılkaya, 2009).

'Reflective Thinking' has been defined in different ways by different researchers. The studies showed that John Dewey took the most attribution in this regard. Therefore, researcher found it appropriate to give place to the definition of Dewey first.

Dewey (1933) defined reflective thinking as the kind of thinking that consists of turning a subject over in the mind and giving it serious consideration. Dewey (1933) indicated that reflection is a kind of special thinking and it includes doubt, hesitation, confusion and making inquiries and researches to resolve this confusion. The request of resolving this confusion guides the process of reflection. The basis of reflective thinking is based on John Dewey's (1933) approach, learning by doing by living.

Taggart and Wilson (1998) defined reflective thinking as a process of making logical decisions on education issues, and then assessing the decisions made by teachers. Ross (1989) has stated that reflective thinking

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is making rational choices and a way of thinking about educational issues that require taking responsibility for these choices (cited in Taggart and Wilson, 1998). Ünver (2003) defines reflective thinking as a process of thinking on solving problems and raising the positive and negative situations about the level and teaching or learning method of individual.

In recent years, in the United States of America, many commissions, boards and foundations like National Board of Professional Teaching Standards (NBPTS); National Commission on Teaching and America's Future (NCTAF); the National Foundation for the Improvement of Education (NFIE); the National Staff Development Council (NSDC) and state and local school districts have identified reflection as a standard that all teachers and students must strive to follow.

The following six phases of reflection have been identified by Rodgers. He says that these phases are also for students' systematically thinking.

I. an experience,
II. spontaneous ınterpretation of the experience,
III. naming the problems or the questions that arise out of the experience,
IV. Generating possible explanations for the problem or questions posed,
V. ramifying the explanations into full-blown hypotheses,
VI. Testing or experimenting the selected hypothesis (Rodgers, 2002).

Dewey (1933) refers to three attitudes to develop reflective thinking:

1. open-mindedness
2. whole-heartedness
3. responsibility

Open-mindedness can be described as freedom from prejudice, partisanship, and close to the mind to entertain new ideas. Open-mindedness requires to pay attention to alternative possibilities and to listen actively to the other side.

Whole-heartedness arises when someone is thoroughly interested in some object and cause. When a person is interested in a topic, he devotes himself to it.

Responsibility can be described as consideration of the results of the steps of the project and be willingness to adapt the results (Dewey, 1933).

In Turkey, the studies aim to identify the students' reflective thinking levels – those either adapting the existing instruments into Turkish or developing original instruments; they all address the reflective thinking levels of teachers and preservice teachers. However, there has not been such an instrument developed towards the reflective thinking levels of the elementary students in Turkey. The basic point of this study is the absence of such an instrument towards Turkish elementary students.

The purpose of the study is to develop a valid and reliable instrument about the reflective thinking levels of elementary students.

## METHOD

The following steps in the process of the development of the instrument of reflective thinking are used: preparation of the items of the instrument, having experts' views about the items for the scope validity, pilot study, the analysis of construct validity and reliability.

### *Preparation of the Items of the Instrument*

While the items of the instrument are being determined, the researcher has benefitted from studies and instruments made previously for undergraduated students in the literature. Items in the instrument have been constituted in 5 point Lykert type, with range from "strongly disagree"(1) to "completely agree"(5). While the items of the instrument are being prepared, the researcher has considerated the language used in the instrument that is simple and understandable.
Scope Validity
Scope validity is the degree of representation of topics that measurement tool intended to measure or items and questions in the measuremnet tool in a balanced way (Cronbach, 1990; cited in Tavşancıl, 2006). To ensure the scope validity of the instrument , three faculty members that were experts in their fields, that is science and technology teachers have been asked about the items in the instrument and the suitability of the subject the instrument measured. In the light of suggestions, some of the items in the instrument have been eliminated, and some of the the items in the instrument have been corrected; at the end  the instrument has been prepared for the pilot study. At the beginning, the instrument prepared for  the pilot study  consisted of 35 items and 12 of the items in the instrument are negative.

### Pilot study

The studies of the development of the instrument were done  with the data obtained from a total of  333 students in 6th, 7th and 8th grades of the elementary schools near the province of Denizli of different socio-economic regions; they were chosen by dispropartionate element selecting sampling method. A total of 13 students' data filled out superficially and marked in an incorrect way were excluded from the scope of  the study. The studies of reliability of the instrument have been obtained from 320 students. Information about  the sanpling is presented in Table 1.

### Data analysis

The analysis of the data obtained was done by using SPSS 11.5 packet programme. In the analysis, exploratory factor analysis, correlation analysis, cronbach alpha internal consistency and descriptive static techniques were used.

## RESULTS

In this part, reliability analysis and exploratory factor analysis on construct validity of  the  instrument were

**Table 1.** Sample charecteristics.

| Class | Gender (n=number) | | Total |
| | Female | Male | (n=number) |
| --- | --- | --- | --- |
| 6. | 59 | 60 | 119 |
| 7. | 42 | 55 | 97 |
| 8. | 58 | 46 | 104 |
| Total | 159 | 161 | 320 |

**Table 2.** The results of the factor analysis

| Item no | Factor load value |
| --- | --- |
| 1 | .580 |
| 6 | .549 |
| 9 | .618 |
| 10 | .562 |
| 12 | .513 |
| 14 | .507 |
| 15 | .589 |
| 17 | .506 |
| 18 | .600 |
| 19 | .649 |
| 21 | .633 |
| 24 | .497 |
| 26 | .476 |
| 28 | .488 |
| 29 | .539 |
| 32 | .618 |
| 33 | .590 |

billeted.

### Determining construct validity

Construct validity of an instrument may be determined by factor analysis and internal consistency. Factor analysis is clustering the properties of measured structure showing a high correlation with each other under a factor. Internal consistency is testing conjecture to know whether the measured structure is homogenous or not (Tavşancıl, 2006). To determine which sub-structures comprise reflective thinking levels exploratory factor analysis was used to ensure construct validity. Exploratory factor analysis is defined as investigation in which the researcher has not got any information on the number of factors that the measurement tool measures; rather than a specific hypothesis to test and trying to obtain information about the nature of the measurement tool and measured factors (Crocker and Algina, 1986; cited in Tavşancıl, 2006). Before the analysis, to determine whether sampling is suitable for factor analysis, Kaiser-Meyer-Olkin (KMO) and Barlett tests have been applied. The value of KMO test is 0.84 which can be placed in 0.80-0.89 range (very good) defined by Kaiser (cited in Tavşancıl, 2006). The value of Barlett test has been found significant ($\chi^2$ =3102; p=0.00). The results of KMO and Barlett tests have shown that the data are suitable for factor analysis.

At the beginning, the items of the instrument consisting of 35 items are located under only one factor (the difference between the two highest load value is at least 0.10) and the value of the factor load located under the factor is high (0.40 and above); 18 items that are not suitable for these qualifications have been sorted out from the instrument (Tavşancıl, 2006). Finally, the instrument was reduced only to 17 items. The values of the factor load of 17 items are presented in Table 2.

At the end of the analysis, the instrument of reflective thinking levels is composed of one factor. The items in the one factor are presented in Table 3.

Item- total correlation has been calculated on the basis of total points and items to measure the internal consistency of the given instrument. In addition, the points that got the lowest and the highest scores from all of the instrument have been calculated. The results of this analysis are presented in Table 4.

According to Table 4, the item-total correlations of the instrument ranged from 0.49 to 0.63. On the basis of both item and factor the obtained coefficients of the item-test correlation have not been found negative, zero or close to zero (Tavşancıl, 2006); it can be said that the internal consistency of the tool is high and so has got construct validity.

The final version of the obtained instrument consists of 17 items and it has been prepared in 5 point Lykert type. The highest point is 85 and the lowest point is 17.

When the standard deviation of the points of the items was examined, it was found that the standard deviation of the items has got values ranging from 0.86 to 1,63.
Reliability

Reliability is an indicator that the measurement tool measures the charecteristics with stability and without error (Tekin, 2000). The reliability of the instrument has been obtained by calculating Cronbach's α coefficient, which is 0.86 (Table 5).

According to these results, when the coefficiency reliability is 0.70 and above the instrument may be considered as reliable, (Nunnally, 1978; cited in Tavşancıl, 2006); the instrument (0.86) is reliable.

### DISCUSSION

In this study, the development process of the instrument to determine elementary school students' Reflective Thinking levels has been discussed. At the end of the study, the reliable instrument consists of one factor and 17 items and its Cronbach α coefficient is 0.86. We have

**Table 3.** Items listed in the Instrument.

| Item no | Item |
|---|---|
| 1 | I can analyze a problem according to my daily needs. |
| 6 | I love to ask questions. |
| 9 | I evaluate that the learned things in the lessons whether creates the opportunity of association with life or not. |
| 10 | I think about how I can improve the class activities. |
| 12 | I think on alternetive methods and perspectives. |
| 14 | I try to find a beter way by questioning my frieds'solution ways. |
| 15 | I try to resolve the next problem with a beter way by evaluating again and again my solution ways. |
| 17 | When I solve a scientific problem, I re-examine and evaluate my actions. |
| 18 | While I'm solving a problem, I ask myself questions to find different solution ways. |
| 19 | When I read a problem, I think what knowledge is needed to solve the problem. |
| 21 | When I read the problem, I ask myself questions to determine givens and requirements. |
| 24 | I Express my thoughts clearly about anything. |
| 26 | I criticize my success or failure after each course. |
| 28 | I can intuit easily the difficulties that meet me out. |
| 29 | I bring life into the style constantly thinking in the school and outside of the school. |
| 32 | I facilitate the solutions of the problems. |
| 33 | Before starting or deciding any activity, I think and plan how to do. |

**Table 4.** Item and test statics and descriptive statistics.

| Item no | Item-test correlation | Standard deviation |
|---|---|---|
| 1 | 0.565* | 0.865 |
| 6 | 0.551* | 1.017 |
| 9 | 0.612* | 1.149 |
| 10 | 0.551* | 0.936 |
| 12 | 0.520* | 1.129 |
| 14 | 0.515* | 1.139 |
| 15 | 0.585* | 1.057 |
| 17 | 0.516* | 1.155 |
| 18 | 0.593* | 1.077 |
| 19 | 0.635* | 1.017 |
| 21 | 0.627* | 1.098 |
| 24 | 0.514* | 1.118 |
| 26 | 0.495* | 1.147 |
| 28 | 0.500* | 1.040 |
| 29 | 0.545* | 1.163 |
| 32 | 0.612* | 1.102 |
| 33 | 0.580* | 1.025 |
| Total | 1 | 10.19 |

**Table 5.** The value of the Cronbach α of the reflective thinking ınstrument

| | n | Total |
|---|---|---|
| Cronbach α | 320 | 0.86 |

not compared the findings of the present study with similar findings of other studies because they are no studies on determining elementary school students' levels of reflective thinking.

The most recent  science and technology curriculum has been prepared according to the constructivist approach. This approach requires the students to learn by doing and experiencing and sense knowledge themselves. It means that the students should learn by gaining experience; in this process when the students construct scientific knowledge by researching and inquirying, they

should reflect on their own learning.

In science and technology lessons, we are trying to enage students with the scientific process skills, because we are expecting to resolve their problems by acting as a scientist in the problems they meet in daily laife. It is possible by producing alternative solutions to problems and doing reflection in this process. As a result, reflective thinking is an important skill which needs to be evaluated and improved.

This instrument which is valid and reliable for obtaining results is the first instrument developed for determining the reflective thinking of the elementary school students in our country.

The developed instrument can be used by researchers that are interested in the subject area as it is a valid and reliable instrument. Items are simple, clear and under-standable; these facilitate the applicability of the instru-ment. The instrument with these characteristics may be used by science and technology teachers for determining students' reflective thinking in this area before and after the process of teaching and learning. In addition with this developed instrument, elementary students' reflective thinking levels can be examined by considering depth in terms of different variables (socio-economic level, gender, learning approaches etc.).

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**Appendix 1.**

| Reflective Thinking Instrument for Elementary School Students | | | | | |
|---|---|---|---|---|---|
| 1.   I can analyze a problem according to my daily needs. | 1 | 2 | 3 | 4 | 5 |
| 2.   I love to ask questions. | 1 | 2 | 3 | 4 | 5 |
| 3.   I evaluate that the learned things in the lessons whether creates the opportunity of association with life or not. | 1 | 2 | 3 | 4 | 5 |
| 4.   I think about how I can improve the class activities. | 1 | 2 | 3 | 4 | 5 |
| 5.   I think on alternetive methods and perspectives. | 1 | 2 | 3 | 4 | 5 |
| 6.   I try to find a beter way by questioning my frieds'solution ways. | 1 | 2 | 3 | 4 | 5 |
| 7.   I try to resolve the next problem with a beter way by evaluating again and again my solution ways. | 1 | 2 | 3 | 4 | 5 |
| 8.   When I solve a problem, I re-examine and evaluate my actions. | 1 | 2 | 3 | 4 | 5 |
| 9.   While I'm solving a problem, I ask myself questions to find different solution ways. | 1 | 2 | 3 | 4 | 5 |
| 10.   When I read a problem, I think what knowledge is needed to solve the problem. | 1 | 2 | 3 | 4 | 5 |
| 11.   When I read the problem, I ask myself questions to determine givens and requirements. | 1 | 2 | 3 | 4 | 5 |
| 12.   I Express my thoughts clearly about anything. | 1 | 2 | 3 | 4 | 5 |
| 13.   I criticize my success or failure after each course. | 1 | 2 | 3 | 4 | 5 |
| 14.   I can intuit easily the difficulties that meet me out. | 1 | 2 | 3 | 4 | 5 |
| 15.   I bring life into the style constantly thinking in the school and outside of the school. | 1 | 2 | 3 | 4 | 5 |
| 16.   I facilitate the solutions of the problems. | 1 | 2 | 3 | 4 | 5 |
| 17.   Before starting or deciding any activity, I think and plan how to do. | 1 | 2 | 3 | 4 | 5 |

**Appendix 2.** The Turkish Version of the Instrument.

| Yansıtıcı Düşünme ile ilgili beceriler | Tamamen Katılıyorum | Katılıyorum | Kararsızım | Katılmıyorum | Hiç Katılmıyorum |
|---|---|---|---|---|---|
| 1.   Günlük ihtiyaçlarıma göre bir problemi analiz edebilirim (çözümleyebilirim). | ( ) | ( ) | ( ) | ( ) | ( ) |
| 2.   Soru sormayı severim. | ( ) | ( ) | ( ) | ( ) | ( ) |
| 3.   Derslerde öğrendiklerimin yaşamla ilişkilendirme fırsatı yaratıp yaratmadığını değerlendiririm. | ( ) | ( ) | ( ) | ( ) | ( ) |
| 4.   Dersteki etkinlikleri nasıl geliştirebileceğimi düşünürüm. | ( ) | ( ) | ( ) | ( ) | ( ) |
| 5.   Alternatif yöntemler ve bakış açıları üzerinde düşünürüm. | ( ) | ( ) | ( ) | ( ) | ( ) |
| 6.   Arkadaşlarımın çözüm yollarını sorgulayarak daha iyi bir yol bulmaya çalışırım. | ( ) | ( ) | ( ) | ( ) | ( ) |
| 7.   Çözüm yollarımı tekrar tekrar değerlendirip bir sonraki problemi daha iyi çözmeye çalışırım. | ( ) | ( ) | ( ) | ( ) | ( ) |
| 8.   Bir problemi çözdüğümde yaptığım işlemleri tekrar inceler, değerlendiririm. | ( ) | ( ) | ( ) | ( ) | ( ) |
| 9.   Problem çözerken, farklı çözüm yolları bulmak için kendime sorular sorarım. | ( ) | ( ) | ( ) | ( ) | ( ) |
| 10.   Bir problemi okuduğumda çözüm için hangi bilgiye ihtiyacım olduğunu düşünürüm. | ( ) | ( ) | ( ) | ( ) | ( ) |
| 11.   Problemi okuduğumda verilen ve istenenleri belirlemek için kendime sorular sorarım. | ( ) | ( ) | ( ) | ( ) | ( ) |
| 12.   Herhangi bir şey hakkındaki düşüncelerimi açıkça ifade ederim. | ( ) | ( ) | ( ) | ( ) | ( ) |
| 13.   Her dersten sonra basarı ve başarısızlığımın kritiğini yaparım. | ( ) | ( ) | ( ) | ( ) | ( ) |
| 14.   Karsıma çıkan zorlukları kolayca sezebilirim. | ( ) | ( ) | ( ) | ( ) | ( ) |
| 15.   Okulda ve okul dışında sürekli düşünmeyi hayat tarzı haline getiririm. | ( ) | ( ) | ( ) | ( ) | ( ) |
| 16.   Problemlerin çözümünü kolaylaştırırım. | ( ) | ( ) | ( ) | ( ) | ( ) |
| 17.   Herhangi bir etkinliğe başlamadan ya da karar vermeden önce nasıl yapacağımı düşünür ve planlarım. | ( ) | ( ) | ( ) | ( ) | ( ) |

**Appendix 3.** The pilot study version of the Instrument.

| Reflective Thinking Instrument for Elementary School Students | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| 1.   1. I can analyze a problem according to my daily needs. | ( ) | ( ) | ( ) | ( ) | ( ) |
| 2.   I look for evidence that support or refute my desicion. | ( ) | ( ) | ( ) | ( ) | ( ) |
| 3.   I can not assess different aspects of events. | ( ) | ( ) | ( ) | ( ) | ( ) |
| 4.   My behaviour depends on the position of the problem. | ( ) | ( ) | ( ) | ( ) | ( ) |
| 5.   I'm not flexible in my thoughts. | ( ) | ( ) | ( ) | ( ) | ( ) |
| 6.   I love to ask questions. | ( ) | ( ) | ( ) | ( ) | ( ) |
| 7.   I'm open to criticism from my friends. | ( ) | ( ) | ( ) | ( ) | ( ) |
| 8.   I can not associate with previous and next topic. | ( ) | ( ) | ( ) | ( ) | ( ) |
| 9.   I evaluate that the learned things in the lessons whether creates the opportunity of association with life or not. | ( ) | ( ) | ( ) | ( ) | ( ) |
| 10.   I evaluate that the learned things in the lessons whether creates the opportunity of association with life or not. | ( ) | ( ) | ( ) | ( ) | ( ) |
| 11.   I don't think that I could learn how differently the same subject. | ( ) | ( ) | ( ) | ( ) | ( ) |
| 12.   I think on alternetive methods and perspectives. | ( ) | ( ) | ( ) | ( ) | ( ) |
| 13.   I don't find adequate ptactices in the book. | ( ) | ( ) | ( ) | ( ) | ( ) |
| 14.   I try to find a beter way by questioning my frieds'solution ways. | ( ) | ( ) | ( ) | ( ) | ( ) |
| 15.   I try to resolve the next problem with a beter way by evaluating again and again my solution ways. | ( ) | ( ) | ( ) | ( ) | ( ) |
| 16.   When solving problems, I don't think about why I'm doing what process. | ( ) | ( ) | ( ) | ( ) | ( ) |
| 17.   When I solve a problem, I re-examine and evaluate my actions. | ( ) | ( ) | ( ) | ( ) | ( ) |
| 18.   While I'm solving a problem, I ask myself questions to find different solution ways. | ( ) | ( ) | ( ) | ( ) | ( ) |
| 19.   When I read a problem, I think what knowledge is needed to solve the problem. | ( ) | ( ) | ( ) | ( ) | ( ) |
| 20.   When I read a problem, I don't interrelate between the similarities and differences about previously solved problems by thinking. | ( ) | ( ) | ( ) | ( ) | ( ) |
| 21.   When I read the problem, I ask myself questions to determine givens and requirements. | ( ) | ( ) | ( ) | ( ) | ( ) |
| 22.   I do not know how to deal with difficulties and negativity. | ( ) | ( ) | ( ) | ( ) | ( ) |
| 23.   I can evaluate myself at the end of the course. | ( ) | ( ) | ( ) | ( ) | ( ) |
| 24.   When I read the problem, I ask myself questions to determine givens and requirements. | ( ) | ( ) | ( ) | ( ) | ( ) |
| 25.   I give the opportunity to criticize me to the people around. | ( ) | ( ) | ( ) | ( ) | ( ) |
| 26.   I criticize my success or failure after each course. | ( ) | ( ) | ( ) | ( ) | ( ) |
| 27.   I don't look evets from different perspectives. | ( ) | ( ) | ( ) | ( ) | ( ) |
| 28.   I can intuit easily the difficulties that meet me out. | ( ) | ( ) | ( ) | ( ) | ( ) |
| 29.   I bring life into the style constantly thinking in the school and outside of the school. | ( ) | ( ) | ( ) | ( ) | ( ) |
| 30.   I do not care what, when, how and why I'm doing. | ( ) | ( ) | ( ) | ( ) | ( ) |
| 31.   I do not know how I find necessary information on any subject. | ( ) | ( ) | ( ) | ( ) | ( ) |
| 32.   I facilitate the solutions of the problems. | ( ) | ( ) | ( ) | ( ) | ( ) |
| 33.   Before starting or deciding any activity, I think and plan how to do. | ( ) | ( ) | ( ) | ( ) | ( ) |
| 34.   I don't associate new learned knowledge with previous experiences. | ( ) | ( ) | ( ) | ( ) | ( ) |
| 35.   I write my thoughts on the subject at the end of the course. | ( ) | ( ) | ( ) | ( ) | ( ) |

**Appendix 4.** The Turkish version of the pilot study.

| Yansıtıcı Düşünme ile ilgili beceriler | Tamamen Katılıyorum | Katılıyorum | Kararsızım | Katılmıyorum | Hiç Katılmıyorum |
|---|---|---|---|---|---|
| 1.   Günlük ihtiyaçlarıma göre bir problemi analiz edebilirim (çözümleyebilirim). | ( ) | ( ) | ( ) | ( ) | ( ) |
| 2.   Kararımı destekleyecek ya da çürütecek deliller ararım. | ( ) | ( ) | ( ) | ( ) | ( ) |
| 3.   Olayları farklı yönleriyle değerlendiremem. | ( ) | ( ) | ( ) | ( ) | ( ) |
| 4.   Davranışım problem durumuna göre değişir. | ( ) | ( ) | ( ) | ( ) | ( ) |
| 5.   Düşüncelerimde esnek değilimdir. | ( ) | ( ) | ( ) | ( ) | ( ) |
| 6.   Soru sormayı severim. | ( ) | ( ) | ( ) | ( ) | ( ) |
| 7.   Arkadaşlarımın eleştirilerine açığımdır. | ( ) | ( ) | ( ) | ( ) | ( ) |
| 8.   İşlenen konuyu önceki ve sonraki konularla ilişkilendiremem. | ( ) | ( ) | ( ) | ( ) | ( ) |

**Appendix 4. Contd.**

| | | | | | | |
|---|---|---|---|---|---|---|
| 9. | Derslerde öğrendiklerimin yaşamla ilişkilendirme fırsatı yaratıp yaratmadığını değerlendiririm. | ( ) | ( ) | ( ) | ( ) | ( ) |
| 10. | Dersteki etkinlikleri nasıl geliştirebileceğimi düşünürüm. | ( ) | ( ) | ( ) | ( ) | ( ) |
| 11. | Aynı konuyu daha farklı nasıl öğrenebileceğimi düşünmem. | ( ) | ( ) | ( ) | ( ) | ( ) |
| 12. | Alternatif yöntemler ve bakış açıları üzerinde düşünürüm. | ( ) | ( ) | ( ) | ( ) | ( ) |
| 13. | Kitaptaki etkinliklerle yetinmem. | ( ) | ( ) | ( ) | ( ) | ( ) |
| 14. | Arkadaşlarımın çözüm yollarını sorgulayarak daha iyi bir yol bulmaya çalışırım. | ( ) | ( ) | ( ) | ( ) | ( ) |
| 15. | Çözüm yollarımı tekrar tekrar değerlendirip bir sonraki problemi daha iyi çözmeye çalışırım. | ( ) | ( ) | ( ) | ( ) | ( ) |
| 16. | Problem çözerken, hangi işlemi neden yaptığımı düşünmem. | ( ) | ( ) | ( ) | ( ) | ( ) |
| 17. | Bir problemi çözdüğümde yaptığım işlemleri tekrar inceler, değerlendiririm. | ( ) | ( ) | ( ) | ( ) | ( ) |
| 18. | Problem çözerken, farklı çözüm yolları bulmak için kendime sorular sorarım. | ( ) | ( ) | ( ) | ( ) | ( ) |
| 19. | Bir problemi okuduğumda çözüm için hangi bilgiye ihtiyacım olduğunu düşünürüm. | ( ) | ( ) | ( ) | ( ) | ( ) |
| 20. | Bir problemi okuduğumda daha önce çözdüğüm problemleri düşünerek benzerlik ve farklılıklarına göre aralarında ilişki kurmam. | ( ) | ( ) | ( ) | ( ) | ( ) |
| 21. | Problemi okuduğumda verilen ve istenenleri belirlemek için kendime sorular sorarım. | ( ) | ( ) | ( ) | ( ) | ( ) |
| 22. | Olumsuzluklar ve zorluklarla nasıl baş edeceğimi bilemem. | ( ) | ( ) | ( ) | ( ) | ( ) |
| 23. | Dersin sonunda kendimi değerlendirebilirim. | ( ) | ( ) | ( ) | ( ) | ( ) |
| 24. | Herhangi bir şey hakkındaki düşüncelerimi açıkça ifade ederim. | ( ) | ( ) | ( ) | ( ) | ( ) |
| 25. | Çevredekilerin kendimi eleştirmelerine fırsat veririm. | ( ) | ( ) | ( ) | ( ) | ( ) |
| 26. | Her dersten sonra basarı ve başarısızlığımın kritiğini yaparım. | ( ) | ( ) | ( ) | ( ) | ( ) |
| 27. | Olaylara değişik açılardan bakmam. | ( ) | ( ) | ( ) | ( ) | ( ) |
| 28. | Karsıma çıkan zorlukları kolayca sezebilirim. | ( ) | ( ) | ( ) | ( ) | ( ) |
| 29. | Okulda ve okul dışında sürekli düşünmeyi hayat tarzı haline getiririm. | ( ) | ( ) | ( ) | ( ) | ( ) |
| 30. | Neyi, ne zaman, nasıl ve niçin yapacağıma dikkat etmem. | ( ) | ( ) | ( ) | ( ) | ( ) |
| 31. | Herhangi bir konuda ihtiyacım olan bilgiye nasıl ulaşacağımı bilmem. | ( ) | ( ) | ( ) | ( ) | ( ) |
| 32. | Problemlerin çözümünü kolaylaştırırım. | ( ) | ( ) | ( ) | ( ) | ( ) |
| 33. | Herhangi bir etkinliğe başlamadan ya da karar vermeden önce nasıl yapacağımı düşünür ve planlarım. | ( ) | ( ) | ( ) | ( ) | ( ) |
| 34. | Yeni öğrendiklerimi önceki yaşantılarımla ilişkilendirmem. | ( ) | ( ) | ( ) | ( ) | ( ) |
| 35. | Dersin sonunda konu ile ilgili düşüncelerimi yazarım. | ( ) | ( ) | ( ) | ( ) | ( ) |

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# Effect of teacher education program on scienceprocess skills of pre-service science teachers

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Over the past three or more decades, many studies have been written about teacher education and the preparation of science teachers. Presented study is one of which investigated the effectiveness of scientific process skills on pre-service science teachers of Pamukkale University Primary Science Teacher Education Program for four years. This study uses a simple descriptive survey approach which is one-shot survey for the purpose of describing the effectiveness of science teacher education program on scientific process skills of pre-service science teachers. The participants of the study consist of 186 primary science pre-service teachers in total from four different semesters of their teacher preparation program. Test of Integrated Process Skills II (TIPS II) was utilized to collect data. The data were analyzed using primarily multivariate statistical methods. One way ANOVA was used to identify patterns within cohorts regarding pre-service teachers' scientific process skills. Major findings indicated that Pamukkale University- Science Teacher Education Program helps to develop pre-service science teachers' scientific process skills effectively. Especially, science teacher education program affected pre-service science teachers' scientific process skills positively in the third and fourth grade.

**Key words:** Scientific process skill, teacher education program, pre-service science teachers, science education, constructivist teaching.

## INTRODUCTION

Approaches and attitudes based on active participation of the students in the process of science education take place in curricular of many countries. The main purpose of new science curriculum is to train individuals as science literate citizens. Science literacy consists of developing the skills of scientific thinking, researching, questioning, critical thinking and problem solving of individuals and making them lifelong learners (NRC, 1996; MNE, 2006). It is expected of individuals to realize the individual and social problems they encounter in their living environments. They should identify them and find solutions to them. The basis of learning to solve a problem is learning to gain scientific process skills.

Current science education reforms and standards have identified both basic and integrated science process skills. The basic process skills are observing, classifying,

predicting, inferring, measuring, and communicating. The integrated skills are identifying and controlling variables, defining operationally, reading/constructing graphs, formulating hypotheses, interpreting data, experimenting and formulating models (Padilla, 1990). Likewise, recommendations by current science education reforms and standards make specific reference for teachers in teaching both basic and integrated science process skills and encourage teacher preparation programs to emphasize science process skills in an effort to develop teachers who are competent in teaching science through inquiry (NSTA, 2002; MNE, 2006).

Science process skills are essential for teaching science content knowledge and scientific inquiry because teachers who have a poor understanding of the science process skills are less likely to have a positive attitude

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**Table 1.** Courses at primary science teacher education program.

| | |
|---|---|
| Field courses | Physics I-II-III-IV, Chemistry I-II-III-IV, Mathematics I-II, Special Topics in Chemistry, Special Topics in Physics, Special Topics in Biology, Biology I-II, Evolution, Earth Science, Environmental Science, Human Anatomy and Physiology, Nature of Science and History of Science, Genetics, Biotechnology, Laboratory Courses I-II (Physics, Chemistry, Biology and Science), Astronomy |
| Professional knowledge | Educational Psychology, Introduction to Teaching Profession, Principles and Methods of Education, Science Technology Program and Planning, Instructional Technologies and Material Designing, Special Methods of Science Teaching I-II, Measurement and Evaluation, Classroom Management, School Experience, Teaching Practise, Turkish Education System and School Management |
| General culture | Turkish, Ataturk's Principles, Computer I- II, Foreign Language, Turkish Education History, Scientific Research Methods, Community Service Applications) |

towards them and are, therefore, less likely to teach them to their students (Cain, 2002). Science process skills instruction also promotes positive attitudes toward science among students; thus, the avoidance of teaching the process skills can be detrimental (Bilgin, 2006). Many researches stated that teachers who are deficient in the science process skills are less equipped to use inquiry in their classrooms (Aka et al., 2010; Blanchard et al., 2008; Hume, 2009; Lotter et al., 2007; Marshall et al., 2009). Similarly, teachers who are not familiar with science processes or have low interest in science processes are not likely to teach science by inquiry. Teachers' competence in the science process skills has also been found to promote a positive attitude towards science (Bilgin, 2006; Kula, 2009; Tatar, 2006).

In relation to increasing significance of science education, roles of teachers and correspondingly significance of science teacher education programs are increasing day by day. As well as continuity in the studies of developing program, new approaches in learning methods and techniques, which the knowledge era brought, created the need of renewal of Science Lesson Curriculum, it made changes in Teacher Education Programs in Turkey and thus, the number of application lessons was increased in these programs. Therefore, education methods and laboratory-oriented courses in teacher education programs have become important today.

As a result of restructuring and accreditation of Faculty of Education by Higher Education Institution (HEI) in 1998, programs of teaching profession courses were re-arranged (MNE, 2006). Courses at Primary Science Teacher Education Program are presented in Table 1.

When it is considered that science teaching philosophies of pre-service teachers affect the success and development of the students in their class where they become a teacher in future, we can say that it is very important for teachers to have scientific process skills. There are many researches available about preservice science teachers and their science process skills (Aka et al., 2010; Baykara, 2011; Bilgin, 2006; Ergun and Avcı, 2012; Ergül, 2009; Kula, 2009; Tatar, 2006). However,

there are not many research studies available which focus on effect of teacher education program on pre-service teachers in Turkey. Considering these concerns, the present research focuses on changing scientific process skills of pre-service science teachers about teaching and learning throughout a four-year teacher education program. The examination of pre-service teachers' scientific process skills could provide the definition for potential teacher education programs and understanding the effects of method courses on pre-service teachers will be useful as models for other teacher educators.

## METHOD

This research uses simple descriptive survey approach. The simple descriptive survey approach is one-shot survey for the purpose of describing the characteristics of a sample at one point in time apart from the other approaches of survey research, namely cross-sectional and longitudinal (Mertens, 1998, p.108). In this research, simple descriptive survey is conducted for the purpose of describing the scientific understanding levels of cohorts of prospective science teachers.

### Sample of research

186 pre-service teachers enrolled in the Pamukkale University Primary Science Teacher Education Program (PSTEP) in Turkey during the spring term of 2012 were invited to participate in the study. All of them volunteered to participate in the study. Fifty were freshmen, fourty-seven were sophomore, fourty-nine were junior, and forty were senior.

### Instrument

#### Scientific Process Skills Test (SPST) and evaluation of the test

In this research, the effect of research-oriented laboratory applications on the development of integrated scientific process skills of pre-service teachers was researched. In accordance with this purpose, 'Scientific Process Skills Test (SPST)- The Test of Integrated Process Skills II (TIPS II)' was used. This test was developed by Burns et al. 1985 and translation into Turkish was done by Geban et al. (1992), study of validity and reliability was

**Table 2.** Mean scores of pre-service teachers by cohort(s) and TIPS II subscales.

| Cohort | N | Identifying Variables | | Operationally Defining | | Hypothesizing and Defining | | Interpretation of Data and Graphic | | Designing Investigation | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Mean | SD | Mean | SD | Mean | SD | Mean | SD | Mean | SD |
| freshmen | 50 | .558 | .177 | .693 | .241 | .695 | .164 | .706 | .145 | .826 | .215 |
| sophomore | 47 | .454 | .210 | .450 | .230 | .529 | .227 | .652 | .205 | .702 | .288 |
| Junior | 49 | .823 | .162 | .714 | .189 | .746 | .183 | .813 | .130 | .864 | .191 |
| Senior | 40 | .618 | .154 | .712 | .244 | .716 | .181 | .754 | .146 | .875 | .180 |

made. The reliability of the test was found as 0.85. As a result of statistical evaluations made on 220 pre-service teachers, cronbach α reliability co-efficient was found as 0.79 (Kanlı and Temiz, 2006). Also in this study, as a result of statistical evaluations made on 285 pre-service teachers to determine reliability of the test, cronbach α reliability co-efficient was found as 0.79. In this multiple choice test consisting of 36 questions, the skills tried to be measured are; *identifying variables (12 questions), operationally defining (6 questions), hypothesizing and defining (9 questions), interpretation of data and graphic (6 questions) and designing the investigation (3 questions).* SPST's results were evaluated on the numbers of questions without considering one correct answer as wrong because of three wrong answers. Scoring was made by giving "1" point to correct answer, "0" point to wrong answer.

**Data analysis**

Turkish version of the TIPS II was conducted for the 186 pre-service teachers, who were enrolled in science teacher education program at Pamukkale University 2011- 2012 spring semester. The results of the TIPS II were analyzed using the Statistical Package for Social Sciences (SPSS) version 12.0 to answer question. To identify patterns in the scores obtained on the TIPS II for each cohort, a one- way analysis of variance (ANOVA) was conducted. Descriptive statistics were computed. The ANOVA analysis was chosen because the analysis of variance deals with differences between or among sample means; it imposes no restriction on the number of means.

**FINDINGS**

Changes of pre-service science teachers' scientific process skills during their preparatory program are presented at Table 2.

When analyzing arithmetic average of 1st, 2nd, 3rd and 4th grades, it is pointed out that in 2nd grade, pre-service teachers cannot use scientific process skills, which they have in 1st grade. But when looked at arithmetic averages, it can be said that there is an increase to use science process skills of especially 3rd and 4th grade pre-service teachers compared to 2nd grade.

In order to determine any differences in mean scores between the practices of the four pre-service science teacher cohorts, the one-way analysis of variance (ANOVA) was computed using the SPSS statistical package. The analysis indicates that the means for the groups were significantly different for the subscales of

Identifying Variables (F=36.824, p=.000 < 0.05), Defining Operationally (F=15.010, p=.000 < 0.05), Hypothesizing and Defining (F=12.238, p=.000 < 0.05), Interpretation of Data and Graphic (F=8.810, p=.000 < 0.05), Designing of Investigation (F=5.761, p=.001 < 0.05) (Table 3).

The Turkey HSD test was utilized to determine which cohort mean scores differed over the subscale where significant differences existed. The results are shown in Table 4.

There were statistically significant differences found between pre-service teachers in freshmen and sophomore mean scores on all subscales of TIPS II except "interpretation of data and graphic" subscale decreased through first year to second year. With regard to "data and graph interpretation" subscale, although the mean scores for sophomore were not statistically different from freshmen, there was observed a decrease in the mean scores. On the other hand, there were statistically significant differences found between pre-service teachers in sophomore and junior mean scores on all subscales of TIPS II increased through second year to third year. Although there were statistically significant differences found between pre-service teachers in sophomore and senior mean scores on all subscales of TIPS II increased through second year to fourth year, there was observed a decrease between pre-service teachers in junior and senior mean scores on all subscales of TIPS II through third year to fourth year.

Research results revealed that pre-service science teachers' scientific process skills developed during four year preparatory program; they can give a description of an investigation or a problem and identify a suitable hypothesis and decide and select a suitable design for an investigation to test it. They can determine the independent, dependent, and controlled variables in their hypothesis and test their hypothesis and obtain their data. They can identify a graph that represents the data or give a graph of data from an investigation. And they can identify the relationships between variables.

**Conclusion**

In our country, teacher education programs within the scope of restructuring of faculty of education were

**Table 3.** One-Way ANOVA for differences in TIPS II subscales across the cohorts.

| Dependent Variables | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| Identifying Variables | Between Groups | 3.503 | 3 | 1.168 | 36.824 | .000 |
| | Within Groups | 5.772 | 182 | 3.171E-02 | | |
| | Total | 9.275 | 185 | | | |
| Operationally Defining | Between Groups | 2.313 | 3 | .771 | 15.010 | .000 |
| | Within Groups | 9.348 | 182 | 5.136E-02 | | |
| | Total | 11.661 | 185 | | | |
| Hypothesizing and Defining | Between Groups | 1.330 | 3 | .443 | 12.238 | .000 |
| | Within Groups | 6.592 | 182 | 3.622E-02 | | |
| | Total | 7.922 | 185 | | | |
| Interpretation of Data and Graphic | Between Groups | .670 | 3 | .223 | 8.810 | .000 |
| | Within Groups | 4.612 | 182 | 2.534E-02 | | |
| | Total | 5.281 | 185 | | | |
| Designing of Investigation | Between Groups | .867 | 3 | .289 | 5.761 | .001 |
| | Within Groups | 9.129 | 182 | 5.016E-02 | | |
| | Total | 9.996 | 185 | | | |

arranged for providing the needs of compulsory education of eight years in 1998-1999 school years. But according to results of surveys carried out by deans of faculty of education and academicians within Higher Education Institution (OYEGM, 2008), program was decided to be changed in accordance with the determinations of the fact that teacher education programs cannot keep pace with developments adequately. After the principles of teacher education programs bringing up teachers for primary education were determined, programs updated in the light of these principles have been put into practice in the related departments of faculty of education since 2006-2007 school years.

The effect of updated Pamukkale University Science Teacher Education Program on scientific process skills of pre-service teachers was examined also in this study. A qualified teacher requires using generally contents s/he will teach and the teaching methods, knowing students and satisfying their needs (ÖYEGM, 2008). Educationalists made studies about how to encourage students to understand the nature of dynamic and ever-changing scientific process skills and stated that it is important for students to be led by a qualified teacher (Barkley, 2010; Khishfe and Abd-El-Khalick, 2002). A pre-service teacher is primarily expected to accomplish general culture, special field knowledge and pedagogical-oriented courses available in teacher education programs and to get a required mark from Public Personnel Selection Examination for being appointed in his field. Distribution of courses in teacher education programs conducted in our country is according to the rate of these fields in teacher

education program. If one looks at the distribution rates of the courses in Science teacher education program renewed in the years of 2006-2007 into the fields determined according to general proficiency criteria, it is seen that courses of field knowledge determined 50-60%, pedagogical courses 25-30% and general culture courses 15-20% (ÖYEGM, 2007). When science teacher education program is considered, pre-service teachers require having taken necessary field courses, professional courses and general culture courses in order to graduate. Thanks to these courses, teachers of the future, who accomplished these criteria, are supposed to use scientific process skills they have and to convey these knowledge and skills to their students. But unfortunately the results arising from this study point out that most of the pre-service teachers do not have scientific process skills such as "Identifying Variables, Operationally Defining, Hypothesizing and Defining, Interpretation of Data and Graphic, Designing of Investigations", which require to be gained in primary school, as expected. The most important reason for this may be that pre-service teachers have not come from a learning environment based on researching along their educational back-ground, that is to say, they have come from a traditional learning environment. The other reason can also arise from the fact that teachers lecture as teacher-centered because of teacher's apprehension about management of program or their unfamiliarity with new education approaches. This result of the study resembles several conducted studies. There are also a lot of studies stating that scientific process skills of students both at primary education level

**Table 4.** Comparison of observed cohort mean differences as measured on TIPS II.

| Dependent variables | (I) Grade | (J) Grade | Mean difference (I-J) | Std. Error | Sig. |
|---|---|---|---|---|---|
| Identifying Variables | 1 | 2 | .1044* | 3.618E-02 | .020 |
| | | 3 | -.2648* | 3,580E-02 | ,000 |
| | | 4 | -6,0417E-02 | 3,778E-02 | ,379 |
| | 2 | 1 | -,1044* | 3,618E-02 | ,020 |
| | | 3 | -,3692* | 3,636E-02 | ,000 |
| | | 4 | -,1648* | 3,831E-02 | ,000 |
| | 3 | 1 | ,2648* | 3,580E-02 | ,000 |
| | | 2 | ,3692* | 3,636E-02 | ,000 |
| | | 4 | ,2044* | 3,795E-02 | ,000 |
| | 4 | 1 | 6,042E-02 | 3,778E-02 | ,379 |
| | | 2 | ,1648* | 3,831E-02 | ,000 |
| | | 3 | -,2044* | 3,795E-02 | ,000 |
| | | | | | |
| Operationally Defining | 1 | 2 | ,2430* | 4,604E-02 | ,000 |
| | | 3 | -2,0952E-02 | 4,556E-02 | ,968 |
| | | 4 | -1,9167E-02 | 4,808E-02 | ,979 |
| | 2 | 1 | -,2430* | 4,604E-02 | ,000 |
| | | 3 | -,2639* | 4,627E-02 | ,000 |
| | | 4 | -,2621* | 4,875E-02 | ,000 |
| | 3 | 1 | 2,095E-02 | 4,556E-02 | ,968 |
| | | 2 | ,2639* | 4,627E-02 | ,000 |
| | | 4 | 1,786E-03 | 4,829E-02 | 1,000 |
| | 4 | 1 | 1,917E-02 | 4,808E-02 | ,979 |
| | | 2 | ,2621* | 4,875E-02 | ,000 |
| | | 3 | -1,7857E-03 | 4,829E-02 | 1,000 |
| | | | | | |
| Hypothesizing and Defining | 1 | 2 | ,1660* | 3,867E-02 | ,000 |
| | | 3 | -5,0476E-02 | 3,826E-02 | ,550 |
| | | 4 | -2,1111E-02 | 4,037E-02 | ,954 |
| | 2 | 1 | -,1660* | 3,867E-02 | ,000 |
| | | 3 | -,2165* | 3,886E-02 | ,000 |
| | | 4 | -,1871* | 4,094E-02 | ,000 |
| | 3 | 1 | 5,048E-02 | 3,826E-02 | ,550 |
| | | 2 | ,2165* | 3,886E-02 | ,000 |
| | | 4 | 2,937E-02 | 4,055E-02 | ,888 |
| | 4 | 1 | 2,111E-02 | 4,037E-02 | ,954 |
| | | 2 | ,1871* | 4,094E-02 | ,000 |
| | | 3 | -2,9365E-02 | 4,055E-02 | ,888 |
| | | | | | |
| Interpretation of Data and Graphic | 1 | 2 | 5,418E-02 | 3,234E-02 | ,337 |
| | | 3 | -,1063* | 3,200E-02 | ,005 |
| | | 4 | -4,7500E-02 | 3,377E-02 | ,495 |
| | 2 | 1 | -5,4184E-02 | 3,234E-02 | ,337 |
| | | 3 | -,1604* | 3,250E-02 | ,000 |
| | | 4 | -,1017* | 3,424E-02 | ,016 |
| | 3 | 1 | ,1063* | 3,200E-02 | ,005 |
| | | 2 | ,1604* | 3,250E-02 | ,000 |
| | | 4 | 5,876E-02 | 3,392E-02 | ,307 |
| | 4 | 1 | 4,750E-02 | 3,377E-02 | ,495 |
| | | 2 | ,1017* | 3,424E-02 | ,016 |
| | | 3 | -5,8759E-02 | 3,392E-02 | ,307 |

**Table 4.** Contd.

| | | | | | |
|---|---|---|---|---|---|
| Designing of Investigation | 1 | 2 | ,1245* | 4,550E-02 | ,032 |
| | | 3 | -3,7279E-02 | 4,502E-02 | ,841 |
| | | 4 | -4,8333E-02 | 4,751E-02 | ,739 |
| | 2 | 1 | -,1245* | 4,550E-02 | ,032 |
| | | 3 | -,1618* | 4,573E-02 | ,002 |
| | | 4 | -,1729* | 4,818E-02 | ,002 |
| | 3 | 1 | 3,728E-02 | 4,502E-02 | ,841 |
| | | 2 | ,1618* | 4,573E-02 | ,002 |
| | | 4 | -1,1054E-02 | 4,772E-02 | ,996 |
| | 4 | 1 | 4,833E-02 | 4,751E-02 | ,739 |
| | | 2 | ,1729* | 4,818E-02 | ,002 |
| | | 3 | 1,105E-02 | 4,772E-02 | ,996 |

* The mean difference is significant at the .05 level.

and getting through high school by accomplishing primary education are at lower level (Temiz, 2001; Aydınlı, 2007; Hazır and Türkmen, 2008).

Another significant result of the study is also that unfortunately in second grade, pre-service teacher cannot use scientific process skills, which have not already been at an expected level in 1$^{st}$ grade. But Pamukkale University Science Teacher Training Program affects development of scientific process skills of pre-service teachers in third and fourth grades positively referring to this result. Unfortunately, field courses they take in second grade and the density of these courses can cause pre-service teachers to have difficulties and to focus on theoretical courses more. Another reason may also be that academicians giving second grade courses could not leave traditional approaches and lead pre-service teachers to memorizing.

In the third grade, pre-service teachers also take "Scientific Research Methods", "Special Education Methods I" and "Nature of Science and History of Science" as well as "Science Education Laboratory I-II". In these courses, pre-service teachers make a lot of project studies in order to solve the problem they have determined by doing several researches and display a part of these project studies. Pre-service teachers have opportunity for using and developing their scientific process skills in these project studies. Science Teacher Education Program can be said to be successful at this level. But, the results of the study show that there is even a little regression in fourth grade in scientific process skills of pre-service teachers. The most important reason for this can be regarded as professional apprehension of pre-service teachers. In our country, pre-service teachers must take the Public Personnel Selection Exam to become a teacher after graduation. This exam is a traditional "multiple choice exam" and pre-service teachers are obliged to answer the questions such as history, geography, policy except their fields. This application leads pre-service teachers to memorizing. Throughout

this process, purposes of pre-service teachers are to manage time well by doing a great number of questions, to recognize or remember the answers of questions in a short time and to get a higher mark. It is known that this process, which pre-service teachers must experience to become a teacher, is a considerably long and exhausting process. Therefore, this process could affect their scientific process skills besides having affected their academic lives negatively. At this point, it can be said that application for teacher appointments affects teacher education programs negatively and this application needs to be rearranged. In addition, that academicians who are the major performers of the program improve themselves by following new publications will increase success of the applied program, as well.

This study includes important results regarding curriculum development and we need more study effect of teacher education program on pre-service science teachers' science process skills because. The limitation of this study is it is just a descriptive study. For a future study, researcher may work on the same students for four years' study; in this way, it is possible to mention the development of pre-service science teachers' science process skills during the four years' preparatory program. Another recommendation is that quantitative data can also be supported with qualitative data. Furthermore, the same study can be designed by teacher educators.

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**Educational Research and Reviews**

*Full Length Research Paper*

# To what extent should schools be autonomous?

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The aim of the research is to present school managers' viewpoints about "school autonomy" program in our country and accordingly determine the degree of school managers' autonomy request. The research was made by using scanning method. The research consists of school managers who are working in preschools, elementary schools, secondary schools and high schools in Istanbul center. The sample consists of 374 school managers who were selected by random sampling. The data were collected with the help of survey which was formed by considering budget, material and human resources of schools, which were in "school autonomy" program. This survey was developed by Eurydice European Unit. SPSS package software (frequency, percentage, average, standard deviation) was used in analysing the data. While comparing the quantitative data, t-test was used in order to find out the differece between two groups, One Way Anova Test was used in comparison of parameters between more than two groups and Scheffe Test was used to identify which group was making difference. They were also interpreted.

**Key words:** School, school autonomy, school management.

## INTRODUCTION

Decentralized management advocates regard local government as a way to participate in society and provide schools financial support. On the other hand, decentralized management opponents think that giving central authority's power and responsibility to local units will spread the problems of the central to local units. They also indicate that local units with limited knowledge, skill and experience to cope with these problems will make them bigger and unsolvable (Çınkır, 2002, 101).

School is a special atmosphere which is created by educational process systematically. School has 3 different fuctions in social field (Başar, 2003). School runs the environmental resources (program, teacher, technology, etc), mainly student resource with the help of certain subsystems. It presents educational services and educated people as a growth and provides feedbacks. Accordingly, it is an open social system which tries to exist and makes necessary changes after reviewing program processes (Şişman and Turan, 2004). On the other hand, school

management is a limited space for implementation of educational management. The boundaries of this space are generally created by aims and structures of educational system (Bursalıoğlu, 1998).

School-based management is a developing school approach which aims to increase the power and responsibilities of school members in areas of budget, personnel, education and training programs (Aytaç, 2000). According to school-based management strategy, it is inevitable to have mistakes and schools should be given power and responsibility in order to remove these problems as soon as possible (Cheng, 1993). Basic hypothesis in this practice is increased organizational democracy with the participation of managed people as a result of managerial decisions (Kepenekçi, 2003).

School autonomy is defined in different names both at home and abroad. School autonomy is the transposition of power to make desicion and responsibility to school and school units. In literature, the concept of school

autonomy is school-based management, school-based governance, a school that manages itself, creative school, participatory management in school, local school management, decentralization, local management of school, shared decision making, self managing schools, participatory desicion making/management, locally autonomous schools, devolution, restructred school. Although these concepts such as school-based management, school-centred management, self managing school, decentralized schools, participatory desicion making schools include some different meanings, they define more autonomous management based on school, human, material, financial resources and their power and responsibilities according to these resources. Different concepts are also derived from different experiences of countries (Naıdoo and Peggy, 2003; Yalçınkaya, 2005; Özdemir, 1996; Aytaç, 2000; Taymaz, 1995; Yemenici and Bayarak 2001; Özden, 1996; De Grauwe 2004; Aytac 2000). The concept, "Autonomy" will be used in the remaining sections.

The concept of school autonomy is defined in various ways. Autonomy, being independent from external audit in terms of management (Oguzhan 1993), is being able to set target and make desicions without violeting rights of individuals, groups, organizations, regions, states and legal people (Demirtas and Gunes, 2002). Therefore educational institutions can not only make plans and programs to meet their needs but also take any managerial desicion about execution with their wide participation in commitee (Uysal 2003).

## The aim of the research

The aim of the research is to show school managers' opinions about "school autonomy" program in our country. Accordingly, pre-school, primary school, secondary school and high school managers' opinions about auto-nomy in schools are studied.

This research tries to addrss the following questions:

a) What are the pre-school, primary school, secondary school and high school managers' opinions about "management of human resources" from the fields of autonomy which will be given to schools?
b) What are the pre-school, primary school, secondary school and high school managers' opinions about "management of financial resources" from the fields of autonomy which will be given to schools?
c) What are the pre-school, primary school, secondary school and high school managers' opinions about "management of teaching-learning process" from the fields of autonomy which will be given to schools?

## METHOD OF THE RESEARCH

Method of the research is scanning model for it aims to detect the

current situation. Scanning models aim to describe a past or current situation just as it is. Topic of the research, *an individual or an object,* is defined in its own circumstances (Karasar, 2011)

## Structure of the research

Managers, chief and assistant managers who are working in kindergartens, primary schools, secondary schools and high schools connected to Ministry of Education in Istanbul create the structure of the research.

## Research universe

The universe of the study was composed of principals, head assistant principals and assistant principals employed in state pre, primary, secondary and high schools under the Ministry of National Education in Istanbul Province central districts. Number of administrators included in the universe in 2012-2013 academic years (the information was obtained from Istanbul Provincial Directorate of National Education, Strategy Development Unit on 07.04.2013. Total of 7164 administrators (principals, head assistant principals and assistant principals) are employed in state pre, primary, secondary and high schools under the Ministry of National Education in Istanbul Province in 2012-2013 academic year.

## Study sample

Since it was difficult to reach the whole universe included in the study, sampling was necessary. The characteristics of the universe, distribution of the elements in the universe, their representative competence, costs, time, the features of the study and conditions of data analysis were taken into consideration in identifying the sample size (Kaptan, 1995; Karasar, 1994).

Simple random sampling, an element sampling technique, was selected in the research (Karasar, 1994; Kaptan, 1995). Therefore, each element in the universe was given an "equal" or "independent" choice for being selected (Yıldırım and Şimşek, 2000; Ural and Kılıç, 2005; Yazıcıoğlu and Erdoğan, 2004; Arıkan, 2004). Hence, weight that will be allocated to each element is the same (Karasar, 1994; Arıkan, 2004; Kaptan, 1995; Çömlekçi, 2001; Gökçe, 1988). It was ensured that each selected school administrator was on the permanent staff.

A sample size consisting of 364 administrators was deemed efficient to represent the universe by utilizing the sample size ratio table (Ural and Kılıç, 2005; Yazıcıoğlu and Erdoğan, 2004) proposed by Gay (1996) and Sekaran (2003) regarding the appropriate size of a sample that can represent the universe. However, the sample size was determined to be 400 thinking that some of the questionnaires would be faulty and some losses would occur. Therefore, questionnaires were distributed to a total of 400 administrators and 380 administrator scales were returned. After examining the returned questionnaires, the questionnaires that were not appropriate for the purpose of the study were eliminated and the rest of the 374 questionnaires were evaluated.

During the selection of study sample, it was ensured that administrators participating in the study worked at least one academic year in their place of employment. The individuals participating in the study were all administrators. Personal information about the participants is provided in Table 1.

61 of the participating administrators were females and 313 were males. 32 of the participating administrators were in the age range of 21-30, 162 in 31-40, 121 in 41-50 and 59 were in the age range of 51 and higher. 158 of the participating administrators were principals, 33 were head assistant principals and 183 were

**Table 1.** Personal information about the participants.

| Variable | | f | % |
|---|---|---|---|
| Gender | Female | 61 | 16.3 |
| | Male | 313 | 83.7 |
| Age | 20-30 | 32 | 8.6 |
| | 31-40 | 162 | 43.3 |
| | 41-50 | 121 | 32.4 |
| | 51 and higher | 59 | 15.7 |
| Profession | Principal | 158 | 42.2 |
| | Head Assistant Principal | 33 | 8.8 |
| | Assistant Principal | 183 | 48.9 |
| Graduation | 2,3-years College | 40 | 10.7 |
| | 4-year Faculty | 261 | 69.8 |
| | Masters Degree | 69 | 18.4 |
| | Doctorate Degree | 4 | 1.1 |
| Seniority | 1-5 years | 18 | 4.8 |
| | 6-10 years | 49 | 13.1 |
| | 11-15 years | 92 | 24.6 |
| | 16-20 years | 71 | 19.0 |
| | 21 years and higher | 144 | 38.6 |

assistant principals. 40 of the participating administrators had completed 2-3 year college, 261 completed a 4-year degree, 69 finished their master degrees and 4 had doctorate degrees.

**Data collection tool**

Eurydice European Unit developed a questionnaire with the cooperation of Portuguese National Unit and official representatives of Portuguese Directorate of Education (Eurydice 2007) and implemented a control phase in 2008 to ensure that the obtained information represented the national situation fully. Current study developed questionnaire items by making use of the content that formed the budget, capital and human resources dimensions included in the "school autonomy" concept developed by Eurydice European Unit. The process entails translating the text content from English into Turkish during questionnaire development:

Researcher and two translation experts translated the text into Turkish and the resulting work was examined with an expert to select the items thought to express them best. The Turkish form obtained in this manner was reexamined with 3 educators to discuss the appropriateness of each item in terms of Turkish expressions and necessary adjustments were made. As a last step, the questionnaire was implemented on a group of 45 participants composed of teachers and school administrators to identify intelligibility of the translation and feedback was obtained to finalize the scale.

The Cronbach Alpha coefficient of the scale was established to be .851 which points to the reliability of the scale.

**Statistical analysis of data**

Collected data were analysed by using SPSS program. Descriptive statistical methods (Frequency, average, standard deviation) were used in evaluating data. In quantitative comparisons of the data, t-test was used in order to find the differences between two groups; when there are more than two groups One Way Anova Test was used in order to compare parameters between groups; Scheffe Test was used in order to detect the different groups.

**FINDINGS**

**Findings regarding the views of pre, primary, secondary and high school administrators about the autonomy that will be given to schools**

**"Regarding the management of the resources"**

Table 2 presents the views of pre, primary, secondary and high school administrators about the extent human resources management should be autonomous.

Examination of Table 2 shows that school administrators "often" believe that autonomy should be provided in all items regarding "the autonomy of human resources management" except item 5 with an arithmetic means that changes between 3.77 and 3.92. Regarding item 5, school administrators expressed that they "rarely" thought autonomy should be provided for "Dismissal/Firing of teachers" with arithmetic means of 2.60.

In line with these findings, school administrators were found to seek autonomy regarding selection of educational administrators, identification of the duties and responsibilities of educational administrators, selection of teachers for available posts, assignment of teachers instead of the ones who do not show up for duty and payment of overtime, extra class fees to teachers; however, they believe schools should not be autonomous in terms of dismissing/firing teachers. This finding may be explained with the possibility that school administrators do not want to shoulder the responsibility of dismissing teachers from duty or firing them and do not want to experience possible conflicts with teachers.

**"Regarding financial resources"**

Table 3 presents the views of pre, primary, secondary and high school administrators about the extent financial resources management should be autonomous.

Examination of Table 3 shows that school administrators believe that the highest level of autonomy should be provided to "providing information communication tools" in item 4 (4,08 arithmetic means) but they "rarely" think management authority should be provided in terms of "borrowing" (2.23 arithmetic means).

School administrators state that autonomy should be provided in all areas of financial resources management other than borrowing of schools (Item 6, 2.23). School administrators state that they should have a voice in financial matters in school management and their

**Table 2.** "Administrator views regarding the autonomy of human resources management".

| Item | Statement | $\overline{X}$ | SS |
|------|-----------|------|-----|
| 1 | Selecting educational administrators | 3.92 | 1.37 |
| 2 | Identifying the duties and responsibilities of educational administrators | 3.87 | 1.36 |
| 3 | Selecting teachers for available posts | 3.80 | 1.39 |
| 4 | Assigning teachers instead of the ones who do not show up for duty | 3.77 | 1.32 |
| 5 | Dismissal/Firing of teachers | 2.59 | 1.56 |
| 6 | Identifying the roles and responsibilities of teachers | 3.90 | 1.23 |
| 7 | Paying overtime, extra class fees to teachers | 3.87 | 1.36 |

**Table 3.** "Administrator views regarding the autonomy of financial resources management".

| Item | Statement | $\overline{X}$ | SS |
|------|-----------|------|-----|
| 1 | Making or spending money | 3.43 | 1.40 |
| 2 | Financial management | 3.34 | 1.57 |
| 3 | Providing information communication tools | 4.08 | 1.34 |
| 4 | Acquiring resources from donors and sponsors | 3.27 | 1.64 |
| 5 | Renting school's physical resources in non-educational times | 3.14 | 1.53 |
| 6 | Borrowing | 2.23 | 1.43 |
| 7 | Utilizing school's estate income | 2.98 | 1.64 |
| 8 | Utilizing school's movable property | 3.09 | 1.63 |
| 9 | Assigning educational staff with the private capital of the school | 3.25 | 1.53 |
| 10 | Assigning non-educational staff with the private capital of the school | 3.30 | 1.56 |

**Table 4.** "Administrator views regarding the autonomy teaching-learning process management".

| Item | Statement | $\overline{X}$ | SS |
|------|-----------|------|-----|
| 1 | Identifying the compulsory courses and programs | 3.50 | 1.38 |
| 2 | Identifying the elective courses and programs | 3.91 | 1.20 |
| 3 | Selecting the teaching methods | 3.90 | 1.19 |
| 4 | Selecting the textbooks | 3.98 | 1.14 |
| 5 | Identifying the student evaluation criteria in compulsory courses | 3.96 | 1.26 |
| 6 | Identifying in-class evaluation criteria | 3.99 | 1.24 |
| 7 | Deciding on students' pass-fail | 3.97 | 1.34 |
| 8 | Taking part in organizing graduation exam and documents | 4.02 | 1.23 |

authority should be increased but they are unwilling in matter such as borrowing. The findings may be interpreted that school administrators think that financial autonomy of the schools should not be unlimited.

**"Regarding the teaching-learning process"**

Table 4 presents the views of pre, primary, secondary and high school administrators about the extent teaching-learning process management should be autonomous.

Examination of Table 4 shows that school administrators "often" believe that autonomy should be provided in all items regarding "the autonomy of teaching-learning process management" with an arithmetic mean that changes between 3.50 and 4.02. Findings may be interpreted that school administrators agree that management of teaching-learning process should be given autonomy.

**Findings regarding demographic characteristics**

This section analyzes whether there are significant differences between school administrators,' genders, ages, assignments, graduations and professional seniorities including teaching years and their views.

**Table 5.** School administrators' views in terms of gender variable.

| Questionnaire | | Gender | N | $\overline{X}\ \overline{x}$ | SS | sd | t | p |
|---|---|---|---|---|---|---|---|---|
| | | Female | 61 | 3,08 | ,744 | 372 | 6,64 | **,000*** |
| | Total | Male | 313 | 3,66 | ,596 | | | |

*p<.05.

**Table 6.** School administrators' views in terms of age variable.

| $f$ , $\overline{x}$ and $ss$ **Values** | | | | | **ANOVA RESULTS** | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Score** | **Group** | $N$ | $\overline{x}$ | $ss$ | | **SS** | $Sd$ | $KO$ | $F$ | $p$ |
| | 20-30 years | 32 | 3.13 | .718 | B.groups | 10.280 | 4 | ,450 | | |
| | 31-40 years | 161 | 3.50 | .675 | I.groups | 151.326 | 369 | ,295 | | |
| Age | 41-50 years | 121 | 3.70 | .625 | Total | 161.606 | 373 | | 6.267 | **.000*** |
| | 51 years and higer | 59 | 3.71 | .515 | | | | | | |
| | Total | 374 | 3.56 | .658 | | | | | | |

* p>0,05.

## Gender variable

Table 5 presents the results of the t-test undertaken to identify whether there were significant differences between school administrators' views about autonomy and their genders.

Table 5 shows a meaningful difference between the views of female and male pre, primary, secondary and high school administrators regarding autonomy (p<.05). Compared to female administrators (3.08), male administrators (3.66) expressed the need for more autonomy in schools.

It is believed that male administrators' desire for more autonomy in schools or lower levels of autonomy desired by women administrators compared to male administrators may be caused by socio-cultural reasons.

## Age variable

Table 6 presents the results of One Way Variance Analysis (ANOVA) undertaken to identify whether there were significant differences between school administrators' views about school autonomy and their ages.

As can be seen in Table 6, results of One Way Variance Analysis (ANOVA) undertaken to identify whether there were significant differences between the sample group of school administrators' views about school autonomy and their ages show that a statistically meaningful difference was found between the arithmetic means of the groups (*F=6,267; p<0,05*). Below you can find the results of Scheffe Multiple Comparison Analysis undertaken to identify among which groups the differentiation of scores

were observed in terms of age.

As can be seen in Table 7, results of the Scheffe Multiple Comparison Analysis undertaken to identify among which groups the differentiation of views observed show that the difference of opinion occurred between 20-30 age range and 41-50 age range in favor of the 41-50 age range in p<0,05 level and between 51 years and higher age range and 20-30 age range in favor of the 51 years and higher age range in p<0,05 level. Therefore, compared to administrators in the 31-41 age range, the administrators included in 41-50 age range believed that more autonomy should be given to schools. No statistically significant differences were observed among the arithmetic means of other groups (*p>0,05*).

Findings can be interpreted in such a way that school administrators want to have more authority and need to use more initiative in school management as they mature; therefore, they believe more autonomy should be provided in school management.

## Assignment variable

Table 8 presents the results of One Way Variance Analysis (ANOVA) undertaken to identify whether there were significant differences between school administrators' views about school autonomy and their assignments.

As can be seen in Table 8, results of One Way Variance Analysis (ANOVA) undertaken to identify whether there were significant differences between the sample group of school administrators' views about school autonomy and their assignments show that a statistically meaningful difference was found between the arithmetic means of

**Table 7.** Results of Scheffe Multiple comparison analysis undertaken to identify among which groups the differentiation of scores was observed regarding "age".

| Age (i) | Age (j) | $\bar{x}_i - \bar{x}_j$ | $\mathrm{Sh}_{\bar{x}}$ | $p$ |
|---|---|---|---|---|
| | 31-40 yr | -.37073 | .12388 | .064 |
| 20-30 years | 41-50 yr | -.57189 | .12730 | .001* |
| | 51 yr and higher | -.57893 | .14146 | .002* |
| | 20-30 yr | .57189 | .12730 | .001* |
| 51 years and above | 31-40 yr | .20117 | .07695 | .147 |
| | 41-50 yr | -.00703 | .10288 | 1.000 |

* p<.05.

**Table 8.** School administrators' views in terms of assignment variable.

| $f$ , $\bar{x}$ and $ss$ Values | | | | | ANOVA results | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Score | Group | $N$ | $\bar{x}$ | $ss$ | | SS | $Sd$ | KO | F | p |
| | Principal | 158 | 3.79 | .648 | B.groups | 16.472 | 2 | 8.236 | | |
| | Head Assistant P. | 33 | 3.67 | .542 | I.groups | 145.134 | 371 | .391 | | |
| Assignment | Assistant P. | 183 | 3.55 | .619 | Total | 161.606 | 373 | | 21.053 | .000* |
| | Total | 374 | 3.56 | .658 | | | | | | |

*p>0,05.

**Table 9.** Results of Scheffe Multiple Comparison Analysis undertaken to identify among which groups the differentiation of scores was observed regarding "assignment".

| Assignment (i) | Assignment (j) | $\bar{x}_i - \bar{x}_j$ | $\mathrm{Sh}_{\bar{x}}$ | $p$ |
|---|---|---|---|---|
| Principal | Head assistant principal | .12236 | .11971 | .594 |
| | Assistant principal | .43572 | .06792 | **.000*** |
| Head assistant principal | Principal | -.12236 | .11971 | .594 |
| | Assistant principal | .31336 | .11829 | **.031*** |

*p<0,05.

the groups ($F$=21,053; p<0,05). Below you can find the results of Scheffe Multiple Comparison Analysis undertaken to identify among which groups the differentiation of scores were observed in terms of assignment.

As can be seen in Table 9, results of the Scheffe Multiple Comparison Analysis undertaken to identify among which groups the differentiation of views observed show that the difference of opinion occurred between the group of principals and group of assistant principals in favor of the group of principals in p<0,05 level and between group of head assistant principals and group of assistant principals in favor of group of head assistant principals in p<0,05 level. Therefore, compared to administrators assigned to work as assistant principals, the admini-

strators assigned to work as principals and head assistant principals believe that schools should be given more autonomy.

Findings can be interpreted in such a way that school administrators want to have more authority and need to use more initiative in school management as they progress in their careers; therefore, they believe more autonomy should be provided in school management.

**Graduation variable**

Table 10 presents the results of One Way Variance Analysis (ANOVA) undertaken to identify whether there

**Table 10.** School administrators' views in terms of graduation variable.

| $f$, $\bar{\text{x}}$ and $ss$ **Values** | | | | | **ANOVA results** | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Score** | **Group** | $N$ | $\bar{\text{x}}$ | $ss$ | | **SS** | $Sd$ | $KO$ | $F$ | $p$ |
| | 2-3 years | 40 | 3.39 | .555 | B.groups | 2.350 | 3 | .587 | | |
| | 4 years | 261 | 3.58 | .684 | I.groups | 159.256 | 370 | .432 | | |
| Graduation | Master's degree | 69 | 3.56 | .611 | Total | 161.606 | 372 | | 1.361 | .247 |
| | Doctorate | 4 | 4.00 | 403 | | | | | | |
| | Total | 374 | 3.56 | .658 | | | | | | |

* p>0,05.

**Table 11.** School administrators' views in terms of seniority variable.

| $f$, $\bar{\text{x}}$ and $ss$ **Values** | | | | | **ANOVA results** | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Score** | **Group** | $N$ | $\bar{\text{x}}$ | $ss$ | | **SS** | $Sd$ | $KO$ | $F$ | $p$ |
| | 1-5 years | 18 | 3.29 | .733 | B. groups | 19.095 | 5 | 3.819 | | |
| | 6-10 years | 49 | 3.16 | .542 | I. groups | 142.510 | 368 | ,387 | | |
| | 11-15 years | 92 | 3.66 | .726 | Total | 161.606 | 373 | | | |
| Seniority | 16-20 years | 71 | 3.37 | .432 | | | | | 9.862 | **.000*** |
| | 21-25 years | 72 | 3.82 | .740 | | | | | | |
| | 26 years and higher | 72 | 3.71 | .519 | | | | | | |
| | Total | 374 | 3.56 | .658 | | | | | | |

* p>0,05.

administrators' views about school autonomy and their graduation.

Results of One Way Variance Analysis (ANOVA) undertaken to identify whether there were significant differences between the sample group of school administrators' views about school autonomy and their graduation does not show a statistically meaningful difference between the arithmetic means of the groups (f=1,361; p>0,05).

Obtained findings show that school and level of graduation do not affect administrators' views. According to these findings, the views of administrators about autonomy of schools are parallel to each other in terms of graduation variable.

**Seniority variable**

Table 11 presents the results of One Way Variance Analysis (ANOVA) undertaken to identify whether there were significant differences between school administrators' views about school autonomy and their seniority.

As can be seen in Table 11, results of One Way Variance Analysis (ANOVA) undertaken to identify whether there were significant differences between the sample group of school administrators' views about school autonomy and their seniority shows a statistically meaningful difference between the arithmetic means of the groups (F=9,862; p<0,05). Below you can find the results of Scheffe Multiple Comparison Analysis undertaken to identify among which groups the differentiation of scores were observed in terms of seniority.

As can be seen in Table 12, the Scheffe Multiple Comparison Analysis was undertaken to identify among which groups the differentiation of views was observed. The different opinions occurred between group of administrators with 6-10 years of seniority and group of administrators with 11-15 years of seniority and group of administrators with 21-25 years of seniority and group of administrators with 26 years. This was in favor of the group of administrators with 11-15 years of seniority, the group of administrators with 21-25 years of seniority and the group of administrators with 26 years and higher seniority in p<0,05 level. Whereas, the difference of opinion that occurred between group of administrators with 16-20byears of seniority and group of administrators with 21-25 years of seniority showed that the results were in favor of the group of administrators with 21-25 years of seniority in p<0,05 level. Therefore, compared to administrators with less seniority (6-10 years), the administrators with more seniority (11-15 years, 21-25 years and 26 years and higher) believe that schools should be given more autonomy. No statistically significant differences

**Table 12.** Results of Scheffe Multiple Comparison Analysis undertaken to identify among which groups the differentiation of scores were observed regarding "seniority".

| Seniority (i) | Seniority (j) | $\bar{x}_i - \bar{x}_j$ | $Sh_{\bar{x}}$ | $p$ |
|---|---|---|---|---|
| 6-10 years | 1-5 years | -.12132 | .17151 | .992 |
| | 11-15 years | -.49542 | .11006 | .001* |
| | 16-20 years | -.20654 | .11557 | .670 |
| | 21-25 years | -.65909 | .11525 | .000* |
| | 26 years and higher | -.54576 | .11525 | .001* |
| 16-20 years | 1-5 years | .08523 | .16422 | .998 |
| | 6-10 years | .20654 | .11557 | .670 |
| | 11-15 years | -.28888 | .09830 | .127 |
| | 21-25 years | -.45255 | .10408 | .002* |
| | 26 years and higher | -.33922 | .10408 | .062 |

*p>0,05.

were observed among the arithmetic means of other groups (*p>0,05*).

Findings can be interpreted in such a way that school administrators want to have more authority and need to use more initiative in school management as they progress in seniority; therefore they believe more autonomy should be provided in school management. However, administrators with less seniority who are new in administrative duties have more reservations in terms of more autonomy in schools since they may not want to take more responsibility and authority.

## DISCUSSION

Following results were reached in the research which aimed to determine the opinions of school managers about how much material and human resources in schools should be autonomous.

According to these findings, school managers think they should be given autonomy in choosing educational managers, determining educational managers' duties and responsibilities, choosing teachers to available quotas, entrusting new teachers in place of the ones who are not coming, determining teachers' duties and responsibilities and giving more work-hour and additional course fee. Findings are coherent with the results of Karadağ (2010) which say that central management structure is not functional enough and attendance of school staff to the process of school managers' desicion making increases the quality of desicions. Managers think that they should not be given autonomy in dismissing teachers. Because they do not want to go into a discussion with teachers and they think that they have not enough knowledge on this issue.

Results are parallel to Turan et al (2010)'s research

which says that educational managers lack knowledge and create a culture on managing education from the center. School managers think that management of financial resources should be given autonomy in every field except for schools' getting into debt (6. Item, 2,23). These findings are parallel to the results of Karadag's research (2010).

The research also supports the results of Tasar (2010). It says that funding reserved for education has given worldwide positive results in the use of demand canal and implementation examples will also give positive resutls in Turkey. It also supports the idea that financial resources reserved for education will be used by school-centred management.

Managers think that when they are given autonomy financially, they will have more power but they are also reluctant for some schools may get into debt. According to the findings, they think that schools' financial autonomy should not be unlimited. In Uz's research (2009), it is understood that primary school managers have some economical problems and they think positively about school-centred budgeting system. It supposes that government is dominant in creating budget income and school-centred budget process will have positive effect on educational quality and students' success. Male managers (3.66) demanded autonomy more that female managers (3.08) did. It is thought that this situation may have resulted from social and cultural reasons.

According to the findings, it can be said that school managers think that management of schools' teaching-learning process shoud be autonomous. These findings support the research of Kaya (2008) which aimed to get the opinions of teachers about school-centred management system. Similarly, in Yolcu (2010) school autonomy is regarded as one of the best structures of decentralization in educational management.

Findings show that managers who are older and have higher seniority want to have a voice in school management more than younger ones. Because older managers want to use initiative in management but younger ones do not want to take responsibility that much. These findings also support the researches of Summak and Rosan (2006), Olmez and Tombul (2011).

According to the findings of the research, the following advice is given:

a) After material and human resources get ready qualitatively and quantitatively, schools should pass to autonomy implementation step by step.
b) Autonomy implementation in school management should be used in pilot schools before spreading it to the whole country,
c) School surroundings and school community should be informed about this issue.

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# Educational Research and Reviews

*Full Length Research Paper*

# Influential factors on students' vocational aspiration in Turkish elementary schools

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This study explored the fifth grade elementary school students' vocational aspiration and the factors affecting it. The sample consisted of 115 students in 20 elementary public schools with whom face-to-face interviews were conducted. The findings showed that engineering, medical doctor, and school teachers were the most frequently mentioned three vocations to which students aspired. Boys were found to aspire to traditionally-masculine occupations; girls aspired to traditionally-female occupations. Parents seemed to be the most influential factor on students' vocational aspiration, followed by the favorite academic subject and social environment. On the other hand, vocational guidance activities were the least influential factor, which was not a surprise given that approximately 90% of the students indicated absence of vocational guidance activities. Based on the findings, improving the quality and quantity of the vocational guidance activities at schools is suggested.

**Key words:** Elementary school, vocational aspiration, student.

## INTRODUCTION

Individuals from the earliest of their life often come across with the question what they want to be when they grow up. Early vocational developmental theorists explicitly have affirmed that childhood is a vital formative period for vocational development (Ginzberg et al., 1951; Havighurst, 1972; Roe, 1956). Studies have shown that numbers of factors are associated with children's vocational choice development. Among them are parents, the favorite academic subject, social environment and planned or unplanned vocational guidance activities at schools.

Children's vocational aspiration development starts as early as at preschool years. In those early years, parents play a critical role in motivating and encouraging their children to explore about various vocations (Seligman et al., 1988). In their study, Seligman et al. (1988) found that children tend to acquire more information about their parents' vocation if their parents have a positive attitude towards it. Another way that parents influence children's vocational aspiration, as found in a study by Helwig (1998), is that parents somehow express their expectations from their children about which vocation they (children) should have and children pursue their vocational aspiration to meet their parents' expectations. Parents' gender is also another influential factor in children's vocational aspirations. Trice and Knapp (1992) found that children have learned more about their mothers' vocation than about fathers' vocation.

When children start elementary school their perceptions towards academic subjects initiate, which, as recognized by several authors (Atkinson, 1964; Weiner, 1974) might be linked to their vocational aspiration. Eccles et al. (1983) pointed out that achievement-related beliefs, outcomes, and goals might influence one's future

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vocational aspiration. For example, Hollinger (1983) found a relationship between gifted girls' math ability and their aspirations to enter math-related vocations, such as engineering and computer science. Moreover, Betz and Hackett (1986) pointed out that there is a link between ratings of personal efficacy in various academic subjects and vocational aspiration. Eccles et al. (1998) dealt with the gender issue in tendency of relation between academic subjects and vocational aspiration. They found that girls rated themselves as having better abilities in English, health and social studies, but weaker abilities in math and science subjects than boys did.

Several researchers have shown that social environment is associated with children's vocational aspirations. Reviewing an extensive body of research, Watson and McMahon (2005) concluded that children learn about the vocations by interacting with their social environment. Societal norms shape perceptions about a vocation, for example whether it is prestigious, or it is an occupation that boys or girls should do, which forms a gender stereotyping in children's vocational aspirations. The gender stereotyping seems to appear particularly at early ages and traditional role models and limited information about the occupations leads children to develop such a tendency. As societal norms transform to non-traditional role models, the gender stereotyping may also change. For example, in Turkey while nurses or primary school teachers were mostly females, with the increases in the male nurses (or making them more visible) and primary school teachers, there seems to be more boys who consider those vocations as possible ones for themselves.

The role of media cannot be ignored in acquiring information about various occupational types and in shaping individual's perceptions. In their daily life, children experience limited number of *real* representations of any vocational type. For example, a child may be exposed to teachers daily, but they see a doctor or nurse if they need a health care, or see a traffic police if they travel. Thus, many of the vocations are underrepresented in their daily life. Media, particularly television, provides a bunch of vocations with good and bad examples and with traditional and non-traditional role models. Though children reported that TV has a little influence on their vocational aspiration (McMahon et al., 2001), children probably absorb some information and develop perceptions implicitly.

A number of studies have suggested that vocational guidance is required to inform early vocational perception and help children to develop a meaningful understanding of relevance of school based learning to their future (Super, 1990; Gottfredson, 1996; Kepceoglu, 1992; Herr and Cramer, 1996; Schultheiss, 2005). Vocational guidance activities can be utilized through classroom guidance lessons and group work. Students in primary grades can also be introduced to vocabulary designed to clarify the concept of postsecondary training in relation to

careers and self. As young children fantasize about careers or college, the school counselor can introduce curriculum activities that weave together fantasy and realistic postsecondary education and vocations. These activities may aid students in recognizing training or education needs (Trice and McClellan, 1993). Vocational programming improves students' self-concept, social skills, decision-making skills and academic achievement (Isaacson and Brown, 1997).

The literature on vocational development of children throughout elementary school shows that following the vocational education and vocational guidance in schools, the students can list the vocations and categorize their favorites. Comprehensive career programs provided by school counselors are an investment primarily of time (Niles and Stamp, 1998). Literature (Kuzgun, 2006; Bacanli, 2012) suggests that school counselors should accept fantasy vocational aspiration as future possibilities, while at the same time furnishing realistic information about vocations. As students begin to restrict their aspirations based on increased understanding of their abilities and interests, their aspirations can be channeled in new directions involving alternative vocations and training.

In Turkey, vocational guidance activities in elementary school are employed by guidance teachers within the regulation of the National Ministry of Education. According to the issue of Article 8, guidance and psychological counseling services in each school are responsible for performing vocational guidance activities, which introduce and inform about various vocations, by which students are encouraged to explore the possible occupations for their future (Mevzuat, 2009).

Although Turkish educational laws regulated the vocational guidance activities at schools, whether students experience such activities at their school and whether those activities inspire them for their future vocations are not clear**.** In addition, potential factors influencing vocational aspiration are identified by the international research. However, there is a gap in the literature at the national level in Turkey. This study aims to fill this gap and proposes to identify potential influential factors in elementary students' vocational aspiration. Therefore, the current study proposed to answer the following research questions: Which vocation(s) do boys and girls aspire for the future? What/Who are the influential factors in student' vocational aspiration?

## METHOD

### Participants

The participants of this study consisted of 115 (48 boys and 57 girls) fifth grade elementary school students during 2011-2012 spring semester in 20 public schools located in different areas of Istanbul. Students were in classrooms where 23 pre-service teachers who were in their last semester at the university and enrolled in a guidance course did their teaching practicum. In each

**Table 1.** Frequency distribution in percentages: classifications of vocational aspirations by gender.

| Vocational Aspirations | Boys (n=48) | | Girls (n=57) | | Total (n=115) | |
|---|---|---|---|---|---|---|
| | F | % | F | % | F | % |
| Medical Professions | 1 | 2 | 6 | 9 | 7 | 6 |
| Airplane pilot | 3 | 6 | 2 | 3 | 6 | 4 |
| Finance | 3 | 6 | 0 | 0 | 3 | 3 |
| Police Officer | 1 | 2 | 2 | 3 | 3 | 3 |
| Engineer | 12 | 25 | 2 | 3 | 14 | 12 |
| Architecture | 1 | 2 | 5 | 8 | 6 | 5 |
| Sport | 5 | 10 | 3 | 4 | 8 | 7 |
| School Teacher | 2 | 4 | 13 | 19 | 15 | 13 |
| Artist | 3 | 6 | 7 | 10 | 10 | 9 |
| Judge | 1 | 2 | 3 | 4 | 4 | 4 |
| Medical Doctor | 8 | 17 | 14 | 22 | 22 | 19 |
| Undeveloped | 8 | 17 | 10 | 15 | 18 | 16 |

classroom, five students with high grades were purposefully selected for the study.

### PROCEDURE

Permission from school principals was gained. Parents also agreed for the interview.  In order to protect the confidentiality of participants, students' names were changed to A, B, C... Then, 23 pre-service teachers were trained on the research procedure.

This research applied a one-on-one structured interview procedure. The structured interview questions addressed the possible factors that influence children's vocational aspiration. The first two questions were open-ended, which were:

(1) Which vocation do you aspire for the future?
(2) Who/What did you get affected most? This question was followed up by sub-questions to investigate whether the study data would reveal the specific factors identified in the literature. Those questions were:

(2a) Did your parents intervene with this decision?
(2b) Which course do you like most? Why?
(2c) Was there any vocational guidance activity in your school?  Do you think it has influenced your decision? What kind of guidance activities did your guidance teacher implement?

School canteens were arranged for the interviews. Each interview lasted approximately 30 min to complete. All interviews were completed in 20 days.

### Data analyses

Each interview was transferred to MAXqda software program (2012) for the content analysis. The coding procedure was started with empty list. Initially, 10 interviews were examined by two coders independently. Each coder identified eight categories. Then, they discussed the categories and definitions and agreed upon the categories. Afterwards, each coder analyzed the rest of the data independently.

## RESULTS

### Students' future vocational aspiration

Table 1 illustrates the ratings of vocational aspirations by gender. As seen in the table, boys and girls seem to have similar aspirations for some vocations, while they show the opposite tendency for some. For example, medical doctor is the most-frequently mentioned vocation for girls (22%) and second most frequently mentioned vocation for both boys (17%). On the other hand, engineering is the most frequently mentioned vocation by boys (25%), and one of the least frequently mentioned by girls (3%). School teacher appeared to be the second most frequently mentioned vocation by girls (19%), while it was one of the least mentioned vocations by boys (4%). Glancing through the table, in general, except for medical doctor, which seems to be a non-gender stereotyped occupation, boys were found to aspire for traditionally-masculine occupations which are characterized by more physically active, concrete and practical occupations (e.g., engineer, sport). On the other hand, girls aspired for traditionally-female occupations which are charac-terized by more people-related, artistic and data-based occupations (e.g. school teacher, medical professions. and artist).

### Specific factors for elementary students' vocational aspiration

To answer the question of "who/what affected your vocational aspiration most" the students were free to list more than one factor that they thought influential on their vocational aspiration. In addition, the answers to the sub-questions (whether their parents, and favorite subject and vocational guidance activities at school were influential on their vocational aspiration) were integrated to the analyses. A preadolescent would say "yes" to as many sub-questions (e.g., whether his parent intervenes with his vocational aspiration) as he/she wants if he/she thought they were influential as shown in Table 2.

As seen in Table 2, 111 students mentioned parents. 93 students mentioned favorite academic subject, 55 students mentioned social environment and 35 students mentioned vocational guidance activity at the school as influential factors on their vocational aspiration. Boys and girls seem to show similar trend in getting influenced by those four factors. Next, how those factors influenced their vocational aspiration were analyzed qualitatively.

### Parental influence

Two subcategories of parental influence were identified: Direct influence and role modeling. Direct influence referred to whether father or mother directly intervenes in

**Table 2.** Frequency distribution of students: classifications of affirmed influenced categories by gender.

| Influential Factors | Number of Students | | |
|---|---|---|---|
| | Boys (n=48) | Girls (57) | TOTAL (n=115) |
| | F | F | F |
| Parental Influence | 48 | 53 | 111 |
| Favourite Academic Subject | 43 | 50 | 93 |
| Social Environment | 27 | 28 | 55 |
| Vocational Guidance Activities | 15 | 20 | 35 |

the vocational aspiration of students through direct expressions of approvals, encouragements or discouragement about which vocations their children should have or have not in the future. Some examples were:

*They want me to become architecture. It doesn't matter for me since I like painting. Particularly, my mom insists me on choosing to become architecture. (A)*
*My mom told me that I should become a medical doctor. Then, I decided to be a medical doctor. (B)*
*My parents encourage me to become a policeman. Because they think that my physical appearance is good enough for such a vocation. (C)*
*Well, my parents never intervene with my decisions. I would like to a policeman. When I said this aspiration to my parents, they questioned it and told me to look for another vocation. (D)*
*My dad wishes that I would become a lawyer. He also encourages me to become a math teacher since it is my fun. (E)*

Role model referred to the statements where the students express that they take their mother or father as a model in their decision making for their vocation. Some expressions coded under this category were:

*My mom is medical doctor and my dad is a dentist. I admire both of them since they help and heal people. It is a really nice work. And I would like to become a doctor like them. (F)*
*I always wish to become a nurse, because my mom is nurse. I often go to hospital with her and she helps people. I admire her. I would like to become a nurse like her. (G)*
*I often go to kinder garten with my mom since she works there and I like her job. And, I wish to become a kinder garten teacher like her. (H)*
*Both my grandfather and my dad are policeman. I admire them so I would like to become a policeman. (I)*

## Favorite academic subject

The responses were coded under the influence of favorite academic subject if student made a linkage between their

vocational aspiration and favorite academic subject in the school.

*I like math course and I would like to be an engineer. (J)*
*I am good at science courses so I believe that I can become a doctor. (K)*
*I am good at painting in our visual art course and my teacher also likes it. That's why I want to become a designer. (L)*

A notable vocational aspiration difference in student' favorite academic subject could be mentioned in terms of gender. For instance, J was a boy who wanted to be an engineer stating his decision due to fun of the course. What could be mentioned from this statement that this was a traditionally masculine stereotyped. K aspired for medical doctor and L aspired for designer. They were both girls. From their statement, it could be inferred that their vocational aspirations were traditionally-female stereotyped.

## Social environment

Two subgroups under this main category emerged: Influence of immediate social environment and influence of TV.

## Immediate social environment

The responses including existence of real vocational role models other than parents (e.g., friends, relatives), support and encouragement from individuals in their social environment were categorized under this category. Some expressions were:

*I want to be a lawyer for a long time. Everybody thinks that I have the ability to perform this vocation; I would like to choose it. (M)*
*I decided on this vocation a few years ago. I was affected by my parent's lawyer relatives and friends. They can defend both themselves and other people's rights. (N)*
*My mom's best friend is a prominent doctor and I admire her a lot. So, I want to become a doctor like her. (O)*

### Influence of television

*Student statements about the characters, movies and programs that gave them vocational aspiration were coded under this category.*

*I want to be a football player because I'm fun of Ronaldo. I like watching football on TV. (P)*
*I notice on the TV. I have been considering for about two years. I took one of the advertisements as a model. I wish*

*to construct buildings for those who need help when I become an architect. (Q)*
*I decided to become a policeman when I started to watch detective films on TV. (R)*

## Vocational guidance activities

Three subcategories of vocational guidance activities were identified: Classroom speakers, information on jobs and other. Classroom speakers referred to the students' expressions mentioning that professionals from various jobs were invited to their school to inform students about their jobs. Some examples are:

*Yes, there is vocational guidance activity in our school. Sometimes, our classroom teachers invite experts in their occupations to give information about their field. I like this activity since it helps me to identify vocations. (S)*
*Our guidance teacher invited his friends from several different vocations. A police officer came in the police week; a fireman in the fireman week. (T)*

## Information on jobs

This category included guidance teacher giving specific information to the students about jobs.

*Yes, there is a vocational guidance education in our school. Our class teacher listens to our opinions on vocations and she gives information on each job. I'm learning various vocations in this lesson. (U)*
*Our guidance teacher gives information on several vocations enabling us to be acknowledged with the function of the vocations. (V)*

### *Other activities*

Any other activities concerning vocational guidance such as going to the work places to have experience about the related work are coded under this category. Statements below are some examples of this category.

*Our guidance teacher sometimes employs surveys on our vocational aspirations. She invites us one by one and makes small conversations. (W)*
*Each student in the classroom chose his/her future desired vocations and prepared homework and presented in the classroom. (X)*

## Absence of vocational guidance activities at school

On average, 90% of the students expressing that there was no vocational activity in the school were coded under this category.

*No, I do not remember any. We do not have any vocational activities. (Y)*
*Well, I do not know any. (Z)*

Responses made by some students implied not only absence of vocational guidance, but the reasons for not having such guidance and what guidance teachers focus on mostly; preventing or dealing with behavioral problems, and advising on being good children.

*Actually, I can't remember any vocational activity that has impact on our vocational aspiration. I know just the name of my guidance teacher. Our classroom teacher asks several questions in our guidance lesson. She advises us to have good relations with our friends. She also advises us to respect our parents. (A1)*
*I do not have any problem to consult the guidance teacher in the school. Some of my friends are having problem, they often go there. (B1)*
*Our guidance teacher is mostly interested in those students having problems either with their parents or friends. I do not have any problems with my friends and parents so I never visit her office in the school. (C1)*
*One of my friends often visits our guidance teacher's office when she starts to cry. I think the teacher gives some advice there, because when she returns she stops crying. (D1)*

## DISCUSSION

This study investigated elementary students' vocational aspiration and self-stated factors that may influence their aspiration. Utilizing a one-on-one interview procedure with 115 fifth grade students, the findings of this study, in general showed consistent results with the previous studies.

This study pointed out that there was a gender difference in vocational aspiration of the students. In consistent with the previous studies, in this study, boys were found to aspire for more physically active, concrete and practical occupations, while girls aspired for more people-related, artistic and data-based occupations (Phipps, 1995). Moreover, Bandura et al. (2001) stated that boys evidenced greater confidence in aspiring scientific and technological occupations, while girls evidenced more confidence in aspiring occupations in education, health and social services. The findings of this study revealed a parental influence on vocational aspiration of students. In agreement with previous research (Helwig, 1998; Emment and Preston, 2001) students in this study reported that parents have influence on their vocational aspiration directly by expressing what they expect their children to be, and affirming or disaffirming their children's vocational aspiration or indirectly by role modeling.

The findings of this study indicate that there is a link between favorite academic subject and students' vocational aspiration in consistent with studies of both Hollinger (1983), Betz and Hackett (1986) Eccles et al. (1998). This study revealed that boys' math ability and their aspirations to enter math-related vocations, such as engineering and girls' (social) science ability enable them to enter (social) science-related vocations, such as medical doctor, teacher.

In agreement with previous research (McMahon et al., 2001), the findings showed that TV and students' immediate social environment are among the factors influencing their vocational aspiration. Individuals such as relatives and family friends who have various jobs and popular characters showing up on TV (e.g., football players) seem to affect students' vocational aspiration.

An important finding of this study is that although National Educational Ministry of Turkey (MEB) has regulations about implementing vocational guidance activities at schools, very few numbers of students reported the presence of such activities. Students' statements imply that guidance teachers at schools deal with almost everything, but vocational guidance. Given the importance of such activities in the early elementary grades in furnishing realistic information about vocations and their educational prerequisites (Kuzgun, 2006; Bacanli, 2012), several steps should be taken. First of all, the crucial role of vocational guidance activities during elementary school should be accepted to encourage students to explore their perceptions for their vocational aspiration. The second, vocational guidance activities in early elementary grades should be done more actively and effectively. To do so, guidance teachers' responsibilities, requirements, and accountabilities should be regulated. In addition, hindrances preventing guidance teachers to implement vocational guidance activities should be identified and resolved.

This study comes with several limitations. Firstly, the research was limited with the written statements of fifth grade elementary students in 20 public schools; hence it is not possible to generalize the findings. Secondly, merely, the responses of students were interpreted. Including class teachers and guidance teachers would facilitate understanding of the context from multiple perspectives.

## Conclusion

Vocational choice is a developmental process starting with aspirations and exploration in the elementary school years. Moreover, students had a wide range of vocational maturity, interests, valu.es, and abilities. In this regard, students need a great variety of guidance activities and opportunities to explore their personal characteristics and vocational options. Therefore, classroom teacher and vocational guidance teacher should encourage students to explore feelings, needs, and uncertainties about their vocational aspiration in collaboration with their parents. Vocational activities throughout students' school life should be enriched, improved and enable students to be more aware of the vocational guidance activities.

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**Educational Research and Reviews**

*Full Length Research Paper*

# The variables affecting the success of students

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The aim of this study is to determine the variables affecting the success of students. This research, which was conducted through the relational screening model, has a sampling of students who were selected from a middle city in Turkey. The schools are classified into three as low, medium and high. A total of 3491 students are selected by using the random stratified sampling model. The data were gathered by a survey which included 20 items developed by researchers. In this study, as a result of separate analysis on grade 7 and 8 students, similar conclusions are made. According to the findings of the research, the success of students who received pre-school education is higher than those who did not. Also, students who went to private establishments longer are more successful than the students who went for a short time. Attending extra school courses has similar results as to going to the private school establishments. When shelter conditions are considered, it is found that students who live with their parents are more successful than those students who are boarding or living in dormitories. It is understood that the variables that affect 7th and 8th grade students' success most are "average amount of daily problem solved" and "the time spent in private establishments or school courses".

**Key words:** Academic achievement, elementary school, student.

## INTRODUCTION

The life of students in the future is mostly influenced by the quality of education in their former schools (Yıldırım, 2006). According to the PISA 2003 (Programme for International Student Assessment) findings, Turkey has the most significant gap between the qualities of schools among the participated countries (MEB, 2005). As a result of this gap, students have to do specific exams and obtain a certain level of success in order to have a chance to choose between secondary schools which can provide a more advantageous education (Gelbal, 2008). It is the Student Placement Test [SBS] (Student Placement Test is one of the elements of the system of transition to secondary education) grades which are main factor for primary school students to get into one of the secondary schools. Students' high grades in SBS are mostly dependent on their school learning in terms of five disciplines (Turkish, Mathematics, Science and Technology, Social Sciences and English).

The Turkish education system has an academic success-centered structure due to exams. From the beginning of the school, students are expected to be successful by their whole family, teachers and environment (Şama and Tarım, 2007). Therefore, the educational success of student gains a prominent importance for student himself/herself, his/her family and the society where the student is living in (Yıldırım, 2000).

In the last few years, Turkish student's success in both national exams and international assessments (Trends in International Mathematics and Science Study [TIMMS], PISA) has been very low. It is thought that if the factors that affect the success are determined, the reasons of failure can be controlled (Özgüven, 1974). Secondary school is a transition period to high schools, and this transition is prominent for students as it impacts their lives in a variety of ways. The success of students in secondary schools can provide them the opportunity to study in a better high school and in a university where they can be educated for the profession they choose.

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Students who were studied from the same school, for the same lessons and with the same methods showed difference in academic success in the exams and this situation triggered the researchers to investigate the factors that affect academic success. Darling-Hammond (1999) states that different factors contribute to the academic success of students and these factors have either low or high effect.

It is claimed that academic success is influenced by many factors such as ability, essential character, personal and family features, the qualifications of the school where the student has been graduated or is still studying (Özgüven, 1974), the habits of studying (Can, 1992), motivation (Bruinsma and Jansen, 2005; Kuyper et al., 2000; Wolters, 1999), anxiety, success incentive (Özgüven, 2002), specific studying hours, the amount of busy and leisure time except from the lessons (Bruinsmave Jansen, 2005; Savaş et al., 2010; Ulular, 1997), the attitude of mother and father (Ulular, 1997).

The family dynamic and its features have an important influence on student's success (Başaran, 1996; Sönmez, 1986). The socio-economic status of family directly affects the opportunities that they can provide for their children, in particular, access to education. Existence of a personal place of the child for studying (room, table) can have a positive impact on student's success. Workrooms are places where student can physically be comfortable, required equipment and books are available in regular so that can increase the efficiency of student's work (Harvey, 2003). According to Çelenk (2003) arrangement of students' studying opportunities at home is an important factor in terms of student's success. Also, according to Gelbal (2008), an increase in students' opportunities at their homes (either computer and internet access is available or not, either a table for studying and a specific room is available or not) has positively affected their success in Turkish tests.  It is found in the research done by Ulular (1997) that the success of secondary school students differs according to their working sphere. Another important variable that affects academic success is pre-school education. In the past, studies have shown that school maturity (Dinç, 2002; Yeşil, 2008), the level of coming to school more equipped (Pehlivan, 2006), the ability in preparation for reading and writing (Erkan and Kırca, 2010) and the level of mathematical abilities (Unutkan, 2007) of students who obtained pre-school education are higher than their peers who did not obtain a pre-school education. According to findings of PISA 2009, even if the socio-economic sub-structure is considered, students who received pre-school education are relatively more successful than the ones who did not get that education in most of the OECD countries.

As a result of the shortcomings in education opportunities, and with the arrangements that determine the transition of students to a higher educational institution according to the exam results, the private educational institutions demonstrated   prominent developments.

According to the research of Savaş et al. (2010), the mathematical success of students who attended a private educational institution is significantly higher than the ones who did not attend.

As a conclusion, there are various factors that have an impact on student's academic success. In this study, it is aimed to assess the relationship between the student's academic success and variables that are expected to have an effect on it. However, it is hard to list all factors influencing the success in one study. Therefore, in the study, it is researched that whether the factors that are expected to affect student's success (pre-school education, workroom, sheltering conditions, daily study, watching TV, time of playing game, attendance to a private educational institution or extra school courses, the daily number of problems that are solved and an average of monthly preparation tests) are valid for these group of students and level of effect of these factors on success. In this general framework, the answers to the following questions are attempted.

## Sub-questions

1. What is the distribution of answers of students who entered the SBS exam in this survey?
2. Is there a statistically significant difference between 7th and 8th grade students' SBS grades according to "Getting a pre-school education", "Having a specific studying place" "Length of time of attending private educational institution" "Length of time of attending extra school courses" "Sheltering conditions" "Length of time of daily studying"
3. What are the variables that affect 7th and 8th grade students' SBS success?

The findings of this research will provide an assessment of the factors that affect success and it is important in order to determine the components of failure, to avoid those components, to provide solutions to the problems, to contribute to increase in educational quality, and to shed light on educational attempts of this sort.

## METHODOLOGY

The aim of this study is to determine the factors that affect the success of students. Towards this aim, the relational survey method was applied. In accordance with this model, the relationship and the level of relationship between variables that can affect the academic success are found out and methods that can made meaningful conclusions from descriptive values are applied (Fraenkel and Wallen, 2006). The quantitative data were gathered through the survey applied to the students and also the SBS grades of students are accessed. The SBS grades of students are accepted as the academic success variable.

## Research population and sample

Research population consisted of  a  total  of 10375 students who

**Table 1.** Population, number of samples and representativeness.

| Grade | No of students | | Representativeness (%) | No of secondary schools | | Representativeness (%) |
|---|---|---|---|---|---|---|
| | Population | Sample | | Population | Sample | |
| 7 | 5237 | 1666 | 32 | 103 | 43 | 42 |
| 8 | 5138 | 1825 | 36 | | | |
| Total | 10375 | 3491 | 34 | | | |

study as 7th and 8th grade in a medium size city in 2010-2011 education semesters. The sample of schools is determined in accordance with the advice of major of the city, manager of national education institution and an education inspector. In order to provide the diversity and to increase the representativeness of the study, while choosing the schools, the success level of students and their socio-economic sufficiency are considered. During the sampling, getting into motion with the understanding of random stratification sampling model, the schools are classified into three as low, medium and high and the ratio of 1/3 is used (Fraenkel and Wallen, 2006). In schools that took place in the sample, the classes are randomly chosen and special attention is paid to 7th and 8th grade classes at the same number with the help of school administration.

According to Table 1, 34% representatives of the population and 42% representatives in terms of secondary schools have been reached. In the study where the population is 10375 and the number of sample is 3491, the error rate is estimated as 1.78% in the 99% confidence interval. If the students who did not attend the SBS exam and the ones who did not have a SBS grade are considered within the population, it can be seen that the study has a high degree of representativeness. Thus, it can be claimed that the findings of the study can be generalized.

### Data gathering instrument

In order to determine students' studying habits for SBS preparation, a 20-item survey developed by researchers has been applied. For the preparation of the survey, the items are written through meetings with 9th grade students who were successful in SBS exam and they were re-considered according to the advice of the specialized teachers working in secondary schools. The draft is applied in 7th and 8th grade students in a different city and has changed according to comments of the students. It can be claimed that the survey has reliability after these efforts.

### Data analysis techniques

The findings presented in the study are gathered from the students who studied in 7th and 8th grade in 2010-2011 education semesters. In the analysis of students' thoughts gathered through survey as well as the descriptive statistics such as percentage, frequency, arithmetic average, standard deviation; independent groups t tests, anaova, scheffe tests and gradual and multiple regression test are used. The Anova and t-test were used to compare group differences. The homogeneity of variation is controlled with the help of Levene test statistics. Finally, regression analyses were used to explore the relationships among multiple predictors as they affect the success of the students. Multiple regression offers a fuller explanation of the dependent variables and allows the effect of a particular independent variable to be examined without distorting influences from other independent variables (Hair et al., 2006). In this study, the independent variables were: daily amount of problem solved, studying in a private

institution, attending school courses, monthly preparation test, time of daily study, having a studying room, average time of playing game, daily time of watching TV, getting pre-school education; dependent variable was students' SBS points. Multiple regression makes a number of assumptions about the data and therefore these assumptions were checked prior to the analyses to make sure they were not violated (Pallant, 2007). The assumptions included the following: sample size, multicollinearity, singularity, normality, outliers, and linearity.

## FINDINGS

In this chapter, findings concerning the sub-questions are presented as in the order of sub-questions.

### The frequency of students' answers

Findings about the frequency of students' answers in the first sub-question are presented in Table 2.

When Table 2 is considered, it is seen that gender frequency of students is balanced. While a total of 1766 girl students constitute 50.6% of whole participants, a total of 1725 boy students constitute 49.4% of whole participants. When the frequency in terms of classes is considered; it is seen that 7th grades constitute 47.7% of 1666 students; 8th grades constitute 52.3% of 1825 students.

When the data in Table 2 are considered, while the overall ratio of getting pre-school education is 32%, it is 35% in the 7th grades and 30% in the 8th grades. The reason for a high degree of getting pre-school education for 7th grades can be an increase in pre-school classes and a change in parents' attitudes towards it.

Approximately 77% of the students stated that they have their own studying place. At the class level, it is understood that the ratio of having a studying place is similar to general average (7th grade, 77.4% and 8th grade, 76.5%)

According to Table 2, more than half of the students stated that they have never studied in a private institution. Also, the ratio of 22% that represents the students who have studied in private institutions for one year proves that limited attention is paid to access to private institutions. For the 7th and 8th grades students the ratio of not studying in private institution is 61.1% for 7th grades and 51.9% for 8th grades.

When Table 2 is analyzed it is understood that the ratio

**Table 2.** Descriptive statistics about the frequency of students.

| | | 7th Grade | | 8. Grade | | Total | |
|---|---|---|---|---|---|---|---|
| | | f | % | f | % | f | % |
| Gender | Girl | 833 | 50 | 933 | 51.1 | 1766 | 50.6 |
| | Boy | 833 | 50 | 892 | 48.9 | 1725 | 49.4 |
| Pre-school education | Got | 582 | 34.9 | 550 | 30.1 | 1132 | 32 |
| | Did not get | 1084 | 65.1 | 1275 | 69.9 | 2359 | 68 |
| Studying place | Have got | 1289 | 77.4 | 1397 | 76.5 | 2686 | 77 |
| | Have not got | 377 | 22.6 | 428 | 23.5 | 805 | 23 |
| Time of attending the private ınstitution | No study | 1019 | 61.16 | 947 | 51.89 | 1966 | 56 |
| | 1 year | 381 | 22.87 | 384 | 21.04 | 765 | 22 |
| | 2-year | 224 | 13.45 | 260 | 14.25 | 484 | 14 |
| | 3-year | 42 | 2.52 | 189 | 10.36 | 231 | 6 |
| | 4-year | 0 | 0 | 45 | 2.47 | 45 | 1 |
| Time of attending the school course | No attendance | 493 | 29.59 | 479 | 26.25 | 972 | 28 |
| | 1 year | 698 | 41.90 | 757 | 41.48 | 1455 | 41 |
| | 2-year | 308 | 18.49 | 304 | 16.66 | 612 | 18 |
| | 3-year | 167 | 9.84 | 178 | 9.75 | 342 | 10 |
| | 4-year | 0 | 0 | 0 | 5.86 | 110 | 3 |
| Time of daily studying | No study at all | 25 | 1.50 | 37 | 2.03 | 62 | 2 |
| | 1 h | 475 | 28.51 | 524 | 28.71 | 999 | 29 |
| | 2-h | 805 | 48.32 | 833 | 45.64 | 1638 | 47 |
| | 3-h+ | 361 | 21.67 | 431 | 23.62 | 792 | 22 |
| Sheltering Place | Own House | 1621 | 97.30 | 1751 | 95.95 | 3373 | 96.6 |
| | State Dormitory | 32 | 1.92 | 49 | 2.69 | 81 | 2.3 |
| | Private Dormitory | 13 | 0.78 | 24 | 1.36 | 37 | 1 |
| | Total | 1666 | 47.7 | 1825 | 52.3 | 3491 | 100 |

of attending school courses is higher than the ratio of attending private institutions courses. While the ratio of students who have never attended private institution is 56%, the ratio of students who have never attended school courses is 28%; and this difference is the proof of the higher attention paid to school courses. This situation can be rooted in accessibility of school courses and its appropriate prices.

Overall, most students stated that they study for 2 h every day (47%). As it is foreseen, daily studying hours are higher in 8th grade. The most considerable difference from the class level is observed in the ones who study more than two or three hours.

According to the data in Table 2, it is seen that almost all of the students live with their parents (96.6%). Just a minority of students stated that they live in state dormitories (2.6%). Therefore, it can be accepted that students do not have shelter problems during the education process.

When Table 3 is examined it is understood that 7th grade students who still continue the education process have higher average of SBS points ($\overline{x}$=313,576) than 8th grades ($\overline{x}$=291,375), at the 6th grade level. It is seen that the number of monthly preparation tests ranged between 1 and 2. It can be foreseen an increase in this number when the time for examination is passing. It is also seen that daily time paid for both playing game and watching TV is between 3 and 4 h.

In the following sub-questions of the study, 7th and 8th grades are compared separately. When the SBS points of 8th grade students are estimated, 25% of their 6th grade points and 35% of their 7th grade points are gathered and this point is used as an exam result.

## Pre-school education

The findings of independent  groups' t tests done in order

**Table 3.** The descriptive statistics about students' SBS points, daily average of problem solved, watching TV, playing game and monthly preparation tests.

|  | No of students | Minimum | Maximum | Average | Standard deviation |
|---|---|---|---|---|---|
| 2009 SBS 6 Points | 1824 | 100,000 | 484,765 | 291,375 | 63,739 |
| 2010 SBS 7 Points | 1824 | 125,690 | 494,524 | 289,319 | 82,251 |
| 2010 SBS 6 Points | 1667 | 100,000 | 500,000 | 313,576 | 74,817 |
| Daily average number of problems solved | 3491 | 0 | 320 | 47,633 | 46,744 |
| Number of monthly preparation test solved | 3491 | 0 | 10 | 1,183 | 1,438 |
| Daily Average time of Watching TV | 3491 | 0 | 10 | 2,290 | 1,300 |
| Daily Average Time of Playing Game | 3491 | 0 | 7 | 1,254 | 1,041 |

**Table 4.** Comparison of SBS grades in terms of the situation of pre-school education.

| Grade | Pre-school education (Yes/No) | N | $\overline{X}$ | Ss | sd | t | p |
|---|---|---|---|---|---|---|---|
| 8 | E | 550 | 190,448 | 46,729 | 1822 | 10,226 | 0,000 |
|  | H | 1274 | 167,050 | 40,150 |  |  |  |
| 7 | E | 582 | 330,276 | 78,688 | 1664 | 6,765 | 0,000 |
|  | H | 1084 | 304,603 | 71,125 |  |  |  |

**Table 5.** Comparison of SBS grades according to having a specific studying place.

| Grade | Studying place | N | $\overline{X}$ | Ss | sd | t | p |
|---|---|---|---|---|---|---|---|
| 8 | Have | 1396 | 177,181 | 43,768 | 1822 | 5,485 | 0,000 |
|  | Do not have | 428 | 164,078 | 41,421 |  |  |  |
| 7 | Have | 1289 | 321,769 | 74,581 | 1664 | 8,440 | 0,000 |
|  | Do not Have | 377 | 285,542 | 68,778 |  |  |  |

to find out if students' SBS grades differ according to pre-school education are presented in Table 4.

It is understood that the SBS grades of students who obtained pre-school education are higher (For 8th grade: x̄=190,448 and for 7th grade: x̄=330,276) than the ones who did not get pre-school education (For 8th grade: x̄=167,050 and for 7th grade: x̄=304,603). Also, this differentiation on behalf of the ones who got pre-school education is considered in terms of 8th grade; it is understood that it is also statistically meaningful (T(1822)=10,226 p<0,001). As well as in 8th grade and 7th grades, the difference between the average of grades of the ones who got pre-school education and the ones who did not is also statistically meaningful (T(1664)=6,765 p<0,001).

## Studying place

The findings of independence groups t tests done in

order to find out if students' SBS grades differ according to their studying place are presented in Table 5.

As it is seen in Table 5, it is found that for 8th grade students, there is statistically significant difference between success of students who have a studying place and the ones who do not have (T(1822)=5,485, p<0,001). In other words, generally the students who have a specific studying place (x̄=177,181) are more successful in SBS examination than those who do not have (x̄=164,078). Similarly, it is seen that there is a statistically significant difference between the SBS success of 7th grade students who have specific studying place (x̄=321,769) and the ones (x̄=285,542) who do not have (T(1664)=8,440, p<0,001).

## Time of attending private institution

The results of Anova and Scheffe tests done in order to determine the effect of the time of attending t private

**Table 6.** Comparison of SBS points ın terms of studying in private ınstitution.

| Grade | Time of studying in a private ınstitution | N | $\overline{X}$ | Ss | F | P | *Significant difference |
|---|---|---|---|---|---|---|---|
| 8 | Not study at all | 946 | 157,487 | 35,362 | | | |
| | 1-year | 384 | 172,984 | 38,294 | | | |
| | 2-year | 260 | 191,777 | 40,391 | 163,951 | 0,000 | 4>G,1,2 3>G1,2 2>G1   1>G |
| | 3-year | 189 | 221,625 | 39,282 | | | |
| | 4-year | 45 | 231,351 | 44,727 | | | |
| 7 | Not study at all | 1020 | 291,849 | 67,308 | | | |
| | 1 year | 381 | 322,898 | 67,891 | | | |
| | 2-year | 224 | 382,624 | 65,741 | 134,213 | 0,000 | 3>G1 2>G1  1>G |
| | 3-year | 42 | 388,411 | 65,552 | | | |

**Table 7.** Comparison of SBS points according to time of attending to school course.

| Grade | Time of attending school course | N | $\overline{X}$ | Ss | F | P | *Significant difference |
|---|---|---|---|---|---|---|---|
| 8 | Did not attend | 478 | 169,260 | 46,065 | | | |
| | 1 year | 757 | 173,325 | 42,947 | | | |
| | 2-year | 304 | 175,856 | 40,860 | 4,360 | 0,002 | 4>G   3>G |
| | 3-year | 178 | 181,453 | 42,266 | | | |
| | 4-year | 107 | 184,079 | 43,396 | | | |
| 7 | Did not attend | 493 | 304,742 | 79,106 | | | |
| | 1 year | 698 | 308,297 | 75,238 | | | |
| | 2-year | 308 | 324,286 | 66,687 | 10,647 | 0,000 | 3>G12 2>G1 |
| | 3-year | 167 | 342,711 | 64,956 | | | |

institution on students' SBS points are presented in Table 6.

When Table 6 is examined, there is a significant statistical difference between the average SBS points of students in terms of different periods of time of attending private institution (For 8th grades $F_{(4,1820)}= 163.951$, p <0,05 and for 7th grades $F_{(3,1662)}= 134.213$, p <.05). In other words, the time of attending private institution has a significant impact on SBS points. For 8th grade students, when the time of attending private institution increases, the average SBS points of students increase as well. It is understood that the points of students who attend private institution for 4 years have a higher average than the ones who did not study or studied just for 1, 2 or 3 years and also it is seen that these differences are meaningful. The findings from the 7th grade students are similar to that of 8th grades.

**Time of Attending School Course**

In order to understand if there is a differentiation between SBS points of 7th and 8th grade students according to

the time of attending the school courses, analysis of Anova and Scheffe is done and the results are presented in Table 7.

When Table 7 is considered, there is a significant statistical difference between the average SBS points of students who attend school courses for different period of time (For 8th grades $F_{(4,1820)}= 4.360$, p < .05 and for 7th grades $F_{(4,1661)}= 10.647$, p <.05). In other words, time of attending school courses has a significant effect on SBS points.

**Shelter**

Anova test is done in order to determine if the shelter of students creates difference in SBS points and the results are presented in Table 8.

When Table 8 is considered, there is a statistically significant difference between students' average SBS points according to their different sheltering conditions (For 8th grades $F_{(3,1821)}= 4.556$, p <0,05 and for 7th grades $F_{(3,1662)}= 5.388$, p < .05). In other words, the sheltering conditions have a significant effect on students'

**Table 8.** Comparison of SBS points according to sheltering condition.

| Grade | Sheltering condition | N | $\overline{X}$ | Ss | F | P | Significant difference |
|---|---|---|---|---|---|---|---|
| 8th grade | Own House | 1751 | 174,799 | 43,583 | | | |
| | State Dormitory | 49 | 151,828 | 39,698 | 4,556 | 0,003 | Own house > state dormitory |
| | Private Dormitory | 24 | 169,364 | 33,950 | | | |
| 7th grade | Own House | 1621 | 314,639 | 74,664 | | | |
| | State Dormitory | 32 | 261,243 | 65,666 | 5,388 | 0,001 | Own house > state dormitory |
| | Private Dormitory | 13 | 310,454 | 73,687 | | | |

**Table 9.** Comparison of SBS points according to time of daily studying.

| Grade | Time of daily studying | N | $\overline{X}$ | Ss | F | P | Significant difference |
|---|---|---|---|---|---|---|---|
| 8 | No study | 37 | 154,163 | 41,878 | | | |
| | 1 h | 524 | 158,126 | 35,839 | 68,753 | 0,000 | 3>Ç12 |
| | 2 h | 833 | 173,806 | 42,453 | | | 2>Ç1 |
| | 3 h and more | 430 | 195,873 | 45,149 | | | |
| 7 | No study | 25 | 271,218 | 62,836 | | | |
| | 1 h | 475 | 289,707 | 70,575 | 37,996 | 0,000 | 3>Ç12 |
| | 2 h | 805 | 316,570 | 73,118 | | | 2>Ç1 |
| | 3 h and more | 361 | 341,219 | 74,031 | | | |

SBS points. When the average SBS points of students are examined, it is seen that the most successful ones are living in their own houses and, second level is living in dormitories and the third and the last level is living in state dormitories. Living in their own houses positively affects the 7th and 8th students' SBS points. However, living in state dormitories negatively affects the SBS points of students.

**Daily studying time**

The results of Anova and Scheffe tests asking the question of "Is there a significant difference between students' SBs points according to the time of students' daily studying and the results are presented in Table 9.

When Table 9 is considered, it is seen that time of daily studying creates a significant difference between students' average SBS points (For 8th grades F(3,1821)= 68.753, p < .05 and for 7th grades F(3,1662)= 37.,996, p < .05). In other words, daily time of studying has a prominent impact on students' SBS points.

**Variables that affect students' success in SBS (Placement Exam)**

Towards this sub-question, in order to determine the variables that affect students' SBS points, first a gradual regression tests are done to find the independent variables. After gradual regression tests, a multiple regression analysis is done. Before the gradual regression, the 11 independent variables are separately analyzed for 7th and 8th grades. As a result of gradual regression, 7 independent variables that affect students' SBS points for 7th grades and 8 independent variables for 8th grades are determined. Before the multiple regression was carried out, the assumptions on multiple regression were checked. According to Stevens (1992) and Tabachnick and Fidell, 2007), the sample size requirement was not violated in this study. The bivariate correlation results revealed no multicollinearity problems since the bivariate correlation between any two independent variable was less than .7 (Pallant, 2007, p.155). The normality problem was eliminated by removing all outliers. After removing the outliers and making sure the assumptions of multiple regression were met, multiple regression analysis was carried out on the resulting sample containing 1825 participants for 7th grade and 1666 participants for 8th grade.

In 8th grades, daily problem solving, attending private institution, attending school courses, monthly preparation test, time of daily studying, average time of playing game and getting pre-school education are determined as the variables affecting SBS points. For 7th grades; daily

**Table 10.** Results of multi-unit regression tests towards 8<sup>th</sup> grades.

| Variable | B | Standard error | Beta | T | P | Dual correlation | Partial correlation |
|---|---|---|---|---|---|---|---|
| Constant | 137,94 | 2,98 | - | 46,27 | 0,00 | - | - |
| Daily SBS Problem | 0,30 | 0,02 | 0,33 | 15,01 | 0,00 | 0,57 | 0,33 |
| Studying in Private Institution | 12,27 | 0,79 | 0,32 | 15,41 | 0,00 | 0,51 | 0,34 |
| Attending to School Course | 4,59 | 0,69 | 0,12 | 6,66 | 0,00 | 0,10 | 0,15 |
| Monthly Preparation Test | 3,14 | 0,63 | 0,10 | 5,01 | 0,00 | 0,40 | 0,12 |
| Daily Studying | 4,34 | 1,06 | 0,08 | 4,09 | 0,00 | 0,31 | 0,10 |
| Average Time of Playing Game | -2,88 | 0,73 | -0,07 | -3,98 | 0,00 | -0,21 | -0,09 |
| Pre-School Education | 4,65 | 1,76 | 0,05 | 2,64 | 0,01 | 0,25 | 0,06 |

R=0.676   $R^2$ =0.457  F(7-1816)=218.051 P=0.00.

**Table 11.** Results of multiunit regression analysis done for 7th grades' SBS points.

| Variable | B | Standard error | Beta | T | P | Dual correlation | Partial correlation |
|---|---|---|---|---|---|---|---|
| Constant | 244.94 | 5.90 | - | 41.50 | 0.00 | | |
| SBS Daily Problem | 0.58 | 0.04 | 0.35 | 14.91 | 0.00 | 0.54 | 0.34 |
| Studying in Private Institution | 25.37 | 1.95 | 0.28 | 13.04 | 0.00 | 0.43 | 0.31 |
| Attending to School Course | 9.90 | 1.58 | 0.12 | 6.28 | 0.00 | 0.15 | 0.15 |
| Monthly Preparation Test | 6.25 | 1.14 | 0.12 | 5.51 | 0.00 | 0.40 | 0.13 |
| Daily Studying | 5.18 | 2.08 | 0.05 | 2.49 | 0.01 | 0.25 | 0.06 |
| Workroom/Studying Place | -9.74 | 3.51 | -0.05 | -2.78 | 0.01 | -0.20 | -0.07 |
| Average time of Playing Game | -3.79 | 1.54 | -0.05 | -2.46 | 0.02 | -0.17 | -0.06 |
| Time of watching TV | 2.40 | 1.19 | 0.04 | 2.02 | 0.04 | -0.04 | 0.05 |

R=0,64   $R^2$=0,41  F(8-1657)=141,07 P=0,000.

amount of problem solved, attending private institution, attending school courses, monthly preparation test, time of daily study, having a studying room, average time of playing game, daily time of watching TV are understood as the variables affecting students' SBS points. The results of multi-unit regression test considering the 8th grades are presented in Table 10.

When Table 10 is considered it is understood that the most essential variables that affect SBS points of students are daily amount of problem solved, the time of attending private institution or school course. There is a positive and medium level relationship between daily amount of SBS problem solving and SBS points (r=0.57), and also there is a positive and medium level relationship between attending private institution and SBS points (r=0.51). Since there is a negative correlation between daily average time of playing game and getting pre-school education level, it can be claimed that if the time of playing game increases and if students do not get pre-school education, the SBS points will decrease. A total of seven variables above explain approximately 46% of the change in SBS points. In other words, almost half of the success in 8th grades is due to these seven variables. In 8th grades, there is a medium level relationship between these seven variables and the SBS points of these classes (r=0,676). The SBS points will increase if these features are developed or increased.

The results of multiunit regression test done for 7th grades are represented in Table 11.

When Table 11 is considered, it is understood that the most important variables that affect 7th grades' SBS points are daily problem solving, the time of attending private institution or school course similar to the 8th grades. There is a positive and medium level relationship between daily problem solving for SBS and SBS points (r=0,54), and also there is a positive medium level relationship between attending private institution and SBS points (r=0,43). There is a negative correlation between having a studying room, daily average time of playing game and daily average time of watching TV and SBS points. However this correlation is mostly low. These eight variables listed above explain approximately 41% of the total change in SBS points. In other words, there is a medium level of relationship between a total of eight variables and 7th grade students' SBS grades (r=0,64). It can be said that when these eight variables are developed, 7th grade students' performance will be better in the next two years.

**CONCLUSION AND ARGUMENTS**

According to the results of the study, the success of the students in SBS is influenced by many factors. According

to the findings of PISA 2009, an average of 72% of students from OECD countries in general stated that they got pre-school education more than one year. This ratio for Turkey is under 30%. When the effect of pre-school education on academic success is considered, Turkish student's low success in international examinations becomes clear. The ratio of students who get pre-school education in this study is similar to the ratio of Turkey in PISA 2009. This similarity is seen as a signifier of study's representativeness of the population. The first question of the research if the students' SBS success is changing when they get pre-school education or not. Under the light of the findings, it is found that 7th and 8th grade students who got pre-school education are more successful than the ones who did not get. The findings considering these sub-questions are parallel to the conclusions of many studies done before (Dinç, 2002; Pehlivan, 2006; Unutkan, 2007; Yeşil, 2008). Informative campaigns that highlight the importance of early childhood education and an increase in the parents' desire to begin their children school earlier can raise the future success of students. Generalizing the access to pre-school education without a decrease in quality will positively affect the total success.

In the other sub-question, the change in students' SBS success according to if they have a working place or not is investigated. As a result of the research, it is determined that both 7th and 8th grade students who have a working place are generally more successful than the rest of the students. In the related literature, there are studies that reached the same conclusion (Çelenk, 2003; Gelbal, 2008; Harvey, 2003; Ulular, 1997). Also, when the possible advantages of having a specific working place are considered, the students who have their own specific working place are expected to be more suc-cessful. Therefore, it can be evaluated that preparing a suitable place for studying for the student at home can be helpful for their educational success. Teachers and admi-nistrators can demand support from the parents in order to provide places for their children appropriate for studying in the general or special meeting arranged at the school. The places provided by the parents will increase the motivation of the students. Also, a suitable working place will contribute to the concentration that the student needs to study. When the conditions in the country are considered, it is known that although some houses have a specific working place, in some of them the working place is created in the commonly used rooms. In the situations like the latter, in order to increase the students' academic success, the furniture must be arranged according to the choices of the student in a way that is available to study.

In the sub-question in which a comparison between the SBS grades of students' according to whether they attending private educational institutions or not, it is found that students who attended private institution for a longer time are more successful than the ones who studied for a

short time. In other words, the longer student attended private educational institution, the higher their SBS grades. Savaş et al. (2010) reached similar conclusions in their studies. There can be an increase in 7th grade students' SBS grades if they attend private educational institution this year and the following year. Students who are successful at school but cannot attend private institution due to economic reasons can be supported through private institutions' quota for successful students. However, the education system of these private institu-tions must be checked, the structure of schools must be developed in a way that they will not be dependent on private institutions and it must not be forgotten that the basic education institutions for students are schools.

The SBS success of students who studied in extra school courses for long time and for relatively short time has been compared. As a result of these comparisons, it has been found that students who studied in extra school courses for longer time are more successful. Time of attending school courses has concluded in a similar way of attending private education institution. If the school courses are developed, results similar to the students who attend private education institutions can be reached. For 8th grade students it can be said that the longer student studies attend the school courses, the higher their SBS grades are. However, this increase is not as effective as attending private institution. Since the private institutions are more professional and the school courses are generally chosen by students from countryside, the success of school courses can be lower than the success of private institutions. In order to promote the success of the school, the school administration must arrange regular school courses and support students' attendance for free.

In the research, when the effect of student's living place on success in the school is investigated, it is found that students who live with their parents are more successful than the ones who live as boarding student or in a dormitory. As a result of the comparison, the success in SBS of students who live in their own house is higher than the ones who live in state dormitories.

When the studying habits and academic success are compared, it is seen that the studying habits of students has positively affected the academic success. It is foreseen that students who pay more time on studying are more successful comparing to the other students (Can, 1992). In the following sub-question of the study, if there is an impact of students' daily studying hours on his/her SBS success is researched. As a result of statistical analysis, it is found that in 7th and 8th grade students, when the studying time is increased, the SBS grades increase as well. It can be beneficial to increase the studying hours of students and promote their studying habits.

In the last sub-question of the study, the variables that affect and determine the SBS success of students are found out. As a result of the analysis done about this sub-

question it is seen that the most essential factors that affect students' SBS success are average of the number of daily question solved and the time of attending private institution or school course. The variables that are common in both grades are monthly preparation tests, time of daily studying and average time of playing game. As a difference between the grades, while at 8th grade pre-school education is effective on grades in SBS; at 7th grade having a studying place and the daily time of watching TV are more important variables. It is known that students who attend private institutions regularly attend preparation tests. If the high number of students who could not afford to attend private institution, it can be beneficial for students' success to do regular preparation tests in schools. Also, it is found that daily studying has an impact on academic success. Practical activities in order to bring in effective studying habits to students must be arranged in the schools. The watching TV habits of the families must be reconsidered through meetings with parents and students and the time of watching TV must be limited. Even if there is a good intention, not limiting the over-use of technological devices such as computer, TV games become an addiction for students and this affects students' success negatively. Therefore, it is important to arrange students' time for playing games in accordance with their time for studying lessons.

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