

Learning Styles and Preferences for Students of Computer Education and Instructional Technologies

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Abstract

Problem Statement: Individual learning processes differ depending on many factors. Learning styles represent individuals' information-capturing and processing advantages and their preferences about them.

Purpose of Study: Learning styles discussed by the Kolb and VARK models as information processing and information transformation in time are investigated in this research. The aim of the study is to find out participants' learning styles and preferences as identified by Kolb's Experiential Learning Style Model and VARK – "How can I learn best?" – and to discuss findings for more effective teaching and learning.

Methods: The sample is of 94 female and 166 male preservice computer teachers (n=260) studying at Ege University's Department of Computer Education and Instructional Technologies (CEIT) in 2007. After stepping original data analysing procedures of these scales, numeric data are statistically analyzed through frequency, percentage, and chi-square.

Findings and Results: The results showed no significant correlation between CEIT students' gender and their learning styles. Regarding Kolb's Learning Style Model, 63.8% of the preservice computer teachers are converger, 25.8% of them are assimilator, 6.2% of them are accomodator and 4.2% of them are diverger. It is assumed that convergers tend to have technical interests and quite often choose to specialize in the physical sciences; this makes it possible to explain why CEIT students mostly have the diverger learning style.

The VARK questionnaire showed that 28.8% of the sample have single learning preferences (0.8% Visual, 5.5% Aural, 3.5% Read/Write, 19.3% Kinesthetic). 12.3% of them are bi-modal learners (0.8% VA, 3.4% AR, 1.6% VK, 3.9% AK, 2.7% RK); 18.1% of them are tri-modal learners and 40.8% of them are multimodals. The results also showed a significant difference between gender and the groups of VARK. However,

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VARK preferences showed no significant difference within grade levels. Finally, the distribution of the sample regarding the Kolb and VARK models showed that 66% of multimodals and 66.7% of kinesthetic learners are converger.

Conclusions and Recommendations: It is concluded that the learning preferences such as visual, aural, read/write, and kinesthetic in the VARK model can be a part of Kolb's cycle of how to "grasp experience" (doing or watching) and "transform experience" (feeling or thinking).

Keywords: Computer, teacher, learning styles, Kolb, VARK

Individuals choose different methods of learning, problem solving and decision making. These differences are called cognitive styles, learning styles or learning strategies. Felder implies that an individual's learning style represents the particular set of strengths and preferences that that individual or a group of people have in how they take in and process information (Gordon & Bull, 2004).

In addition to a teacher's or course designer's individual preferences, students' learning styles or preferences should be considered during instructional material preparation or selection. For example, individuals who have a strong visual memory but weaker verbal processing will find text-based material harder to process than individuals who have stronger verbal skills (Logan & Thomas, 2002).

In order to find out individuals' learning styles and make use of this information in instructional settings, three approaches are presented. The first approach, which focuses on individuals, is related to making an individual aware of his or her own learning characteristics. The second approach, which focuses on instructional programs, emphasizes the different learning characteristics that should be considered in curriculum design and instructional activities planning. The third approach defines the basic elements of individual learning styles and emphasizes matching these styles with appropriate instructional methods (Brandt, 1990). Vermunt, who developed the Inventory of Learning Styles (ILS) in 1996, combines relatively stable cognitive styles with strategies and processes that can be modified by teachers, the design of the curriculum, assessment and the nature of the course and institution (Coffield, Moseley, Hall, & Ecclestone, 2004).

As Coffield et al. (2004) mention, one of the most widely used inventories is Kolb's Learning Style Inventory (LSI). Kolb's Experiential Learning Model claims that the way an individual perceives new information can be viewed on a continuum from concrete to abstract, while how an individual processes what is perceived can be viewed on a continuum from active to reflective. Kolb's Experiential Learning Model includes four learning modes: concrete experience (CE, feeling), reflective observation (RO, watching), abstract conceptualization (AC, thinking) and active experimentation (AC, doing) (Kolb, 2000). In Kolb's LSI, joint scores represent the individual's preferences from abstract to concrete (AC-CE) and from active to reflective (AE-RO) (Aşkar & Akkoyunlu, 1993).

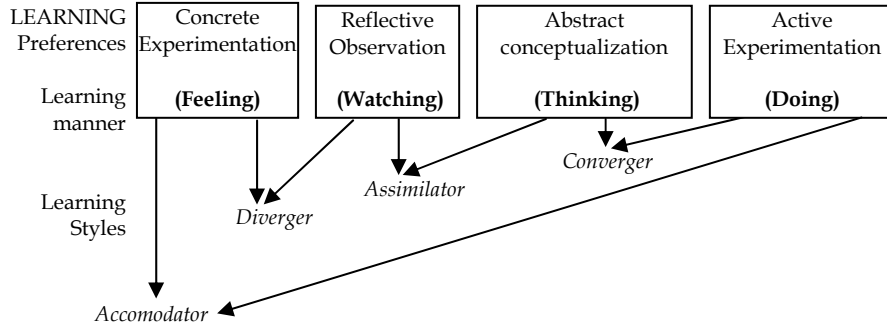


Figure 1. Kolb's Learning Model (Aşkar & Akkoyunlu, 1993)

Many researchers offer different models for types of learning styles and categories. Murrell and Claxton classified learning styles into four groups (Fleming & Bonwell, 2001):

1. Personality (extrovert or introvert)
2. Information processing (holistic or sequential)
3. Social interaction (how students behave and interact with each other, such as studying to learn or just to get a high score)
4. Teaching preference and learning environment (graphics presentation, listening, reading or experiencing). The VARK inventory was developed to identify the preferences in this category. It aims to reveal the learners' perceptual preferences as chosen for information retrieval and information processing.

Kolb's LSI is another approach that implies that learning styles are methods for individuals' information processing. In this study, Ege University CEIT students' learning styles are assigned through an information-processing approach. One of Kolb's learning manners, learning by doing, compares with the kinesthetic learning mode in the VARK model. VARK also includes Visual, Aural, and Read/Write preferences (Fleming & Bonwell, 2001):

Visual-V. Visual learners absorb information more readily from a visual medium (art, symbols, circles, hierarchical patterns). This preference does not include movies or animated web sites, which are preferred by multimodals.

Aural-A. Aural or auditory learners retain content best from lectures, audio tapes, conferences, or group discussions.

Read/Write-R. Read/write represents people who prefer learning from print or written documents. Many teachers prefer this manner.

Kinesthetic-K. Kinesthetic learners prefer learning from experience and real or simulated environments. Learners in this group use senses such as hearing, sight, taste, touch, and smell to experience something unusual for them (Fleming, 2001a).

In this study, CEIT students' learning styles and preferences as identified by Kolb's Learning Style Model and the VARK Model are investigated. Babadoğan (2000) claims that if we know what learners' learning styles are, it will be easier for course designers and teachers to decide how to plan instructional activities. It seems that teachers normally start by designing appropriate teaching and learning environments based on their own preferences rather than for their students. At this point, informing CEIT course lecturers about their students' learning styles and preferences, and making recommendations about developing materials and designing learning environments, may help them create more effective courses.

Purpose of Study

This study basically aims to reveal CEIT students' learning styles as identified in Kolb's LS and the VARK model. The sample is of students enrolled in the Faculty of Education at Ege University in Izmir. Kolb's Learning Style Model, based on experiential learning theory, is one of the most widely used models in Turkey. The VARK—"How do I learn best?"—learning preferences model is not so widely known; however, it may be helpful for helping teachers and learners discover their own learning preferences. A common attribute of Kolb's LSI and the VARK model is that both of them treat learning styles as preferences of processing and transforming information in time. This study aims to reveal Ege CEIT students' predominant learning styles and investigate the relations between learning styles and some independent variables such as gender and grade level.

Kolb, Boyatzis and Mainemelis (1999) suggest that it is important to organize a learning environment in a way specially aimed at developing learning skills. Informing students about how they can learn better provides self-awareness and may help students to develop more positive attitudes towards learning. Starting at the elementary level, indicating students' learning styles affects them through the rest of their learning process (Hasırcı Kaf, 2006). Also, in designing learning environments and developing course materials, considering students' individual learning styles helps to bring about effective learning and teaching. Due to these reasons, it is claimed that indicating Ege CEIT students' predominant learning styles and preferences would be meaningful for students, teachers and researchers.

Problem Statement

What is the distribution of prospective computer teachers' learning styles as identified by Kolb's LS and the VARK model, and how do they relate to each other?

Other research problems are as follows:

1. What is the distribution of students' learning styles as identified in Kolb's LS model?
2. Is there any relation between students' learning styles as identified in Kolb's LS model and their grade levels?
3. Is there any relation between students' learning styles as identified in Kolb's LS model and gender?
4. What is the distribution of the students' learning preferences as identified by the VARK model?

5. Is there any relation between students' learning styles as identified by the VARK model and their grade levels?
6. Is there any relation between students' learning preferences as identified by the VARK model and gender?
7. What is the distribution of results from Kolb's LSI and the VARK questionnaire?

Assumptions of Study

It is assumed that all participants honestly replied to questions in the Kolb LSI and VARK questionnaire.

Limitations of Study

This study is limited by the use of two learning style indicator inventories (Kolb's and VARK) and by participants from Ege CEIT students in the 2006-2007 academic year.

Methods

In this study, the descriptive method is used for examining Ege CEIT students' learning styles and learning preferences.

Participants

The sample of the study includes all prospective computer teachers (CEIT students) enrolled at Ege University, Faculty of Education in the 2006-2007 academic year. The distribution of the sample is presented in Table 1.

Table I
Distribution of the Sample by Gender and Grade Level

Grade	Gender				Total	
	Female		Male			
	f	%	f	%	f	%
1	12	4.6	46	17.7	58	22.3
2	24	9.2	46	17.7	70	26.9
3	35	13.5	34	13.0	69	26.5
4	23	8.8	40	15.4	63	24.2
Total	94	36.2	166	63.8	260	100

Data Collection

In this study, three data collection tools are used: a personal information or student demographic form, Kolb's Learning Style Inventory and the VARK Learning Preferences Questionnaire. Their attributes are as follows:

1. Student Demographic Form: The personal demographic form includes questions about students' gender, grade, and level of computer competency.

2. Kolb's Learning Style Inventory: This inventory, originally developed in 1985, includes 12 situations with four statements for each. The inventory's translation into Turkish and a reliability analysis were conducted by Aşkar and Akkoyunlu (1993). It was administered to 103 adults (62 female, 41 male) who had earned a Pedagogical Formation Certificate from Hacettepe University, Faculty of Education. 37% of this sample graduated from Physical Science programs (Maths, Chemistry, Biology); 52% graduated from Social Science programs (Literature, History, Geography, Library, Sociology, Psychology); and 12% of them graduated from Engineering programs (Physical, Chemistry, Plant, Geology). The reliability of the four scores of major learning styles and joint scores are analysed with Cronbach-alpha ($n=103$). The reliability coefficients for Concrete Experimentation is .58, for Reflective Observation .70, for Abstract Conceptualisation .71, for Active Experimentation .65, for Abstract-Concrete .77, for Active Reflective .76. Aşkar and Akkoyunlu (1993) implied that since the percentage of accommodators in the sample is less than the others, this may explain the reduction of the reliability coefficients of Concrete Experimentation and Active Experimentation.

3. VARK Learning Preferences Questionnaire: The VARK—"How do I learn best?"—model is designed to reveal how people exchange information and what their preferences for information processing are. VARK was developed initially in 1987 by Neil Fleming from New Zealand Lincoln University (Fleming and Mills, 1992). Fleming's VARK questionnaire was translated to Turkish by Atalay (<http://www.vark-learn.com/documents/turkish.pdf>). VARK is made up of 13 questions. Each question presents a different scenario that questions what the person in the scenario should do next. Since the person may choose to follow more than one way, it is possible to select more than one option or none of the options.

Data Analysis

In the data analysis, frequency and percentage techniques were used. The relation between learning styles, preferences, gender, and grade was statistically analysed through a non-parametric chi-square test. The existence of a relation between two variables means that the answers at levels of a variable differentiate at another variable's levels. Inside the cells, which are formed by levels of two classified variables, whether the observed values and expected values show significant differences among each other was analyzed (Büyüköztürk, 2003). The SPSS 11.0 program was used.

When analysing data relating to Kolb's LSI, joint scores indicate individuals' learning preferences from abstract to concrete (AC-CE) and from active to reflective (AE-RO). Therefore, Kolb's learning styles are accommodator and diverger (learning is concrete) and converger and assimilator (learning is abstract).

Each option for the questions in the VARK inventory represents a learning preference such as visual (V), aural (A), read/write (R) and kinesthetic (K). During analysis, at the first phase, the number of Vs, As, Rs, and Ks were calculated and ordered from high score to low score. If the sum of the four preferences is between 10-16, the stepping distance is 1; if it is between 17-22, the stepping distance is 2; if it is between 23-30, the stepping distance is 3; and if it is above 30, the stepping distance is 4. The highest preference score is the person's first learning preference. We subtracted the second high score from the first; if the result was higher than the

stepping distance, we can say that the person has a single learning preference. If not, we subtracted the third highest score from the second. If this result was higher than the stepping distance, the person has bi-modal learning preferences. If not, we subtracted the fourth highest score from the third, and if this is higher than the stepping distance, the person has tri-modal learning preferences. Otherwise, the person is a multimodal learner. Finally, it was concluded whether each person can learn predominantly visually, aurally, through reading/writing, or through double, triple or multi-combinations of the various styles.

Findings and Results

This section presents the findings and results of the research problems related to the distribution of Ege CEIT students' learning styles as identified by Kolb's LS and the VARK model.

1. What is the distribution of students' learning styles as identified in Kolb's LS model?

Table II
Distribution of Learning Styles as Identified in Kolb's LSI

Kolb's Learning Styles								Total	
Accommodator		Diverger		Converger		Assimilator		F	%
f	%	f	%	f	%	f	%		
16	6.2	11	4.2	166	63.8	67	25.8	260	100.0

Table 2 illustrates that 63.8% of the Ege CEIT students have the converger learning style. Similarly, Numanoglu and Şen (2006) figured that 46.8% of Ankara University's CEIT students' learning styles were converger. Zanich (1991) claims that people with the converger learning style often have an interest in technical issues and tend to succeed in the physical sciences. Therefore, it is expected that CEIT students who have relatively high scores in ÖSS (the exam of student selection for college/university in Turkey) mostly have converger learning styles.

2. Is there any relation between students' learning styles as identified in Kolb's LS model and their grade levels?

Table III
Distribution of Students' Kolb Learning Styles Regarding Grade Levels

Grade	Kolb's Learning Styles									
	Accommodator		Diverger		Converger		Assimilator		Total	
	f	%	f	%	f	%	f	%	f	%
1	2	0.8	1	0.4	32	12.3	23	8.8	58	22.3
2	6	2.3	5	1.9	43	16.5	16	6.2	70	26.9
3	1	0.4	5	1.9	45	17.3	18	6.9	69	26.5
4	7	2.7	0	0.0	46	17.7	10	3.8	63	24.2
Total	16	6.2	11	4.2	166	63.8	67	25.8	260	100.0

Statistically, when we analyse the differences in the distribution of students' Kolb's learning styles regarding their grade levels, the number of cells which have an expected value of less than 5 are above 20% of all cells (that is, 50%) figured. Therefore the results related to the significance test are not interpreted (Büyüköztürk, 2003). However, it is clear that at all grade levels CEIT students have the converger learning style, as shown in Table 3.

As a result of the chi-square (χ^2) test, it is revealed that active and reflective learners are significantly different regarding their grade levels ($\chi^2 (3) = 9.92, p < .05$). Table 4 illustrates that 70% of Ege CEIT students are active learners.

Table IV
Distribution of Active and Reflective Learners Regarding Grade Levels

Grade	Reflective learners		Active learners		Total	
	f	%	f	%	f	%
1	24	9.2	34	13.0	58	22.3
2	21	8.1	49	18.8	70	26.9
3	23	8.8	46	17.7	69	26.5
4	10	3.9	53	20.3	63	24.2
Total	78	30.0	182	70.0	260	100.0

$$\chi^2 = 9.92 \quad df=3 \quad p = .019$$

3. Is there any relation between students' learning styles as identified in Kolb's LS model and gender?

Table V
Distribution of Students' Kolb Learning Styles Regarding Gender

Gender	Kolb's learning styles				Total
	Accommodator	Diverger	Converger	Assimilator	
Female	5	4	57	28	94
Male	11	7	109	39	166
Total	16	11	166	67	260

$$\chi^2 = 1.327 \quad df=3 \quad p = .72$$

As a result of the chi-square (χ^2) test, it is revealed that Kolb's learning styles are significantly unrelated to gender ($\chi^2 (3) = 1.327, p > .05$). This finding is consistent with the findings of Numanoğlu and Şen (2006).

4. What is the distribution of the students' learning preferences as identified by the VARK model?

Table VI
Distribution of Students' Learning Preferences Regarding the VARK Model

VARK Learning Preferences									
V		A		R		K		VA	
f	%	f	%	f	%	f	%	f	%
2	0.8	14	5.4	9	3.5	48	18.5	2	0.8
VK		AR		AK		RK		VAR	
f	%	f	%	f	%	f	%	f	%
4	1.5	9	3.5	10	3.8	7	2.7	6	2.3
RKV		RAK		AVK		VARK		Total	
f	%	f	%	f	%	f	%	f	%
3	1.2	30	11.5	10	3.8	106	40.8	260	100.0

The distribution of Ege CEIT students' learning preferences regarding the VARK model indicates that 40.8% of the students are multimodals. Multimodal learners can work compatibly with the people they interact with at work such as doctors, teachers, counselors, and nurses (Fleming & Bonwell, 2001). This explains why many prospective computer teachers are multimodal learners.

5. Is there any relation between students' learning styles as identified by the VARK model and their grade levels?

Table VII
Distribution of VARK Learning Preferences Regarding Grade Levels

VARK groups	Grade				Total	
	1	2	3	4	f	%
V	1	1	-	-	2	0.8
A	4	3	5	2	14	5.4
R	3	-	4	2	9	3.5
K	11	12	10	15	48	18.5
VA	1	-	-	1	2	0.8
VK	1	2	1	-	4	1.5
AR	-	4	3	2	9	3.5
AK	2	1	4	3	10	3.8
RK	3	2	2	-	7	2.7
VAR	2	2	-	2	6	2.3
RKV	-	2	-	1	3	1.2
RAK	7	9	9	5	30	11.5
AVK	3	4	2	1	10	3.8
VARK	20	28	29	29	106	40.8
Total	58	70	69	63	260	100.0

As shown in Table 7, at all levels Ege CEIT students' VARK preferences intensify at the multimodal learning (VARK) preference. Those multimodal learners without a predominant learning style are able to utilize all of their senses for information processing (Fleming & Bonwell, 2001).

6. Is there any relation between students' learning preferences as identified by the VARK model and gender?

Table VIII
Relations Between VARK Learning Preferences and Gender

VARK Groups		Gender		Total
		Female	Male	
Single preferences	f	15	60	75
	%	5.7	23.1	28.8
Bi-modals	f	15	17	32
	%	5.7	6.6	12.3
Tri-modals	f	20	27	47
	%	7.7	10.4	18.1
Multimodals	f	44	62	106
	%	16.9	23.8	40.8
Total	f	94	166	260
	%	36.2	63.9	100

$\chi^2 = 12.22$ df=3 p= .007

As Table 8 illustrates, the chi-square test showed that the number of learning preferences identified by the VARK model (single, bi-modal, tri-modal, and multimodal) showed significant differences regarding gender ($\chi^2 (3) = 12.22, p < .01$). Table 9 presents the distribution of each of V,A,R,K combination regarding gender in detail.

Table IX
Distribution of VARK Preferences Regarding Gender

VARK groups		Gender		Total	VARK groups		Gender		Total
		Female	Male				Female	Male	
V	f	1	1	2	RK	f	4	3	7
	%	0.4	0.4	0.8		%	1.5	1.2	2.7
A	f	5	9	14	VAR	f	3	3	6
	%	2.0	3.5	5.5		%	1.2	1.2	2.3
R	f	3	6	9	RKV	f	2	1	3
	%	1.2	2.3	3.5		%	0.8	0.4	1.2
K	f	6	42	48	RAK	f	11	19	30
	%	2.3	16.2	18.5		%	4.2	7.3	11.5
VA	f	1	1	2	AVK	f	4	6	10
	%	0.4	0.4	0.8		%	1.5	2.3	3.8
VK	f	1	3	4	VARK	f	44	62	106
	%	0.4	1.2	1.5		%	16.9	23.8	40.8
AR	f	5	4	9	Total	f	94	166	260
	%	2.0	1.5	3.5		%	36.2	63.8	100
AK	f	4	6	10					
	%	1.5	2.3	3.8					

Table 9 shows that male CEIT students' kinesthetic (K) and multimodal (VARK) learning preferences are the two highest numbers among the other learning preferences.

7. What is the distribution of results from Kolb's LSI and the VARK questionnaire?

Table X
Distribution of Results from Kolb's LSI and the VARK Questionnaire

VARK Preferences	Kolb's learning styles				Total
	Accomodator	Diverger	Converger	Assimilator	
V	-	1	1	-	2
A	1	1	8	4	14
R	1	-	5	3	9
K	2	2	32	12	48
VARK	7	5	70	24	106
VA	-	-	2	-	2
VK	1	-	3	-	4
AR	1	-	5	3	9
AK	-	-	8	2	10
RK	-	-	6	1	7
VAR	1	-	2	3	6
RKV	-	-	1	2	3
RAK	-	1	20	9	30
AVK	2	1	3	4	10
Total	16	11	166	67	260

Table 10 illustrates the Ege CEIT students' distribution of all learning styles and preferences regarding Kolb's LS and the VARK model. Regarding the two highest numbers in this table, 70 of 106 multimodal learners (66.0%) and 32 of 48 kinesthetic learners (66.7%) are convergers. These findings are interpreted in the Conclusion and Recommendations section.

Conclusion and Recommendations

The VARK model aims to find out specifically which senses individuals utilize to get information. It also aims to guide students about how they can learn best, and to inform teachers so that they can help their students in the learning process (Fleming and Bonwell, 2001). The VARK model can be a guide to students at any level to help them study more effectively and efficiently; therefore, it is recommended to all teachers and students. The VARK model's learning preferences of visual, aural,

read/write and kinesthetic may be included in Kolb's LS model's learning modes (feeling, watching, thinking and doing). The VARK model mostly focuses on which senses individuals use most to process information.

The findings revealed no significant correlation between CEIT students' gender and their learning styles. Regarding the Kolb's Learning Style Model, 63.8% of the preservice computer teachers are converger. This result is consistent with the findings of Numanoglu and Sen (2006). As Zanich (1991) stated regarding Kolb's model, people with the converger learning style often have a wide interest in technical issues and tend to succeed in the physical sciences.

The VARK questionnaire results showed that 28.8% of the sample have single learning preferences (0.8% Visual, 5.5% Aural, 3.5% Read/Write, and 19.3% Kinesthetic). 12.3% of the them are bi-modal learners (0.8% VA, 3.4% AR, 1.6% VK, 3.9% AK, 2.7% RK), 18.1% of them are tri-modal learners and 40.8% of them are multimodals. The results also showed significant relations between gender and the groups of VARK. However, VARK preferences showed no significant relation to grade level. Finally, in the distribution of the sample regarding Kolb's and VARK models, 66% of multimodals and 66.7% of kinesthetic learners are diverger.

Regarding the VARK model, 40.8% of Ege CEIT students are multimodals. Among 28.8% of the sample having single learning preferences, 18.5% of them are kinesthetic (K) learners. Fleming (2001b) stated regarding the VARK model that multimodals do not have a single predominant learning preference while kinesthetic learners prefer learning by doing, and they can easily transfer knowledge into practice. Therefore, it is assumed that the converger style in Kolb's model resembles the kinesthetic preference in the VARK model. Hence, it is suggested tha teachers include frequent practice sessions in addition to introducing theoretical information in the courses offered to CEIT students/prospective computer teachers. Lecturers are encouraged to use animation, simulations, and real-life situations and to conduct project-based studies.

A common characteristic of multimodals is that they can work compatibly with the people they interact with at work such as doctors, teachers, counselors, and nurses (Fleming and Bonwell, 2001). Therefore, the lecturers of mostly multimodal learner groups are encouraged to use collaborative learning techniques for more effective and efficient teaching and learning.

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Bilgisayar ve Öğretim Teknolojileri Eğitimi Öğrencilerinin Öğrenme Biçemleri ve Öğrenme Tercihleri (Özet)

Problem Durumu: Öğrenme, bireye özgü olan çok sayıda etmene bağlı olarak gerçekleşmektedir. Bu etmenlerden biri olan öğrenme stili ya da biçemi, bireyin bilgiyi alma ve işleme konusunda sahip oldukları güçlü yanları ve bu konudaki tercihlerini temsil eder. Öğrencilerin öğrenme biçimlerinin belirlenmesi ile elde edilen bilgiler, düzenlenecek öğrenme-öğretme ortamlarında nasıl bir yöntem geliştirileceği konusunda eğitimcilere yardımcı olabilir. Bu kapsamda araştırmanın problemi, Bilgisayar ve Öğretim Teknolojileri Eğitimi (BÖTE) öğrencilerinin öğrenme biçimleri ve tercihleri hakkında bilgi sahibi olmanın BÖTE öğretim elemanları açısından önemi oluşturmaktadır. Araştırmanın alt problemleri ise şu şekilde belirlenmiştir:

1. Öğrencilerin Kolb'ün modeline göre öğrenme biçimleri nasıl bir dağılım göstermektedir?
2. Öğrencilerin Kolb'ün modeline göre öğrenme biçimleri, sınıf düzeylerine göre değişmekte midir?
3. Öğrencilerin Kolb'ün modeline göre öğrenme biçimleri, cinsiyetlerine göre değişmekte midir?
4. Öğrencilerin VARK modeline göre öğrenme tercihleri nasıl bir dağılım göstermektedir?
5. Öğrencilerin VARK modeline göre öğrenme tercihleri, sınıf düzeylerine göre nasıl bir dağılım göstermektedir?
6. Öğrencilerin VARK modeline göre öğrenme tercihleri, cinsiyetlerine göre değişmekte midir?
7. Kolb ve VARK ölçme araçlarından edinilen sonuçlar nasıl bir dağılım göstermektedir?

Araştırmanın Amacı: Araştırmanın amacı, Ege Üniversitesi, Eğitim Fakültesi, Bilgisayar ve Öğretim Teknolojileri Eğitimi (BÖTE) öğrencilerinin öğrenme biçimlerini, Kolb'ün Öğrenme Stili Modeli ve VARK-"En iyi nasıl öğrenebilirim?" öğrenme tercihleri modeline göre belirlemektir. Kolb ve VARK öğrenme biçimleri modellerinin ortak yanı, öğrenme biçimlerini, bilgiyi işleme ve zaman içinde dönüştürme tercihleri olarak ele almalarıdır. Bu çalışmada, her iki modele göre, BÖTE öğrencilerinin öğrenme biçimlerini belirleyerek, cinsiyet ve sınıf düzeyi bağımsız değişkenlerine göre dağılımı ortaya çıkarmak ve daha etkili öğrenme-öğretmenin sağlanması için önerilerde bulunmak amaçlanmaktadır.

Araştırmanın Yöntemi: Araştırma örneklemini, Ege Üniversitesi, Eğitim Fakültesi, BÖTE Bölümü'nde 2006-2007 öğretim yılında öğrenim görmekte olan 94 bayan ve 166 erkek öğretmen adayı oluşturmaktadır (n=260). Araştırmada, öğrenci bilgi formu, Kolb Öğrenme Stilleri Envanteri ve VARK Öğrenme Tercihleri Anketi olmak üzere, üç adet veri toplama aracı kullanılmıştır. Bu araçların özellikleri ise aşağıda belirtilmektedir.

1. Öğrenci bilgi formu: Öğrencilerin cinsiyetleri, sınıf düzeyleri, bilgisayar kullanım düzeyleriyle ilgili soruların yer aldığı kişisel bilgi formu kullanılmıştır.

2. Kolb Öğrenme Stilleri Envanteri: Aslı, 1985 yılında Kolb tarafından geliştirilmiş olan bu envanterde; her birinden dörder tümce olan 12 tane durum verilmektedir. Envanterin Türkçe'ye çevrilerek güvenilirlik çalışması Aşkar ve Akkoyunlu tarafından yapılmıştır. Envanter, Hacettepe Üniversitesi, Eğitim Fakültesi Öğretmenlik Sertifikası kurslarına katılan çeşitli alanlardan mezun 62 bayan, 41 erkek toplam 103 yetişkine uygulanmıştır. Öğrencilerin %37'si Fen Bilimlerinden (Matematik, Kimya, Biyoloji), %52'si Sosyal Bilimlerden (Edebiyat, Tarih, Coğrafya, Kütüphanecilik, Sosyoloji, Psikoloji), %12'si de mühendislikten (Fizik, Kimya, Orman, Jeoloji)'dir. 4 temel öğrenme biçimi puanları ile birleştirilmiş puanların güvenilirliği, Cronbach-alpha ile hesaplanmıştır (n=103). Güvenirlik katsayıları somut yaşantı için .58, yansıtıcı gözlem için .70, soyut kavramsallaştırma için .71, aktif yaşantı için .65, soyut-somut için .77, aktif yansıtıcı için .76 bulunmuştur. Örneklemde "yerleştiren" içerisinde yer alan bireylerin yüzdesinin düşük olması, somut yaşantı ve aktif yaşantı için güvenilirlik katsayılarını düşürmüş olabileceği vurgulanmıştır.

3. VARK Öğrenme Tercihleri Anketi VARK modeli, yalnızca bireylerin bilgi alışverişlerini nasıl yaptıklarını, bilgiyi işleme tercihlerinin neler olduğunu ortaya çıkarmayı amaçlamaktadır. İlk olarak 1987 yılında, Yeni Zelanda Lincoln Üniversitesi'nden Neil Fleming tarafından geliştirilmiştir. VARK'ı oluşturan 13 anket sorusunda 13 farklı senaryo yaratılarak, bireyin o durumda ne yapacağı sorulmaktadır. Birey birden fazla yolu tercih edebileceğinden, birden fazla seçeneği işaretleyebilir ya da seçeneklerden hiçbirini uygun bulmuyorsa soruyu boş bırakabilmektedir.

Verilerin analizinde öğrenme biçimleri ve tercihleri için frekans ve yüzde istatistiklerinden yararlanılmıştır. Öğrencilerin cinsiyetine ve sınıf düzeylerine göre öğrenme stilleri ve tercihleri arasında bir ilişki olup olmadığı parametrik olmayan kare-kare testiyle analiz edilmiştir. İki değişken arasında ilişkinin olması, bir değişkenin düzeylerindeki cevapların diğer değişkenin düzeylerinde farklılaştığını gösterir. İki sınıflamalı değişkenin düzeylerine göre oluşan gözeneklerde, gözlenen değerlerle, beklenen değerlerin birbirlerinden anlamlı farklılık gösterip göstermediğini sınırlar. Verilerin çözümlenmesinde SPSS 11.0 programından yararlanılmıştır. Kolb'ün Öğrenme Stili envanterinin çözümlenmesinden elde edilen birleştirilmiş puanlar bireyin soyuttan somuta (SK-SY), aktiften yansıtıcıya (AY-YG) tercihlerini göstermektedir. Buna göre, öğrenme biçimleri; öğrenmenin somut olduğu yerleştiren ve değiştiren ile öğrenmenin soyut olduğu ayrıştıran ve özümseyen olarak belirlenmiştir. VARK anketindeki her soruda farklı seçenekler görsel (V), işitsel (A), okuyup yazarak (R) ve devinimsel (K) öğrenme tercihlerine karşılık gelir. Analiz için, ilk aşamada yanıtlarda V, A, R, K toplamları elde edilir, büyükten küçüğe sıralanır. 4 tercihe ait sayılar toplanır. Bu sayı 10-16 arasıysa uzaklık 1; 17-22 arasıysa uzaklık 2; 23-30 arasıysa uzaklık 3; 30 üzeriyse uzaklık 4'tür. Tercihlerden en yüksek puan ilk öğrenme tercihidir. 2.

yüksek puan, en yüksekten çıkarılır, bu sayı uzaklık değerinden büyükse bu birey tek öğrenme tercihlidir, değilse 3. yüksek puan 2.den çıkarılır, bu sayı uzaklık değerinden büyükse bu birey çift öğrenme tercihlidir, değilse 4. puan 3. yüksek puandan çıkarılır, bu sayı uzaklık değerinden büyükse bu birey üç öğrenme tercihlidir. Eğer bu durum da sağlanmıyorsa birey çok modelli öğrenme tercihlidir denilmektedir. Sonuç olarak, bireyin yalnızca görerek, duyarak, okuyup yazarak ya da yaparak öğrenen olduğu ya da bu öğelerin ikili, üçlü ya da çok modelli kombinasyonlarıyla öğrenen olduğu sonucuna da varılabilmektedir. Kolb ve VARK öğrenme biçimleri belirleme araçlarından edinilen verilerin çözümlenmesinde, geliştiricileri tarafından belirlenen hesaplama yöntemleri izlendikten sonra frekans, yüzde ve ki-kare çözümlerinden yararlanılmıştır.

Araştırmanın Bulguları ve Sonuçları: Kolb'ün Öğrenme Stili Modeli'ne göre, BÖTE öğrencilerinin öğrenme biçimlerinin cinsiyete göre farklılaşmadığı saptanmıştır. Öğrencilerin, %63,8'inin "Ayrıştırıcı", %25,8'inin "Özümseyen", %6,2'sinin "Yerleştirici" ve %4,2'sinin "Değiştirici" öğrenme biçimine sahip oldukları saptanmıştır. Teknik ilgi alanları olan ayrıştırıcıların, sayısal bilimlerde uzmanlaşabildikleri düşünülmektedir. Buna göre, BÖTE bölümü öğrencilerinin neden özellikle ayrıştırıcı oldukları açıklanabilmektedir.

VARK'a göre, tek baskın öğrenme tercihliler %28,8, çift öğrenme tercihliler %12,3, üç öğrenme tercihliler %18,1 ve çok modelli öğrenme tercihliler ise %40,8'dir. VARK tercihleri açısından BÖTE öğrencileri çok modelli öğrenme tercihinde yoğunlaşmaktadır. Öğrencilerin tek baskın öğrenme tercihlerinin olup olmama durumları cinsiyete göre farklılaşmakta, sınıf düzeyine göre farklılaşmamaktadır. Son olarak, VARK modeline göre çok modelli öğrenme tercihlilerin %66'sı; devinimsel öğrenme tercihlilerin ise % 66,7'si Kolb'ün modeline göre ayrıştırıcı öğrenme biçimine sahiptir.

Araştırmanın Önerileri: VARK modeline göre görsel, işitsel, okur-yazar ve devinimsel/yaparak şeklinde belirlenen öğrenme tercihleri, Kolb'ün Modeli'nde belirtilen öğrenme yolları (hissederek, izleyerek, düşünerek, yaparak) kapsamında ele alınabilir.

Anahtar Sözcükler: Bilgisayar, öğretmen, öğrenme biçimleri, Kolb, VARK

The Use of Student Journals in Science and Technology Education*

Dilek ERDURAN AVCI**

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Abstract

Background/Problem Statement: Students have different learning and progressing speeds. When this fact is taken into the consideration, questions arise about evaluating the efficiency of all students according to the same standardized tests. In this context, student journals – which enable teachers to chase and evaluate students' learning and individual progress permanently – gain significance. There is no study in our country about student journals in science and technology education.

Purpose of Study: This study will evaluate how students writing journals in science and technology contributes to education and will construct a model for science instructors.

Methods: This research was applied to 30 7th grade students in the 2005-2006 spring term. Research lasted six weeks consisting of "work and energy" subjects in science and technology lessons. During the research period, students wrote in a journal once a week, about subjects taught in those weeks. Finally, five random students from the group were interviewed.

Findings/Results: This section has been divided into two sections: findings obtained from the students' journals and findings obtained from interviews. Student journal evaluation revealed that, during the period of application, 23.3 percent of students wrote in journals five-six times, 33.3 percent wrote three-four times, 26.7 percent wrote twice and 16,7 percent wrote once in six weeks. All students wrote in a journal at least one time. It was observed that students used their journals to express their comments clearly about scientific concepts and definitions in the course, tests and observations being made, problems they had with group mates, feelings and opinions about lesson experiments, likings and criticisms about the lesson teacher, examples of scientific concepts that have been applied to daily life, and comments about their individual performances in a lesson. Additionally, it was noticed that some students made drawings about subjects and expressing concepts as formulas. Interviews made it clear that students liked writing journals about the course, considered it useful for their own benefit and thought of writing journals for their other courses as well.

Recommendations: Science journals can be used as reliable and valid instruments in the student assessment process. It is considered that science journals help students express feelings and ideas, repeat the knowledge gained in the lessons and build up better student-teacher communication.

Keywords: Student journals, science and technology education, assessment.

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Science and technology journals are usually considered the records of the activities performed in the course, kept by the students. Also known as science and technology notebooks, these journals encourage students to write their daily natural course experiences. Students can express the problems they try to solve, methods they use, observations they make and conclusions they reach via these journals. Journals have different types, such as thinking journals, affirmational dialogue journals, think-aloud journals and team journals (Ruiz-Primo, Li, Ayala & Shavelson, 2004). Journals also create an opportunity for students to express personal ideas and observations after their own experiences. Journal pages can be considered a story in which the observed events change by time (Shepardson, 1997, cited in Korkmaz, 2004).

“There has been a consensus that student journals are progressive measurement instruments for the instructors. These journals allow instructors evaluate students’ conceptual and procedural understanding and get required feedback to improve performance. Student journals also give information not only about learning of the students but also about the quality of the education. Through the multi-assessment approach, they can also be considered as quick evaluation instruments. Journal records are constructed by evaluation applications that match the purpose, content and instruction activities in the education process. Ruiz-Primo handles the science and technology journals in two levels as an instrument of assessment: (1) Personal level: A source for records of student performance throughout education process. (2) Class level: A source for records of learning opportunities in the course” (Ruiz-Primo, Li, Ayala & Shavelson, 1999, March).

In the literature, there are studies about student journals in medicine (Goldenhar and Kues, 2006), nursing (Barton and Brown, 1992), geography (Cook, 2000) and science education (Ruiz-Primo, Li, Ayala & Shavelson, 1999, March ; Ruiz-Primo, Li & Shavelson, 2002; Shepardson & Britsch, 2001; Ruiz-Primo, Li, Ayala & Shavelson, 2004; Nesbit, Hargrove, Harrelson & Maxey, 2004; Hargrove & Nesbit, 2003). Shepardson ve Britsch (2001) studied how pre-school and 4th grade students transmitted their experiences in science and technology course to journals and the impact of journal use in their course comprehension. It was observed in the study that students defined their comprehension in three groups of words: imaginary, experiment-based and research-based.

Ruiz-Primo et al. (1999) studied student journals as an assessment instrument in finding out student performance. This research was performed on two science units with the contribution of 163 5th grade students. Students wrote 18 journals about the first unit and 14 about the other. Research results show that student journals can be graded reliably and with validity and there exists a high positive correlation between the student journal scores and the scores obtained from other evaluation instruments. Ruiz-Primo, Li and Shavelson (2002) used student journals to examine the educational activities and the nature of the teacher feedback in the science course. This study was performed with the contribution of 60 5th grade students over two semesters. Results obtained from student journals indicated that teachers had a tendency to ask definitions or experiment results rather than asking them for their comments. Communication and comprehension scores of the students were pretty low. Teachers provided very limited feedback, and researchers concluded that the benefits of the student journals were not used efficiently in science courses in this study.

Student journals, which can be used as an information resource for student performance and instructor feedback (Ruiz-Primo, Li, Ayala & Shavelson, 2004), have several uses:

- To provide proof of student learning and progress to the instructor.
- To grant an opportunity to return personal feedback to students and plan personal education with the instructor.
- To grant an opportunity to both the instructor and students to create a dialog about the principals of the course and student progress.
- To make the instructor and students build up better personal communication.
- To improve students' writing and illustrating abilities.

In addition, as stated by Hanrahan (1999), science and technology journals help students build "science literature for everybody." In this context, to improve our knowledge of students' science learning, we need to examine carefully their interaction with each other, their approach to experiments, their notes, illustrations and interpretations (Dorris, 1991, cited in Shepardson & British, 2001). Student journals provide instructors a unique chance to see students from different sides.

Methods

This is qualitative research performed to evaluate the contribution of student journals to the students and define an example application of student journals in lessons of science and technology courses. Research was performed in a primary school located in Ankara, Turkey, during the spring term of the 2005-2006 educational year, with the contribution of 30 7th grade students. The study lasted for six weeks while the "work and energy" topic was taught. Instruction was performed by the researcher, who is a specialist of physics instruction. The curriculum was inspected for physics topics and the only physics topic for 7th grade students in the planned research schedule was the "work and energy" topic. Therefore, this topic was selected. The following sub-topics were performed during the process: (1) a spring is compressed by work; (2) work is energy and energy is work; (3) the same work is performed quicker by the stronger; and (4) simple machines make our life easier.

Students were asked if they had kept any journals in this manner before the study and all responses were negative. However, some of the participants stated that they had diaries in which they expressed their feelings time to time. Since the participants had no experience in keeping journals, they were informed during a lesson about this issue. In this period, they were informed about journal writing, the important points that need to be considered, and the proper time to write. They also gained their first experience by writing their first journals during class.

Students wrote a journal once a week about a course topic-related subject chosen by the researcher. An example subject is as below:

Journal subject: What did you learn about work this lesson? Which issues interested you most and which issues did you understand well? Which activities did you like most? Were there any parts you could hardly understand or could not understand? Please share your comments, feelings and ideas by writing in your journal.

The rest of the journal subjects were prepared similarly about the topic used during the week. The science and technology course was scheduled on Mondays and Wednesdays. Students were given the journal topic at the end of the last lesson on Wednesdays. Students had two days to complete the journals and they returned the journals to the researcher each Friday.

The researcher evaluated the student journals according to the Science and Technology Journal Rubric given in Table 1. This key was constructed and adopted from different resources (Arctic Alive Program, 2002; Charlesbridge School Division, 2005). Misunderstandings and defects about scientific concepts were marked on the journals and corrected. Following the above steps, journals were given back to students.

Table I
Science and Technology Journal Rubric

Grade	Explanation
4	Text and illustrations show that the scientific concepts are understood clearly. Gained knowledge is linked successfully to daily life. Scientific terms are used clearly and properly. Experiments and observations are written in detail, correctly and with no deficiencies. Ideas and expressions are clear, comprehensible and include no spelling mistakes.
3	Scientific concepts are mostly true in text and illustrations. Gained knowledge is linked decently to daily life. Scientific terms are used mostly clear and properly. Experiments and observations are written in enough detail, mostly correct, with some deficiencies. Ideas and expressions are usually comprehensible and include no spelling mistakes.
2	Scientific concepts are partially true in text and illustrations with some mistakes. Gained knowledge is linked limitedly to daily life. Scientific terms are used mostly clear and proper. Experiments and observations are mostly correct with no detail and some deficiencies. Ideas and expressions are hardly comprehensible and include spelling mistakes.
1	Scientific concepts are poorly true in text and illustrations. Use of scientific terms is not clear, proper or consistent. Experiments and observations are not written correctly and in detail. Ideas and expressions are not comprehensible and include many spelling mistakes.

Explanations in the Science and Technology Journal Rubric are prepared according to the students' usage level of vocabulary, recall level of scientific concepts and the following levels of scientific method process. These criteria can be explained as follows:

Use of vocabulary. Usage of scientific terms in the journal in a proper, decent, clear and consistent way.

Recall of scientific terms. Students' level of expressing scientific concepts clearly.

Scientific method process. Defining the problem, making predictions, building up hypotheses, designing the research and applying it, discussing the conclusion and reaching a conclusion.

The researcher shared her assessments, corrections and comments about the previous week's student journals during the first lesson of the week. In this phase, the researcher returned the journals on which she wrote her notes to the students. This way, students had the chance to see their own mistakes and deficiencies in vocabulary use, recall of scientific terms and scientific method processes. In addition, volunteer students were permitted to read their journals in the class and share them with their classmates. The researcher wrote a journal from time to time and shared hers with the class to motivate students keep their journals regularly.

At the end of the study, the researcher interviewed five random students from the class. A group interview method was utilized. In a group interview, the interviewer converses and discusses with a group of people at the same time. Activity is performed by asking the group questions about a common subject and seeking answers by interaction (Karasar, 2004). The interview is performed in a semi-formal form. In semi-formal interviews, the interviewer has a set of prepared questions, but this type also allows the interviewer to ask some unplanned questions or to skip some planned questions when a special condition occurs during the interview (Ebenezzer & Haggerty, 1999, cited in Kaya, 2005). A group interview was performed by asking five questions. In order to help the researcher perform interviewing and listening activities better, the meeting was recorded to video.

Reliability and Validity

Twenty random student journals were evaluated by three researchers, all of whom are science journal experts, according to the Science and Technology Journal Rubric given in Table 1. In order to determine the consistency of the raters, a generalization analysis is performed. The generalization coefficient is calculated using the following formula:

$$g = \frac{\sigma_p^2}{\sigma_p^2 + \frac{\sigma_e^2}{n_i}}$$

σ_p^2 represents a person's variance, σ_e^2 stands for error variance. The generalization variance, which is also the reliability coefficient, is the ratio of the observed point variance to the expected point variance (Atılgan, 2006). After the analysis, the generalization coefficient is computed as 0.95. Variance analysis results are given in Table 2.

Table II
Variance Analysis Results

Source of variation	Sum of squares	df	Mean of squares	F
Persons	63.4	19	3.33	45.53
Raters	0.433	2	0.217	2.84
Error	2.906	38	0.0765	
Total	66.74			

The Pearson product moment multiplication correlation coefficient between raters is computed by using SPSS. The correlation coefficient between the first and second raters is 0.844; the correlation coefficient between the first and third raters is 0.880 and the correlation coefficient between the second and third raters is 0.656 ($p < 0.01$). These coefficients prove that there is a statistically significant, high and positive relation between raters. Analysis results of the evaluators' scores prove that the evaluation criteria defined in the Science and Technology Journal Rubric are valid and reliable.

Findings

Findings from Student Journals

During the research period of six weeks, students were asked to write journals once a week. The researcher collected the journals regularly and evaluated the journals weekly. Student journals were evaluated according to the criteria in the Science and Technology Journal Rubric. The students' weekly grades are displayed in Table 3.

Table 3 reveals that a great majority of the students did not write daily. Nearly 17 percent of the students wrote journals once, 26.6 percent wrote twice, 6.6 percent wrote three times, 26.6 percent wrote four times, 10 percent wrote five times and 13.3 percent wrote six times. Arithmetic averages of the weekly scores are: 2.5 for first week, 3.07 for second, 3.2 for third, 3.14 for fourth, 3.66 for fifth and 3.81 for the sixth. After inspection of the average student journal grades, one can state that weekly grades of the journals rise toward the end of the study.

Students clearly reflected in the journals on course-related scientific concepts and definitions, their experiments and observations, problems they had with their group mates, their feelings and comments about the course, their likings and criticisms about the instructor, the examples of the scientific concepts they encounter in daily life and their comments on their personal performance. In addition, the students sometimes made illustrations about the subject of the lesson and defined concepts in formulary form. The researcher had the opportunity to know student more and to evaluate them using the text and illustrations from the student journals. They also allowed the researcher to communicate with the students and tell them about their mistakes and misunderstandings of the scientific terms. Another interesting observation is that some students gave their journals nicknames and preferred starting a dialog with that nickname in the beginning, as if they considered the journal an imaginary personality to whom they could express themselves. Figure 1 and Figure 2 represent examples from student journals.

Table III
Weekly Grades of the Student Journals

Student No.	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6
Student 1	2	4				4
Student 2	1		3	3		
Student 3	2	4			3	3
Student 4	2	1	4	4		
Student 5	3	3	2	3	3	3
Student 6	3		4	4	4	4
Student 7	2	3	4	2		
Student 8	4	4	4	4	4	4
Student 9	2		3		4	4
Student 10	3		3	3	4	4
Student 11	2			4		
Student 12	1	2				
Student 13	4	4	3	4	4	4
Student 14	2		3	3	4	
Student 15	4	4	4	4	4	4
Student 16		4	4	2	3	4
Student 17		2	1			
Student 18	3					
Student 19		4	4	4	3	
Student 20		2	3	4	4	
Student 21				3	4	
Student 22			3	4	4	4
Student 23			4			
Student 24				3	4	
Student 25				3	4	
Student 26				1		
Student 27				1		
Student 28		2		3		
Student 29					4	
Student 30			2		2	

Bergili Günü;

Bugün 8 saat fen dersi işledik. Çeşitli etkinlikler yaptık, soru sorduk. Dur, ben sana etkinlikler, deneyleri ve soruları, sloganları sayısız her şeyi anlatayım-

İlk önce Dilek Öğretmenimiz bizi laboratuara çağırdı. Burada 20 etkinlikler ve sayamadığım o eşsiz güzellikte deneyler ve soruları yaptık. İlk önce bize bazı kağıtlar dağıtıldı. Daha sonra hocamız bize slaytları gösterdi. Ayrıca kinetik enerjiyi işledik, bu enerjinin hareket veya hızdan kaynaklandığını öğrendik. Haa unutmadan bunun hakkında deneyde yaptık. Ayrıca kinetik enerjiyi unutmamak için bir slogan öğrendik: "KINETİK". Daha sonra potansiyel enerjiyi öğrendik, yükseklikten ve esneklikten kaynaklanan potansiyel enerjiyi de öğrenmiş oldum ve benim potansiyel enerjisi hakkında deneyler yaptık. Bunun sonucunda bu tür enerjinin, kütle ve yükseklikle doğru orantılı olduğunu öğrendim.

Haa unutmadan potansiyel enerjinin de sloganı var: "POTA". Çok eğlenceli bir fen dersiydi. Fen dersi bence mükemmeldi, yalnız hani dramatizasyon yapacaktık haa --

Bugünük bu kadar!!! -- Artık fen derslerini coboooooooooook seviyorum. Dersi dört gözle bekliyorum!!! --

Elma armut portakal
Hadis bana haşşakal!!! --

Figure 1. A sample student journal

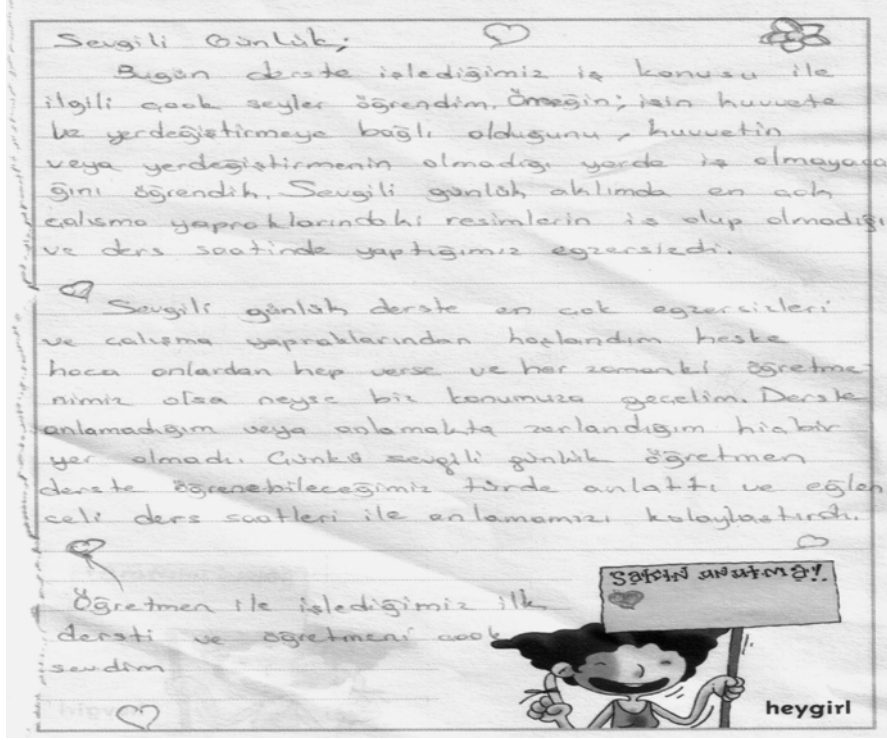


Figure 2. Another sample of student journal

Findings from Interviews

At the end of the research period, five random students were selected from the contributors and a group interview was performed with these students. Interview questions and student answers are summarized below:

Question 1: Could you keep your journal regularly?

Two of the students replied this question as they regularly kept their journals where the rest did not. An interesting part of the students' answers is as follows:

Student 1: I could not keep my journals regularly...

Researcher: What do you think is the reason for that?

Student 1: I decided to write down my journal regularly at the beginning but then I got bored...

Student 2: Frankly speaking, I do not think that I kept my journal regularly during past six weeks

Researcher: Why could not you keep it regularly?

Student 2: To my thinking, it is because I never kept any journals before. And in addition there is another affect. My parents ask what sort of teacher wants students

keep journals and tell me to give it up. They think we do it to spend time. Therefore I cannot keep journal.

Student 5: I kept my journal regularly...

Question 2: What benefits did you get by keeping science and technology journals?

Most of the students stated that keeping journals helped them to repeat their lessons, to express and share their feelings and ideas and improved the level of retention of their gained knowledge. One of the students declared that since he had always repeated his lessons daily, journal keeping had not proven useful for him. An interesting part of the students' answers is as follows:

Student 1: ...I repeated my lessons while writing a journal. After then, I realized that the things I wrote were also in my mind. Therefore I think the journal had no benefit for me at all.

Student 2: ...I think if I had kept a journal for this course, I would have remembered these subjects until the end of my life.

Student 3: First of all, it helped me a lot to repeat my lessons. Second, I can express my feelings to both my friends and my teacher clearly in the journal...

Student 4: Keeping a journal helps me in repeating my lessons because we learn by writing with it. Retention of knowledge with writing is far much better than learning by reading...

Student 5: ...Studying by writing is very helpful. I wrote both the formulae I learned in the lesson and my feelings and ideas.

Question 3: Do you think keeping science journals has any useless sides?

This question is replied positively by one student where the rest did not find anything non-useful about journals. The only interesting user reply is as follows:

Student 1: Repeating the lesson and keeping a journal are exactly the same. We do not need to write a journal to repeat them.

Question 4: What is your opinion about sharing your writings in your journal with your friends and your teacher?

Students think that teacher understood them better and they could share their feelings and ideas easily and clearly by using journals. An interesting part of the students' answers is as follows:

Student 1: ...Our journals let our teacher and friends recognize us closer and better...

Student 2: ...I like my teacher's reading our journals and telling us her comments.

Student 3: We write our feelings and ideas to the journal and that makes our teacher understand us better. We can also tell our feelings and opinions about our friends as well.

Student 4: ...I can express my ideas by writing. It is nice to share them.

Student 5: I share what I feel with the journal. My teacher reads it and tells me about her ideas on my writings...

Question 5: Do you wish to keep writing your science journal?

Four of the students replied this question positively where remaining one gave a negative answer. An interesting part of the students' answers is as follows:

Student 1: ...I think repeating what I learned is more useful than keeping a journal.

Student 3: ...I would like to. I wish our own teacher continued it.

Student 4: ...I wish we performed the same activity in other courses too...

Discussion

Integrity and correctness of the scientific concepts and gained practices of the students bear great importance. Teachers are always interested in what their students learn. They keep composing information about their students while continuing regular education activities. A teacher usually asks himself the question, "What did I teach today, what were my goals and which of them did I manage to achieve?" at the end of a day. They try to find out the answer to this question using different tests. These tests are usually paper-pen tests about the context of the functioned subject, but these tests, although proof of what students learned in the course, do not reflect all the dimensions the learning process (Korkmaz, 2004). When the fact that the students have different improvement and learning speeds is taken into consideration, questions arise about evaluating the efficiency of all students according to the same standardized tests. In this context, student journals--which have a dominant role in tracing and evaluating students' individual development and learning progresses--gain great importance.

The results of this study resemble the results of some other studies in the literature. For example, Ruiz-Primo et.al (1999) reached a conclusion that science journals can be used as reliable and valid assessment instruments. However, another study (Ruiz-Primo, Li and Shavelson, 2002), found that science journals were not utilized efficiently due to a lack of decent teacher feedback. Research performed at Purdue University (Utah State Office of Education, 2003) focused on the use of student journals as instruments of instruction, learning and assessment instruments. Research findings point out that student journals are very valuable instruments in instructional communication and literature techniques in the science course. Student journals also provided documentation to teachers for explorative learning and effective instruction of scientific concepts. Barton and Brown (1992) used student journals with nursing students to examine students' cultural learning and the changes in their sensitivity during the lesson. The findings of Goldenhar and Kues (2006) stress the value of the use of reflective journals in medical education process assessment.

Conclusion and Recommendations

In this study, student journals for a science and technology course and interviews of 7th grade students are evaluated. After the study, it was observed that 23.4 percent of the students kept their journals five-six times, 33.3 percent of them did three-four times, 26.6 percent of them did twice and 16.6 percent of them did just once during the six-week study. All students wrote journals at least once during the study. After inspecting the journals according to weeks, it is shown that the scores of the journals written in later weeks of the study were higher than prior weeks. The results of the interview performed during the final phase of the study indicates that most of the students liked keeping journals and the journals helped students make their ideas

more clear to the teacher, share their ideas and feelings, repeat the subjects and raise the level of knowledge retention.

Ajello (2000), states that keeping science journals has no strict rules but proposes advice for the beginning:

- Make your students write date and time in the journal. This helps you trace individual progress.
- Ask students questions to make them write their hypotheses and predictions of the experiments and discuss probabilities of future experiments.
- Make students keep and save their journals.

The addition of the science journals to the education process has many positive affects, but such an evaluation process loads extra responsibilities on the teacher. Because reading student journals and providing regular feedback are time consuming activities that require a teacher's time both in-class and out of class. In addition, in order to make students learn a regular writing habit, the teacher needs to spend extra motivation and support effort. In this study, most of the students had no intention or habit of journal writing, but as the education process advances and the researcher regularly supported feedback, students turned out to be more willing to write journals.

The course teacher may write journals from time to time and may share his writings in the lesson. This way, students may be encouraged. Student journals may be utilized not only in science and technology courses, but also in other courses. The researcher thinks that future studies about the use of student journals in other courses and the measurement of students' success, behavior and knowledge retention might contribute to the education literature.

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Fen ve Teknoloji Eğitiminde Öğrenci Günlüklerinin Kullanılması

(Özet)

Problem Durumu: Öğrencilerin gelişim ve öğrenme hızlarının farklı olduğu gerçeği dikkate alındığında, tüm öğrencileri aynı standardize edilmiş testlerle değerlendirmenin yeterliliği konusunda soru işaretleri oluşmaktadır. Bu bağlamda, öğretmenlerin öğrencilerin gelişim ve öğrenmelerini bireysel olarak sürekli şekilde takip edebilme ve değerlendirebilmelerine olanak sağlayan öğrenci günlükleri büyük önem kazanmaktadır.

Fen günlükleri, genel olarak öğrencilerin fen sınıflarında neler yaptıklarını yazdıkları kayıtlar olarak görülürler. Fen defterleri olarak da adlandırılan fen günlükleri, öğrencileri günlük fen sınıf deneyimlerinin doğal bir parçası olarak yazmaları için cesaretlendirir. Öğrenciler; çözmeye çalıştıkları problemleri, kullandıkları yönergeleri, yaptıkları gözlemleri, ulaştıkları sonuçları ve izlenimlerini bu sayede ifade edebilirler. Fen günlükleri öğretmenler için gelişimsel bir değerlendirme aracıdır. Fen günlükleri, öğrencilerin kavramsal ve prosedürel anlamalarının değerlendirilmesine ve performanslarını geliştirmek için ihtiyaç duydukları geri dönütlerin sağlanmasına olanak tanır. Bir değerlendirme aracı olarak kullanılmasının yanında, sınıf dışında, sadece öğrencilerin öğrenmeleriyle ilgili değil, aynı zamanda öğrencilerin aldıkları eğitimin niteliğiyle ilgili görüşleri konusunda da bilgi verir. Çoklu değerlendirme yaklaşımı kapsamında, fen günlükleri çabuk değerlendirme araçları olarak görülebilir. Çocukların fen öğrenmeleriyle ilgili bilgilerimizi genişletmek için, onların emsalleriyle etkileşimlerini, fen deneyimlerine yaklaşma yollarını ve oluşturdukları çizim, yazım ve anlamlandırmalarını çeşitli açılımlarla incelememiz gerekir. Bu noktada, öğrenci günlükleri ile eğitimciler, öğrencilerini farklı açılardan tanıma fırsatı yakalayabilirler.

Araştırmanın Amacı: Bu çalışma, fen ve teknoloji eğitiminde öğrencilerin fen günlükleri yazmalarının, öğrencilere sağladığı katkıların değerlendirilmesi ve eğitimciler için fen derslerinde günlüklerin kullanılmasına örnek teşkil etmesi amacı ile yapılmıştır.

Araştırmanın Yöntemi: Bu araştırma, 2005- 2006 öğretim yılı ikinci döneminde 30 ilköğretim 7. sınıf öğrencisi ile yapılmıştır. Çalışma, fen ve teknoloji dersinde “İş ve Enerji” konusunun işleme sürecini kapsayan 6 hafta devam etmiştir. Öğrenciler günlük yazma konusunda deneyimleri olmadığı için, araştırmacı tarafından bir ders saatini içeren bir sürede bilgilendirilmişlerdir. Bu aşamada öğrencilere nasıl günlük yazacakları, nelere dikkat edecekleri ve ne zaman yazacakları konusunda bilgi verilmiş ve öğrenciler derste örnek bir günlük yazarak ilk deneyimlerini kazanmışlardır. Araştırma sürecinde, öğrenciler haftada bir kere araştırmacının derste işlenen konu kapsamında verdiği bir konuyla ilgili günlük yazmışlardır. Günlükleri değerlendirmek amacı ile dört dereceden oluşan bütünsel bir dereceli puanlama anahtarı oluşturulmuştur. Dereceli puanlama anahtarındaki açıklamalar öğrencilerin, kelime hazinesini kullanma, bilimsel kavramları hatırlama ve bilimsel yöntem sürecini takip etme kriterlerine dikkat edilerek, çeşitli kaynaklardan yararlanılarak hazırlanmıştır. Dereceli puanlama anahtarı ile rasgele seçilen 20 öğrencinin fen günlüğü alan uzmanı üç araştırmacı tarafından değerlendirilmiştir. Puanlayıcılar arası güvenilirliği belirlemek için genellebilirlik analizi yapılmıştır. Yapılan analiz sonucunda genellebilirlik katsayısı 0,95 bulunmuştur. Araştırmanın sonunda gönüllü öğrencilerden rasgele seçilen 5’i ile grup görüşmesi yapılmıştır. Bu bağlamda araştırma nitel bir boyut kazanmıştır.

Araştırmanın Bulguları: Araştırmanın bulguları; öğrencilerin günlüklerinden elde edilen bulgular ve görüşmeden elde edilen bulgular olarak iki kısımda incelenmiştir. Öğrenci günlüklerinin değerlendirilmesi sonucu, 6 haftalık uygulama sürecinde öğrencilerin %23.3’ünün 5-6 kez günlük yazdığı, %33.3’ünün 3-4 kez günlük yazdığı, %26.7’sinin 2 kez günlük yazdığı ve %16.7’sinin yalnızca 1 kez günlük yazdığı görülmektedir. Tüm öğrenciler uygulama sürecinde en az bir kez günlük yazmıştır. Öğrencilerin günlüklerinde; dersle ilgili bilimsel kavram ve tanımları, yapılan deney ve gözlemleri, grup arkadaşlarıyla yaşadıkları sorunları, ders deneyimleriyle ilgili duygu ve düşünceleri, ders öğretmeni hakkındaki beğeni ve eleştirileri, bilimsel kavramların günlük yaşantılarına yansıyan örnekleri, derse yönelik bireysel performanslarıyla ilgili yorumlarını açık olarak ifade ettikleri gözlenmiştir. Ayrıca öğrencilerin günlüklerinde zaman zaman dersin konusuyla ilgili çizimler yaptıkları ve kavramları formüsel olarak ifade ettikleri görülmüştür. Yapılan görüşmelerden, öğrencilerin çoğunun dersle ilgili günlük yazmaktan hoşlandıkları, kendilerine fayda sağladıklarını düşündükleri ve daha sonraki derslerde de günlük tutmaya devam etmek istedikleri görülmüştür.

Araştırmanın Sonuçları: Bu çalışmada, ilköğretim 7. sınıf öğrencilerinin fen ve teknoloji dersinde tuttukları günlükler ve konu ile ilgili yapılan görüşmeler değerlendirilmiştir. Öğrenci günlükleri dereceli puanlama anahtarı ile değerlendirilmiştir. 6 haftalık uygulama sürecinde öğrencilerin çoğunun düzenli günlük tutmadığı belirlenmiştir. 1. hafta günlük yazan öğrencilerin puanlarının aritmetik ortalaması 2,5, 2. hafta 3,07, 3. hafta 3,2, 4. hafta 3,14, 5. hafta 3,66 ve 6. hafta 3,81 olarak hesaplanmıştır. Günlüklerin haftalara göre değerlendirme puanlarına bakıldığında, genel olarak uygulama sürecinin son haftalarında yazılan günlüklerin ilk haftalara oranla puanlarının daha yüksek olduğu görülmektedir. Araştırmanın sonunda öğrencilerle yapılan görüşme sonuçları; öğrencilerin çoğunluğunun günlük yazmaktan hoşlandığını, günlükler sayesinde öğretmenlerinin kendilerini daha iyi anladığını,

duygu ve düşüncülerini rahatça paylaşabildiklerini, derslerini tekrar etmelerinde ve öğrendiklerinin kalıcı olmasında onlara katkı sağladığını işaret etmektedir.

Öneriler: Fen günlükleri öğrencileri değerlendirme sürecinde geçerli ve güvenilir araçlar olarak kullanılabilir. Fen günlüklerinin, öğrencilerin duygu ve düşüncelerini rahatça paylaşabilmelerine, derste edindikleri bilgileri tekrar etmelerine ve öğretmen-öğrenci iletişiminin gelişmesine katkı sağlayacağı düşünülmektedir. Fen ve teknoloji derslerinde öğrenci günlüklerin kullanılması ile ilgili şu önerilerde bulunulabilir:

- Günlüklere tarih yazılması konusunda öğrencilere hatırlatmalar yapılabilir.
- Öğrencilerin günlüklerini muhafaza etmeleri sağlanabilir.
- Öğrenciler düzenli olarak günlük tutmaları konusunda teşvik edilebilir.

Ayrıca öğretmenin de zaman zaman günlük tutması ve yazdıklarını öğrencileriyle paylaşması öğrencileri günlük tutmaları konusunda teşvik etmede yardımcı olabilir.

Anahtar Sözcükler: Öğrenci günlükleri, fen ve teknoloji eğitimi, değerlendirme.

Development of Strategies for Coping with Stress Scale*

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Abstract

Problem Statement: People and their environment are in a complex interaction. This interaction changes gradually according to the steady changes of people and environments. This change affects both the person's stressful life and the ways to cope with stress, especially in adolescence, a stage with the most rapid change while growing up. One of the important factors causing stress is a person's difficulty adapting to rapid change. When literature is considered, different scales were developed for coping with stress in adolescence. Thus, new instruments on the basis of different approaches have to be developed in guidance services. The Strategies for Coping with Stress Scales (SCSS), developed in this research, are based on the flow theory. As a result, it was discovered that presenting effective ways of helping is very important.

Purpose of the Study: To develop the instrument which is based on the flow theory, to examine adolescents' levels of coping with stress.

Methods: Descriptive method was used in the study. The validity and reliability studies of SCSS were examined on 331 participants, including 172 girls and 159 boys, studying in high schools (ninth grade students) at central Ankara. The participants' ages ranged from 14-17 (M=15.53). The data were analyzed by SPSS. The structural validity of SCSS was examined by principle-components factor analysis. The criterion-related validity of the SCSS was examined by the Beck Depression Inventory (BDI). The reliability coefficients of the SCSS were examined by the Cronbach Alpha and test-retest (rxx) techniques.

Findings and Results: As a result of the data analysis, it was seen that the SCSS has three factors: Struggle (S), Personal Control (PC) and Active Contact with the Environment (ACE). The SCSS consists of 48 items. The criterion-related validity coefficients of the SCSS were $r = -.16$ (S); $r = -.23$ (PC); $r = -.57$ (ACE) and $r = -.40$ (total score). The Cronbach Alpha coefficients were $\alpha = .85$ (S), $\alpha = .83$ (PC), $\alpha = .81$ (ACE) and $\alpha = .88$ (total score). Test-retest correlations (a week later) of the SCSS were $r = .84$ (S); $r = .91$ (PC); $r = .84$ (ACE) and $r = .91$ (total score). In conclusion, the results of this study provided evidence that the scores on the SCSS demonstrated evidence for reliability and validity.

Conclusions and Recommendations: School counselors can determine the help needed for coping with stress for the ninth grade students with SCSS and can prepare school psychological counseling and guidance programs according to the student's needs. Researchers can also use SCSS to verify data on similar groups for their aims.

Keywords: Flow theory, coping with stress, adolescence, ninth grade students

* In this study, the data of the Dissertation carried out under the supervision of Prof. Dr. Uğur Öner are utilized.

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The stress conditions relevant to adolescence can be examined in three groups, namely "daily hassles", "developmental stress" and "major life events". When the relevant literature is examined (Yıldırım, 2004), it was discovered that the significant majority of the problems observed in adolescents were those related with "family," "friend," "educational life," and "wide environment." On the other hand, within this scope, the following factors took place: parents' indifference, parents' expectations, social and economic situation of the family, superficial friendship relations, unwanted behaviors of friends, boredom from educational life, complaints regarding education life, anxiety regarding success and future, time pressure, going to and returning from school and traffic and environmental noise.

According to research studies, the psychological symptoms of daily hassles are much more effective than "negative incidents of life" (Chamberlain & Ziko, 1990; Holahan & Holahan, 1987; Kanner, Coyne, Schaefer & Lazarus, 1981 in Yıldırım, 2004). These problems also play a critical role in the spread of stress and the development of certain symptoms by the individuals (Ledoux, 1989 in Yıldırım, 2004). School violence and violent actions are also among the major daily hassles. Csikszentmihalyi (1993) said one of the important reasons for actions such as stealing, disaster and violence is related to the rapid getaway of the schools to places of enjoyment, the reduction of the internal motivation toward education and the fact that the criminal behaviors are more enjoyable for the students than the activities presented by the schools.

Stress regarding development, on the other hand, originates from the rapid transformation process during adolescence. The fact that some of the adolescents do not develop a positive "body perception" of their rapidly transforming bodies and do not accept the new characteristics of their bodies is an important source of sorrow for them. The negative body perception remove the adolescents' attention and psychological energy away from academic activities and gives way to their moving away from the social mediums returning inward. During this period, the sexual energy and curiosity and interest toward the opposite sex increases. When the requirements in these subjects cannot be covered in a correct manner, this also leads to stress.

Another characteristic typical of this period is the fact that the adolescent becomes independent of the family and orientates toward his/her same age group. An adolescent's inability to gain a balanced independence from the family, inability to have a place among the same age group with positive characteristics and loneliness are important sources of stress for adolescents. In addition, the rapid development of the body not only motivates the adolescent's search of an identity, but also motivates him/her to have expectations about the future. Expectation for the future is an important source of stress for adolescents. For instance; a convenient academic program during secondary education, school, a decision on profession and the university entrance exam that plays an important role in this decision are all important sources of stress. Another source of developmental stress during adolescence is "self-centered" thinking. Any adolescent behaving with this type of thinking is conflicted with his/her environment and is entering into various risks.

Apart from all these, the level of academic class designates the pressure imposed by stress. Griffith, Dubow and Ippolito (2000), in their study carried out with adolescents in seventh, ninth and twelfth classes, discovered that in relation with coping with stress and in comparison with the other two classes, the ninth class students ap-

plied more strategies to refraining from stress. This outcome is a result of the addition of stress created by the transition of the level of school. The students forming the first step in the transition from the primary education to secondary education – ninth class students – are in the position to cover higher academic expectations which in turn increases the pressure imposed by stress (Geisthardt, 1996).

The researchers posited that the major stresses of the adolescence period are: Inter-personal relations (Tyszkowa, 1990; Kohn & Milrose, 1993; Oral, 1994), academic duties (Tyszkowa, 1990) and orientation to the future with increasing age (Stark, Spirito, Williams & Guevremont, 1989; Kohn & Milrose, 1993; Oral, 1994).

Not only is it impossible to completely eliminate stress, it is also a situation that is not wanted. In this issue, the important thing is to be able to “effectively” cope with stress. While the strategies to cope effectively with stress are developing and adaptation, the ineffective strategies adapted for coping with stress hinder development and harm psychological and physical health. Within the scope of the research, examining the relations between coping with stress in adolescents and psychological health, inferential relationships were observed between the strategy of refraining from the factors leading to stress (such as the attitudes of withdrawal, pretending as though unaware and fatalism) and high levels of depression and anxiety (Hess & Copeland, 2001). Refraining strategies are explained within the scope of relevant literature as ineffective ways of coping with stress. It is observed that the children and adolescents with psychiatric problems (Reinhard & Ott, 1994), depressive symptoms, low level of self-respect and social support (Chan, 1995) and those with weak social adaptation (Tolor & Fehon, 1987) adopt refraining strategies. The strategy of refraining from stress limits the adolescents’ interpersonal relationships and reduces their opportunities for developing themselves (Compas, 1987; Rice, Herman & Petersen, 1993). According to studies (Dryfoos, 1990; Kaplan, Dampousse & Kaplan 1994; Rumberger, 1987 in Hess & Copeland, 2001), the ability of students leaving high school without graduating to cope with stress is much lower than that of high school graduates; they have lower levels of psychological health and encounter economic, social and psychological problems throughout adolescence because of a lack of education.

In their research, Fad and Ryser (1993) found that students with academic success were far better than those with academic failure in their same age relations, strategies for coping with stress and study habits. Rice and others (1993) claim that the difficulties encountered in coping with the stresses related with the development stage originate from the inadequacy or non-conformance of individual characteristics and social support funds.

According to Offer, Kaiz, Howard and Benneth (1998), the understanding of how to cope with stress during adolescence helps explain the period of conformance in adolescence. Also, the method of coping with stress during adolescence helps improve psychological health during adulthood.

When the findings of the research are considered, how adolescents cope with stress also designates their psychological and physical health, academic success, level of attending lectures and their levels of adaptation in the future. When the adolescents are equipped with strategies to effectively cope with stress, they are expected to be in better situations in these areas. The designation of the strategies of

the adolescents for coping with stress via measurement tools developed using different theoretical opinions and thus the organization of preventive and improved services carry significance. When the relevant literature is examined, it is observed that certain measurement tools have been developed for investigating the strategies of the adolescents for coping with stress, by considering different theoretical opinions (Aysan, 1988; Oral, 2004). On the other hand, within the scope of this research, the SCSS developed for the adolescents at high school education stage was developed by considering Csikszentmihaly's (1990, 1993, 1996, 2000) flow theory. Coping with stress according to flow theory is summarized below.

Coping with Stress According to Flow Theory

Flow theory is a phenomenological-humanitarian theory developed by Csikszentmihalyi (1965). According to this theory, the most basic personal source in improving the quality of subjective experience is the power of "controlling the consciousness." The individual, with the help of this power, can select and attribute a new meaning to the motivators and can change the direction of their opinions, feelings and behaviors and abandon them upon becoming aware of their non-functional nature. As well, they can designate new goals in conformance with their selves and reorganize their lives. Control of the conscience is a skill that can be developed through education. Depending on the level of effective usage of this power, the responses put forward by the individuals against all kinds of stress (traumatic events, daily hassles, developmental stress) will differ. While certain individuals have losses due to stress, some gain power from the same stress. There are three basic methods for transforming stress into struggle (Csikszentmihalyi, 1990). These methods are summarized below:

Unself-conscious self-assurance. This is the situation when the individual believes that his/her personal resources will be adequate for designating his/her own fate. Any individual with such a belief is definitely self-assured, though strangely, the egos of such individuals are almost absent. In other words, they are not self-centered. Paradoxically, this feeling of tolerance—the individual's decision to reduce his/her objectives to second priority for the sake of a greater existence and become aware of the fact that he/she must conform to a series of different rules outside their own preference—is the most discriminative characteristic of the powerful individual.

Focusing attention on the world. When attention is completely focused toward the inner world, the majority of a person's psychic energy is consumed by the anxieties and desires of the ego and paying attention to the environment becomes extremely difficult. The individuals who know how to transform stress into a enjoyment struggle spare less time to focus inward. These individuals do not use their entire energy with trying to cover their personal requirements (genetic-based requirements—genetic teleonomy) or in relation to anxieties regarding socially-conditioned desires (cultural teleonomy). The attention of these individuals is always open for the sake of data processing of the environment.

The focus is designated by the objectives of the individual. Even though the outside events may not be directly related to the objectives desired by the individuals, their attention is in fact adequately alert to be aware of outside events and to conform to such events. The fact that the attention is focused outside the self has two positive effects. First, the probability of the disappointment of the individual

regarding his/her desires to cause dispersions in consciousness decreases. When the individual focuses on the events in his/her surroundings instead of focusing on internal disorder, the negative effects of stress decrease.

Secondly, the individual is a part of the environment. This situation provides the means for the individual to understand the characteristics of the environmental system within which he/she lives and thus he/she can find a better way to conform to a stressful situation.

Discovery of new solutions. With respect to this solution, there are two basic ways to cope with stress: First, the individual focuses on the hindrances and removes them from his/her way to realize his/her goals. Thus, the order of the consciousness can be rendered possible. Second, he/she changes his/her objectives; in other words he/she designates new objectives in conformance with his/her self.

The first step of providing effective help to the individuals within the scope of psychological counseling and guidance services is the studies related with the correct and detailed understanding of the individuals. With this study, the SCSS is developed based on the flow theory to assist the experts in more objectively understanding the adolescents and consequently to help more effectively. Below, the development stages of SCSS are explained in detail.

Methods

Sample

The validity and reliability studies regarding SCSS were conducted at the general high schools in Ankara's central counties (Çankaya, Mamak and Yenimahalle) on a total of 331 students attending the ninth classes (172 female and 159 male) and between the ages of 14-17. The ninth class students were selected as the sample because it was already verified in previous studies (Geisthardt, 1996; Griffith et al., 2000) that the stress of the ninth class students is more than that of the other students.

Implementation

At the first stage, a questionnaire was prepared by the researcher with the objective of designating the stress resources to take place within the scale, as well as the strategies for coping with these stresses. This questionnaire was applied to a total of 175 ninth class students at three high schools in the central counties of Ankara (2001-2002 education year spring semester). In this questionnaire, the students were asked to designate the problems they encountered in relation with their: 1) academic lives (courses, homework, exams, etc.), 2) social relations within the school (with managers, teachers and friends), 3) future lives, and 4) selves, as well as the level of importance of these problems and solution applied. Prior to giving the questionnaire to the students, the researcher forwarded a brief explanation regarding stress and coping with stress.

In the second stage, a list is formed of the problems defined by the students as "very important" with high frequencies and the solutions applied to these problems. In this list, the problems and strategies are combined and formed into single sentences. In other words, each item represents a stress source and the strategy regarding the said stress. The researcher added new item to this list, based on the flow theory. In the third stage, the 114 items obtained from the sample form were presented

to an expert group of seven persons from different disciplines (psychological counseling and guidance, measurement-evaluation and Turkish language experts), with the objective of obtaining their opinions regarding the convenience of the sample form with respect to flow theory, measurement-evaluation and Turkish language rules. In the fourth stage, corrections were made on the sample forms in accordance with the feedback obtained from the experts. The questionnaire was then applied to a total of 331 students attending ninth class at five general high schools in Ankara. As a result of this application, the factor structure of the scale and the factor loads of the items were examined on the data obtained. As a result of the investigation, the items with factor loading lower than .30 and those near to each other within different factors were discarded from the scale. The validity and reliability studies of the SCSS were carried out on the remaining 48 items.

Analysis of Data

The SPSS program was used in the analysis of the data. With the objective of determining with priority whether or not the data is convenient for factor analysis, the item-total correlations of each of the 114 items forming the scope of the SCSS were examined (Tavşancıl, 2002). As a result of this transaction, it was observed that there were a total of 66 items with items-total correlation coefficient values equal or greater than .20 and in the positive direction. With the objective of examining the structural validity and factor structure, exploratory factor analysis was adopted, while for factorizing technique the principle-components analysis (PCA) was applied. Within the scope of the analysis, the factor loadings, calculated variance rates and the scree graph/plot were analyzed. The factor loadings of the items were selected as minimum .30. With the objective of bringing the interrelated items together to form a factor and of better interpretation of the factors, the Varimax axis turning technique (rotation) was selected (Büyüköztürk, 2004). For the criterion-related validity, the BDI was used, and for the analysis of the data obtained from this application, the Pearson moment's multiplication correlation technique was used. The reliability coefficients of the scale were examined by the Cronbach Alpha and test-repetition test (rxx) techniques.

Findings and Results

Validity of the SCSS

The validity of the SCSS was examined in two ways: 1) factor analysis, 2) criterion-related validity. Prior to the application of factor analysis, the item-total correlation coefficients of each of the 114 items forming the scope of the SCSS were examined. The results of the SCSS item-total correlation analysis results are given below in Table 1.

Table I
SCSS Trial Form Item-Total Correlation Coefficient Analysis Results

Itm. No.	ITCC	Itm. No.	ITCC	Itm. No.	ITCC	Itm. No.	ITCC
1	.122	30	.253	59	.215	88	.190
2	.133	31	.092	60	.340	89	.290
3	.102	32	.071	61	.320	90	.181
4	.301	33	.258	62	.232	91	.271
5	.166	34	-.103	63	.267	92	.207
6	.175	35	.283	64	.420	93	.200
7	.236	36	.375	65	.245	94	.187
8	.012	37	.158	66	.112	95	.219
9	.089	38	.230	67	.319	96	.156
10	.120	39	.316	68	.326	97	.219
11	.041	40	.263	69	.214	98	.199
12	.238	41	.211	70	.207	99	.296
13	.187	42	.280	71	.261	100	.120
14	.198	43	.238	72	-.027	101	.324
15	.244	44	.371	73	.229	102	.285
16	.172	45	.268	74	.304	103	.250
17	.217	46	.119	75	.299	104	.094
18	.319	47	.312	76	.147	105	.202
19	.187	48	.189	77	.221	106	.216
20	.231	49	.230	78	.173	107	.225
21	.106	50	.306	79	.168	108	.241
22	.104	51	.236	80	.270	109	.103
23	.138	52	.415	81	.092	110	.318
24	.202	53	.331	82	.271	111	.164
25	.266	54	.177	83	.054	112	.090
26	.285	55	.345	84	.340	113	.182
27	.162	56	.121	85	.234	114	.249
28	.125	57	-.081	86	.153		
29	.223	58	.283	87	.068		

When Table 1 is examined, it is observed that the item-total correlations of 66 out of total 114 items range between .20-.42. Also, the item-total correlation coefficients for each of the 66 items were positive.

SCSS' factor analysis. Factor analysis was used to determine the structural validity of the SCSS. The PCI technique was applied to a total of 66 items with item reliability values equal to or above .20. Within the scope of the axial rotation analysis applied with the aim of providing independence, clarity and meaning to the factors, the varimax varimax technique was adopted (Büyüköztürk, 2004). Within the scope of

this application, items with factor loadings either equal to or above .30 and those items taking place within more than one item with factor loadings equal to and lower than .10 were discarded (Tavşancıl, 2002; Büyüköztürk, 2004). Until this criterion was rendered possible, factor analysis was applied to the SCSS items. As a result, a scale consisting of 49 items and three factors was obtained. In order to arrive at a powerful structure, the use of only those items with minimum item-total correlation values of .30 in the factor reliability analysis is accepted as a criterion. It was observed that the item-total correlation value of item 17 taking place within the scope of factor 3 was .28 and was discarded from the scale. When item 17 was discarded from the scale, factor analysis was re-applied to the remaining 48 items. In conclusion, a scale was obtained using a total of 48 items and three factors.

The researcher accepted three as the important factor number to be adopted in the factor analysis of the SCSS. Therefore, three factors were designated with eigenvalues above 1 and at the same time with the highest eigenvalue. In the scree graph drawn according to the eigenvalue found, reductions were observed among the factors until the fourth factor with high rates of decelerations. At the fourth and following factors, the general trend of the graph is horizontal and a significant reduction trend was not observed. In other words, the contributions of the fourth and the following factors to variance were indeed too close. This, in turn, is proof that the scale consists of three factors. The factor loadings values of the SCSS prior to and after transformation are given below in Table 2.

As seen in Table 2, the factor loading values of the SCSS prior to transformation range between -.35-.58. Following the application of the Varimax technique on SCSS, it was observed that factor 1 included 18 items and the factor loading values of these items ranged between .38-.62; factor 2 included 16 items and the factor loading values of these items ranged between .35-.63. Factor 3 included 14 items and the factor loading values of these items ranged between .36-.66. In the formation of the factor design, it is claimed that the factor loading values ranging between .30-.40 can be accepted as the lower limit (Scherer & Liebert, 1980; Cathell & Boggaley, 1960 in Tavşancıl, 2002). As can be seen in Table 2, the factor loading values of the SCSS prior to and after transformation were within the accepted limits.

When the variance levels are examined, it is observed that 11.58 percent of the total variance of factor 1, 10.35 percent of the total variance of factor 2, 9.08 percent of the total variance of factor 3 and 31 percent of the calculated total variance is explained by the variance value. By attributing respectively the given names to the factors of the SCSS—first factor “struggle” (S); second factor “personal control” (PC) and third factor “active contact with environment” (ACE)—the three sub-scales are defined below.

1. *Struggle sub-scale.* Struggle, in its broadest meaning, stands for the “effective effort” of an individual against any present or probable stress. When the articles forming the scope of the struggle strategy sub-scale are examined, it is shown that the struggling individual “designates his/her aims in a realistic manner” (items 1 and 37), and indicates “resilience” (items 7, 13, 16, 19, 22, 24, 41, 43, 45 and 46), “optimistic” (items 4, 34, 36 and 39) and “socially concerned” (items 27 and 30) behaviors. In addition, factor analysis was not applied to the struggle lower level and the articles within the scope of this sub-scale were grouped according to their similarities and named accordingly.

Table II
SBSÖ's Factor Analysis Results

Item No.	Factor loading values prior to transformation	Transformed Factor loadings Values		
		Factor 1	Factor 2	Factor 3
63	.461	.623		
85	.404	.602		
70	.454	.578		
80	.479	.564		
106	.469	.563		
89	.503	.557		
91	.524	.554		
107	.483	.530		
42	.444	.529		
50	.423	.512		
69	.456	.488		
36	.537	.486		
71	.459	.474		
114	.413	.451		
53	.537	.451		
55	.536	.450		
41	.449	.416		
84	.422	.377		
29	-.520		.630	
44	.569		.599	
47	.580		.586	
18	.555		.584	
64	.617		.538	
52	.494		.503	
4	.487		.500	
45	.385		.499	
38	-.351		.496	
25	.486		.489	
68	.459		.476	
51	.383		.456	
60	.472		.411	
65	.374		.405	
12	.391		.347	
33	.393		.346	
43	.562			.656
30	.567			.644
59	.566			.600
82	.545			.580
15	.497			.576
92	.493			.552
24	.446			.544
99	.451			.517
35	.500			.509
97	.397			.507
105	.464			.503
77	.456			.459
20	.440			.401
61	.406			.363
Calculated variance		11.58%	10.35%	9.08%
Calculated total variance after transformation: 31%				

2. *Personal control sub-scale.* This is related to the re-organization of the feelings, opinions and behaviors to adapt to the current situation by taking realities into consideration, instead of opposing the reality in which the individual lives (such as school regulations, academic and social issues), disregarding realities and being self-centered. From the viewpoint of flow theory, it can be said that the individuals able to realize personal control at the highest possible level can also control their consciousness at the highest possible level.

3. *Active contact with environment sub-scale.* This is related to how the individual focuses his/her attention on environmental elements (such as academic and social issues) with self-confidence and effectively involves in such elements. From the viewpoint of flow theory and when it is considered that concentrating on feelings such as anxiety, fear, distrust against self resources and despair leads to a loss of concentration regarding the environment, it is expected that the individuals who lose effective contact with the environment can “focus their attention toward themselves” and can behave in conformance with refraining strategies. From the viewpoint of the flow theory, the individuals able to realize an effective contact with the environment at the best possible level can at the same time control their conscience at the best possible level.

SCSS criterion related validity. As a second proof regarding the validity of the SCSS, the criterion-related validity method was adopted. Then, the SCSS and BDI (adapted to the Turkish society by Şahin-Hisli, 1988-1989 in Savaşır & Şahin, 1997) was applied at Ankara’s four general high schools on a total of 308 ninth class students (153 females and 155 males). The correlation coefficients of the SCSS were as follows: $r=-.40$ for the entire scale, $r=-.16$ for S, $r=-.23$ for PC and $r=-.57$ for ACE. The correlation coefficients regarding the entire scale—including the sub-scales—are meaningful ($p<0.01$).

Reliability of SCSS

SCSS’ Cronbach Alpha coefficients (internal consistency) are calculated by the Pearson moment’s multiplication correlation technique. As for the Alpha coefficients of the SCSS, the values are as follows: $\alpha=.88$ for the entire scale, $\alpha=.85$ for S, $\alpha=.83$ for PC and $\alpha=.81$ for ACE. The Alpha coefficients for the entire scale as well as for the sub-scales are at the level of $p<0.01$ and are meaningful.

The SCSS is applied twice in one-week intervals to the total 115 adolescents in the ninth class of the three general high schools at Ankara to calculate the rxx coefficients. The reliability coefficients discovered are as follows: for the entire SCSS $r=.91$; for S $r=.84$; for PC $r=.91$; for ACE $r=.84$, while they are all at the level of $p<0.01$ and are meaningful. In order to claim that the scale of an attitude is reliable, it is necessary for the calculated correlation coefficient to be positive and at least of a value of .70 (Fink & Kosecoff, 1985; Anastasi, 1988 in Tavşanlı, 2002). The rxx values of the scale are within the accepted limits.

In addition to the above-dictated reliability measurements, the rxx reliabilities of the SCSS among the items were also calculated. As a result of the rxx reliability analysis of the SCSS between the items, it was observed that the correlation coefficients of the entire items range between .31 and .66 and are in the positive direction. Also, the correlation coefficients of all the items are at the level of $p<0.01$ and are meaningful.

Conclusions and Recommendations

The results obtained in relation to the validity and reliability of SCSS, studies clearly indicate that the SCSS can be used to measure the levels of the adolescents' strategies for coping with stress. Within the scope of the SCSS, there are a total of 48 items and three sub-scales. In the S sub-scale, a total of 18 (1, 4, 7, 13, 16, 19, 22, 24, 27, 30, 34, 36, 37, 39, 41, 43, 45, 46), in the PC sub-scale a total of 16 (2, 5, 8, 10, 11, 14, 17, 20, 25, 28, 29, 31, 33, 38, 40, 48), and in the ACE sub-scale a total of 14 (3, 6, 9, 12, 15, 18, 21, 23, 26, 32, 35, 42, 44, 47) articles take place. Again within the scope of the scale, a total of 17 items (2, 3, 6, 9, 10, 12, 15, 18, 20, 21, 23, 26, 31, 32, 35, 42, 44) are present that are reversed. The scale includes five alternatives. The participants select the degree convenient for them in front of the articles and respond with an (X) sign. Opposite the presence of direct articles, the reversed articles are graded from the reverse side. The maximum amount of points that can be obtained from the entire scale was 240, while the minimum amount of points was 48. Within the scope of the entire scale and the sub-scales, high points indicate that the level of the individual in effectively coping with stress is indeed high. The SCSS—since it is based on the strategies for coping with stress arising from development and for controlling consciousness—is at the same time a scale for proactively coping with stress.

The culture within which the individuals live determines the stress and the strategies for coping with the stress. The SCSS, due to the fact that it was developed within the Turkish culture, puts forth the stress of the adolescents living within the Turkish culture and their strategies for coping with the stress. Apart from this, since the SCSS is developed by utilizing the flow theory, it is observed that as the level of coping with stress increases, the level of effectively controlling the consciousness of the students in their academic and social interactions also increases.

Psychological counselors, psychologists and psychiatrists can utilize the SCSS in determining the problems such as low level of internal motivation, failing to create realistic objectives, exhaustion, pessimism, social indifference, anxiety to be evaluated negatively by others and lack of self-confidence and in finding effective solutions to such problems. They also can use the SCSS in recognizing the problems frequently encountered during adolescence such as negative body image and self-centered behaviors and in finding effective solutions to such problems.

The psychologic counselors at schools can determine the students with low levels of coping with stress with the help of the SCSS. They also can prepare and implement a "group program" for all students, related to coping with stress. They can make use of the package program (Aydın, 2006) prepared for the purpose. They can also reorganize the school psychological counseling and guidance programs according to the students' requirements.

The researchers can investigate the correlation of the SCSS with other scales that measure the variables regarding flow experience, adaptation to school, school satisfaction, school success and psychological health.

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Stresle Başa Çıkma Stratejileri Ölçeğinin Geliştirilmesi

(Özet)

Problem Durumu: Birey ve çevre karmaşık bir etkileşim içindedir. Bu etkileşim de birey ve çevrenin sürekli değişimine bağlı olarak zamanla değişmektedir. Bu değişim, bireylerin stres yaşantılarını ve stresle başa çıkma yollarını da etkilemektedir. Özellikle ergenlik, gelişim sürecinde en hızlı değişimin olduğu bir evredir. Stresle başa çıkma konusunda önceki araştırmalar değerlendirildiğinde, strese neden olan önemli etkenlerden birinin, hızlı değişim olduğu görülmektedir.

Ergenlik, hızlı bedensel büyümenin, kimlik kazanımının gerçekleştiği, eğitsel ve mesleki kararların verildiği, gelecek yöneliminin, artan cinsel ve fiziksel enerjiyi kontrol etmenin, ailenin ve okulun ergenden beklentilerinin arttığı, aileden dengeli bir bağımsızlığın sağlanmasının önemli hale geldiği çocukluktan yetişkinliğe bir geçiş evresidir. Geçiş evreleri stres vericidir. Yeni bir gelişim evresinin fiziksel, duygusal, sosyal, eğitsel ve mesleki gelişim görevlerini karşılamaya çalışmak, ergenlerde farklı düzeylerde strese yol açmaktadır. Bu tür gelişimsel stres yaşantılarına gündelik sıkıntılar ve travmatik stresler de eklendiğinde ergenlere sunulabilecek yardımların önemi daha iyi anlaşılabilir. Bunun yanı sıra, ilgili araştırmaların ve kuramsal görüşlerin de ortaya koydukları gibi, ergenlik dönemine uyum düzeyi, yetişkinlikteki uyum düzeyini belirleyici olmaktadır.

Ergenlere etkili yardımlar sunmanın temel basamağı, onları doğru ve ayrıntılı bir biçimde tanımadır. Bireyi doğru ve ayrıntılı bir biçimde tanımanın etkili bir yolu ise,

farklı kuramsal görüşleri temel alan geçerlik ve güvenilirliği sağlanmış birden fazla ölçme aracı kullanılmaktadır.

Alan yazın incelendiğinde, ergenlik dönemine özgü ve farklı kuramsal görüşlere dayalı stresle başa çıkma stratejileri ölçeklerinin geliştirildiği görülmektedir. Bu araştırma kapsamında geliştirilen Stresle Başa Çıkma Stratejileri Ölçeği (SBSÖ) ise, akış kuramı (flow theory) temel alınarak Türk kültüründe yaşayan ergenler üzerinde geliştirilmiştir. Akış kuramı stresle başa çıkmada en temel kişisel kaynak olan bilinci kontrole dayalı stratejiler öne sürmektedir.

Bu araştırma 9. sınıfta öğrenim gören ergenler üzerinde yapıldı. Alan yazın incelendiğinde, sınıf düzeyinin stres yaşantılarını etkilediği, özellikle de 9. sınıfın diğer sınıf düzeylerine göre stres yükünün daha yüksek olduğu görüldü. 9. sınıf ilköğretimden ortaöğretime geçiş düzeyidir. Bu düzeyde gelişimsel strese okul geçişinin yarattığı stres de eklenmektedir. Okulun ve ailenin ergenden beklentileri, ergenin bireysel sorumluluğu bir önceki döneme göre daha da artmaktadır. Tüm bunlar bu araştırmanın önemini ortaya koyar niteliktedir.

Araştırmanın Amacı: Ergenlerin stresle başa çıkma düzeylerini ölçmek amacıyla akış kuramını temel alan bir ölçme aracı geliştirmektir.

Araştırmanın Yöntemi: Bu araştırmada betimsel yöntem kullanıldı. SBSÖ'nün geçerlik ve güvenilirlik çalışmaları, Ankara'nın merkez ilçelerindeki genel liselerin 9. sınıfında öğrenim gören 14-17 yaşları arasındaki 331 (172'si kız, 159'u erkek) öğrenci üzerinde yapıldı. Veriler SPSS programında analiz edildi. SBSÖ'nün yapı geçerliği temel bileşenler analizi ile; ölçüt bağımlı geçerliliği ise Beck Depresyon Envanteri ile incelendi. SBSÖ'nün güvenilirliği Cronbach alpha ve test-tekrar test (rxx) teknikleriyle incelendi.

Bulgular ve Sonuçlar: Verilerin analizi sonucunda, SBSÖ'nün üç faktörlü olduğu görüldü. Bunlar: Mücadele (M), Kişisel Kontrol (KK) ve Çevreyle Etkin Temastır (ÇET). Mücadeleci bir birey, amaçlarını gerçekçi bir biçimde belirlemekte, yılmaz, iyimser ve sosyal ilgili davranmaktadır. Kişisel kontrollü bir birey, içinde yaşadığı dış dünyanın gerçekleri doğrultusunda duygu, düşünce ve davranışlarını yeniden düzenleyebilmektedir. Çevreyle etkin temasta bulunabilen bir birey, akademik, sosyal vb. konulara aktif olarak katılmakta ve bunlara dikkatini yoğunlaştırabilmektedir. Stresle başa çıkma stratejilerinin tümü, uyarıcıları yeniden anlamlandırmaya, bilişleri etkin kullanmaya ve öz güvene dayalı problem çözme yollarıdır.

SBSÖ, 48 maddeden oluşmaktadır. Ölçeğin ölçüt bağımlı geçerlik katsayıları, $r = -.16$ (M), $r = -.23$ (KK), $r = -.57$ (ÇET) ve $r = -.40$ (tüm ölçek)'dir. Cronbach Alpha katsayıları, $\alpha = .85$ (M), $\alpha = .83$ (KK), $\alpha = .81$ (ÇET) ve $\alpha = .88$ (tüm ölçek)'dir. Ölçeğin bir hafta arayla yapılan test-tekrar test sonuçları, $r = .84$ (M), $r = .91$ (KK), $r = .84$ (ÇET) ve $r = .91$ (tüm ölçek)'dir. SBSÖ'nün, geçerlik ve güvenilirliğine ilişkin elde edilen tüm bulgular, benzer grupta uygulanabilecek güçte olduğunu gösterdi.

Ölçeğin toplamından alınabilecek en yüksek puan 240, en düşük puan ise 48'dir. Ölçeğin tamamında ve alt ölçeklerde yüksek puan, bireyin stresle etkin başa çıkma düzeyinin yüksek olduğunu göstermektedir. SBSÖ, gelişimsel stres yaşantılarını ve bilinci kontrole dayalı stresle başa çıkma stratejilerini temel aldığı için olası stres yaşantılarına karşı da önceden hazırlayıcı (proactive coping) nitelikte bir ölçektir.

Öneriler: Psikolojik danışmanlar, psikologlar ve psikiyatrlar; içsel motivasyon düşüklüğü, gerçekçi amaç belirleyememe, yılgınlık, kötümserlik, sosyal ilgisizlik,

bařkaları tarafından olumsuz deęerlendirilme kaygısı ve öz güven eksiklięi gibi sorunları belirleme ve bunlara etkili cözümler bulmada SBSÖ'yü kullanabilirler. Ergenlik döneminde sıkça gözlenen olumsuz beden imgesi, tepkisel, ben-merkezci davranıřlar gibi sorunları belirleme ve bunlara etkili cözümler bulmada SBSÖ'yü kullanabilirler. Okul psikolojik danıřmanları, SBSÖ aracılıęıyla 9. sınıf öęrencilerinin stresle bařa çıkmaya iliřkin yardım gereksinimlerini belirleyebilirler; okul psikolojik danıřma ve rehberlik programlarını öęrencilerin gereksinimleri yönünde yeniden düzenleyebilirler.

Arařtırmacılar, benzer gruplar üzerinde SBSÖ'nün, akıř yařantısı (flow experience), okula uyum, okul doyumunu, okul bařarısı ve ruh saęlıęı deęiřkenlerini ölçen ölçeklerle iliřkisini inceleyebilirler.

Anahtar Sözcükler: Akıř kuramı, stresle bařa çıkma, ergenlik dönemi, dokuzuncu sınıf öęrencileri.

Validity and Reliability Study of the Mathematics Anxiety Scale involving Teachers and Prospective Teachers *

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Abstract

Problem Statement: Mathematics is a significant part of education throughout the world. The nature of mathematics typically induces anxiety. Mathematical anxiety can be defined as an "irrational dread of mathematics that interferes with manipulating numbers and solving mathematical problems within a variety of everyday life and academic situations." The most significant issue related to the determination of mathematics anxiety is the development of tools that measure this anxiety. There are those who have attempted to measure mathematics anxiety with tools based on self-report techniques, like other personal characteristics. In this scope, while there are various measurement tools, mathematical anxiety scales developed in different scopes (daily life, professional life, etc.) for different samples (children, adults, etc.) are still required. For this reason, the problem of research is that there is no mathematics anxiety scale developed for teachers and prospective teachers who must use mathematics in their professional life for different purposes and on different levels.

Purpose of Study: Considering the state of the problem, the aim of this research is to develop a tool that measures mathematics anxiety in teachers and prospective teachers.

Methods: In this study designed to develop a mathematics anxiety scale in teachers and prospective teachers, factor analysis and discrimination analyses in the scope of validity studies and item remainder analyses and internal consistency analyses in the scope of reliability analyses were calculated.

Findings and Results: As a result of the research, a mathematical anxiety scale composed of 39 items and seven sub-scales and explaining 59.23% of the total variance was developed. Since the scale relates to teachers and prospective teachers, it is called MAST (Mathematics Anxiety Scale toward Teachers). Sub-scales included in the scale were named Mathematics Understanding Anxiety, Mathematics Teaching Anxiety, Problem Solving Anxiety, Arithmetical Operations Anxiety, Mathematical Self-Adequacy Anxiety, Mathematical Interpretation Anxiety, Making Mathematical Mistakes Anxiety. Cronbach α internal consistency coefficient of the whole scale was found to be .95.

* This study is developed based on part of a graduate thesis Developing Mathematics Anxiety Scale Toward Teachers and Prospective Teachers and An Evaluation About Mathematics Anxiety by Ipek Uldas (2005).

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Considering the results obtained, it is understood that MAST is a valid and reliable tool used to determine mathematics anxiety of teachers and prospective teachers.

Recommendations: MAST can be used in researches to be conducted to determine mathematical anxiety of teachers and prospective teachers in different fields.

Keywords: Mathematical anxiety, mathematical anxiety scale, teachers, prospective teachers

Mathematics is not only a significant part of education throughout the world, it also, due to its nature, often creates anxiety. It can also be said that factors related to the environmental, cognitive and personal characteristics of mathematical anxiety are among the popular study objects that have been engaged by education psychologists and mathematics educators for years. While mathematical anxiety is considered to be a sub-type or form of test anxiety, a sufficient degree of conceptual and experimental reasons were introduced for not considering these two equivalents through researches held. Richardson and Woolfolk (1980) stated that it is most meaningful to conceptualize mathematical anxiety as a response displayed against all sorts of mathematical contents (numbers, concepts, definitions) and mathematical operations encountered in numeric tests and examinations in which the mathematical skills of people are evaluated intensively.

Mathematical anxiety is defined as an "irrational dread of mathematics that interferes with manipulating numbers and solving mathematical problems within a variety of everyday life and academic situations (Buckley & Ribordy, 1982). Similarly, mathematical anxiety is also defined as a state of anxiety emerging in the nature of a response against all sorts of situations containing mathematical tasks which are perceived as threatening to self-esteem (Cemen, 1987). These feelings of anxiety can lead to an emergence of feelings such as panic, excitement, tension, helplessness, fear, distress, shame, inability to cope, as well as many physiological symptoms like sweaty palms, nervous stomach, difficulty breathing, and loss of ability to concentrate (Cemen, 1987; Posamentier & Stepelman, 1990). Academic success and career preferences of people having this anxiety are restricted by the negative impacts of the anxiety.

The reasons for mathematical anxiety were dealt with by researchers in three dimensions: environmental, mental and personal (Cemen, 1987; Dossel, 1993; Hadfield & Mc Neil, 1994; Levin, 1995; Miller & Mitchel, 1994; Tobias, 1990). Baloğlu (2001) made this classification as situational, individualist and personal reasons by benefiting from relevant researches. In both classifications, the similarity of content draws attention. Negative experiences occurring in class, family pressure on students, teachers who are insensitive towards students and inadequate in their fields, prejudices emerging concerning mathematics in time (such as introducing mathematics as strict rules whole in the eyes of students beginning in their early years of education) and teacher-oriented class environments in which students who are passive, can be listed as environmental factors. Mental factors can be listed as a non-overlapping learning style of students and teaching methods, students' attitudes, easily backing down, lack of motivation, wrong ideas and prejudices developed by students about their mathematical ability, low degree of self-value in students, lack of self-confidence, and a way of thinking suggesting that mathematics is not required. Personal factors can be listed as abstaining from asking questions in class, shame, shyness, lack of self-confidence, and prejudices like considering mathematics to be a field in which only males can be successful.

It is observed that anxiety is usually not a general characteristic which can be measured through tests, but a behavior which emerges in cases of certain stimulants. This

characteristic was required to be evaluated only after accepting that anxiety is a characteristic belonging to people and is a different dimension of personality. Especially in circumstances where individuals cannot cope with anxiety, psychotherapy is applied in order to reveal sources of conflict-causing anxiety. However, since measuring any characteristic in a wide group of people would be financially excessive, the anxiety dimension was also attempted to be measured through the self-report technique as another personal characteristic. In this context, various difficulties can be encountered while measuring mathematical anxiety. When we examine the scales oriented to the determination of mathematical anxiety, Baloğlu (2005: 9) emphasized that the scale that is most often used, translated and adapted in many languages is the Mathematical Anxiety Rating Scale (MARS) developed by Richardson and Suinn (1972). Another form of this scale which can be applied to adolescents was developed separately (MARS-A). Suinn and Edwards (1982) stated that validity and reliability studies of these scales were limited or did not exist during the initial periods when mathematical anxiety scales started to be developed. However, it is understood that validity and reliability studies have become more important in time. There are limited efforts oriented to adaptation (Baloğlu, 2005) and development (Erol, 1989) of different mathematical anxiety scales in Turkey. However, mathematical anxiety remained a sub-scale of the attitude scale developed (Mathematics Attitude Scale - MAS) instead of being measured with an independent scale in the study of Erol (1989) within the context of these efforts. The mathematical anxiety sub-scale was not included in the scale because the results of validity and reliability studies conducted in a "short form" study held by starting from this scale by Nazlıçipek and Erkin (2002) later. Starting from these rationales, it is understood that the development of scales which will introduce mathematical anxiety with its different dimensions and oriented to sections having different characteristics (age, occupation, etc.), is still required. This study aims to develop a mathematical anxiety scale especially related to teachers and prospective teachers.

Method

Study Group

1568 persons (502 teachers and 1066 prospective teachers) participated in the validity and reliability studies. Teachers in the study group (male n:190, 38%; female n:312, 62%) were from a total of 16 schools including two primary and two secondary schools selected from each of four districts of Istanbul (Kadıköy, Fatih, Maltepe, Beşiktaş). Prospective teachers were composed of students attending different departments of Marmara University, Atatürk Faculty of Education (male n:458, 43%; female n:608, 57%). When distribution of the whole study group according to sex was examined, it is understood that males represented 41% (n=648) and females represented 59% (n=920). Sixty-four percent of teachers were working in public schools and 36% in private schools. It was detected that the average age of teachers was 38.1 (min: 22, max: 63), and that of prospective teachers was 20.6 (min:17, max:38). Teachers were grouped in between "one year" to "43 years" in terms of experience working in the profession and it is seen that the average number of working years was 14.7.

Gathering and Analyzing the Data

An item pool containing 75 statements was created by benefiting from relevant resources and specialists' opinions within the context of the development of MAST. Having the opinions of 20 specialists in the field of Primary and Secondary Mathematics Education, Psychological Consultancy and Guidance, Measurement and Evaluation, and Turkish Language and Literature, the content validity of items was determined. Opinions of

specialists on the validity of each item were received with a 4-level rating scale as (4) very conformable, (3) conformable, (2) must be analyzed and (1) should be removed from the test. Twelve items, which 10% of the specialists were not in agreement with, were deleted. Factor analysis (varimax rotating) was applied to the remaining items as a result of specialist opinions in order to determine construct validity. The correlation between sub-scales emerged and the total of sub-scales with each other were analyzed in order to support construct validity. In addition, item discrimination of the whole scale, sub-scales and items included in the scale was analyzed separately, and "criterion validity in scope of internal criterion" of the scale was tested (Tezbaşaran, 1996, p. 50). Correlations between the whole scale and sub-scales and among sub-scales were tested with Pearson Product Moment Correlation analysis and discriminations were tested with independent group t-test applied to upper and lower 27% of the groups.

In the determination of the reliability of the scale, item remainder analyses were applied to the items respectively in the whole scale and in sub-scales and Cronbach α internal consistency coefficients were calculated.

Evidences and Results

Validity studies. The 75 item pool was evaluated in the direction of specialist's opinions and 12 items on which sufficient compromise was not obtained were removed from the scale. In so doing, there remained 63 items in the scale for statistical validity and reliability studies. At the beginning of factor analysis, the Kaiser Meyer Olkin (KMO) sampling conformity test was conducted "in order to determine whether sampling data is conformable to extract factor" (Şencan, 2005, s. 384). KMO value was found to be .969. It is understood that this is a "perfect" value since it must be greater than .90 in order to continue factor analysis of the value found. (Şencan, 2005, s. 384). Moreover, it was tested whether or not the correlation matrix is an identity matrix by using the Bartlett sphericity test, and the value obtained ($\chi^2= 30069,1 - p<.01$) was determined to be significant. This result means that factors can be extracted from the correlation matrix. Any limitation was not applied in the factors number while beginning the factor analysis; the eigen value was determined to be one, and seven factors having an eigen value over one emerged as a result of analyses.

Table I
Variance Ratios Explained by Factors of MAST

Factors	Eigen values	% of Variance	Cumulative variance (%)
1st factor	5.22	13.37	13.37
2nd factor	4.39	11.26	24.63
3rd factor	3.11	7.93	32.60
4th factor	2.76	7.07	39.67
5th factor	2.71	6.94	46.61
6th factor	2.52	6.46	53.07
7th factor	2.40	6.16	59.23

As you can see in Table 1, the first factor having an eigen value of 5.22 explains 13.37% of the total variance by itself. The amount of total variance explained was found to be 59.23%.

Table II*Rotated Filtered Factor Loads Related to Items of MAST Factors*

Item	1st Factor	2nd Fator	3rd Factor	4th Factor	5th Factor	6th Factor	7th Factor
53	0.712						
32	0.657						
54	0.657						
36	0.650						
39	0.647						
37	0.607						
50	0.520						
56	0.505						
52	0.490						
45		0.666					
11		0.617					
46		0.612					
43		0.591					
29		0.573					
47		0.562					
10		0.520					
26		0.500					
63			0.801				
33			0.786				
49			0.705				
60			0.563				
7				0.685			
8				0.630			
4				0.516			
31				0.510			
35				0.507			
9					0.741		
2					0.736		
15					0.651		
55					0.634		
16					0.435		
61						0.721	
62						0.576	
51						0.550	
57						0.517	
20							0.693
18							0.680
48							0.619
58							0.538

Factor loads of items belonging to MAST are presented in Table 2. Starting from the rule that factor load of an item must be at least .40 in order to determine whether or not it is related to the conceptual structure (Şencan, 2005, s. 391); minimum values for item factor loads were also accepted as .40 in this research. While initial results of factor analysis are analyzed, 24 items having a factor load value below .40 or having a high load value in multiple factors were removed from the scale, and factor analysis was repeated. MAST composed of seven factors and 39 items were finalized as a result of factor analysis.

As seen in Table 2, nine items remained in the 1st sub-scale, eight in the 2nd sub-scale, four in the 3rd sub-scale, five in the 4th sub-scale, five in the 5th sub-scale, four in the 6th sub-scale and four in the 7th sub-scale as a result of factor analysis. These sub-scales were determined to be Mathematics Understanding Anxiety, Mathematics Teaching Anxiety, Problem Solving Anxiety, Arithmetical Operations Anxiety, Mathematical Self-adequacy Anxiety, Mathematical Interpretation Anxiety, and Making Mathematical Mistakes Anxiety by taking the contents of each item into account. In another analysis conducted in the scope of validity studies to support construct validity, the correlation coefficient of MAST with other sub-scales and sub-scales with other was calculated and correlations were found to be significant on $p < .01$ level. It was understood that correlation coefficients between the total scale and sub-scales differ between .56 and .91, and correlation coefficients between sub-scales differ between .15 and .79.

As seen in Table 3, it is understood that points obtained by 27% upper group and 27% lower group from all items included in the scale differentiate as significant on $p < .01$ level as a result of discrimination analyses applied on the items forming MAST. The results obtained show that all items in the scale are discriminating. Discrimination analyses held oriented to the items were also applied oriented to points obtained from the whole scale and sub-scales. It was understood as a result of analyses held that total points obtained by 27% upper group and 27% lower group from the scale constitute a significant difference on $p < .01$ level. These results show that sub scales discriminate as well as individual items.

Reliability studies. Item remainder analyses were applied on items of the scale emerged as a result of factor analyses. As a result of item remainder analyses, it was determined that all items, excluding the 2nd item, are significant on $p < .01$ level. Since the number 2 item included in the mathematical self-adequacy anxiety scale doesn't have a significant correlation with the value it obtained and the total scale, it displayed a structure which can be extracted from the scale. However, the decision of extracting the item from the scale was delayed in order to evaluate the results of later analyses. Item remainder analyses were also held in the scope of sub-scales. The correlation of scale points of items included in sub-scales has a significance on $p < .01$ level. A significant relationship was found in the sub-scale; the number 2 item created a problem concerning its correlation with the whole scale.

Table III*Independent Group t-test applied in Item Average Points of Lower and Upper Groups of MAST*

Item	Group	n	x	sd	df	t*	Item	Group	n	x	sd	df	t*
2	l.g.	423	1.00	0.00	844	101.06	43	l.g.	423	1.00	0.00	844	102.85
	u.g.	423	3.44	0.50				u.g.	423	3.31	0.46		
4	a.g.	423	1.00	0.00	844	50.62	45	l.g.	423	1.32	0.47	844	85.32
	u.g.	423	2.57	0.64				u.g.	423	3.83	0.38		
7	a.g.	423	1.00	0.00	844	37.37	46	l.g.	423	1.00	0.00	844	90.51
	u.g.	423	2.23	0.67				u.g.	423	3.20	0.50		
8	l.g.	423	1.00	0.00	844	69.91	47	l.g.	423	1.00	0.00	844	105.84
	u.g.	423	3.03	0.60				u.g.	423	3.26	0.44		
9	l.g.	423	1.00	0.00	844	100.94	48	l.g.	423	1.00	0.00	844	100.73
	u.g.	423	3.44	0.50				u.g.	423	3.42	0.49		
10	l.g.	423	1.00	0.00	844	81.97	49	l.g.	423	1.00	0.00	844	51.17
	u.g.	423	3.09	0.52				u.g.	423	2.96	0.79		
11	l.g.	423	1.09	0.28	844	85.56	50	l.g.	423	1.00	0.00	844	51.37
	u.g.	423	3.47	0.50				u.g.	423	2.65	0.66		
15	l.g.	423	1.13	0.34	844	78.99	51	l.g.	423	1.00	0.00	844	53.09
	u.g.	423	3.43	0.50				u.g.	423	2.81	0.70		
16	l.g.	423	1.20	0.40	844	75.88	52	l.g.	423	1.00	0.00	844	102.30
	u.g.	423	3.55	0.50				u.g.	423	3.32	0.47		
18	l.g.	423	1.02	0.14	844	99.05	53	l.g.	423	1.00	0.00	844	61.11
	u.g.	423	3.28	0.45				u.g.	423	2.88	0.63		
20	l.g.	423	1.00	0.00	844	106.47	54	l.g.	423	1.00	0.00	844	87.76
	u.g.	423	3.25	0.44				u.g.	423	3.20	0.52		
26	l.g.	423	1.00	0.00	844	58.07	55	l.g.	423	1.27	0.44	844	76.54
	u.g.	423	2.91	0.68				u.g.	423	3.67	0.47		
29	l.g.	423	1.00	0.00	844	62.73	56	l.g.	423	1.00	0.00	844	100.67
	u.g.	423	2.95	0.64				u.g.	423	3.39	0.49		
31	l.g.	423	1.00	0.00	844	64.63	57	l.g.	423	1.00	0.00	844	46.04
	u.g.	423	2.99	0.63				u.g.	423	2.50	0.67		
32	l.g.	423	1.00	0.00	844	61.61	58	l.g.	423	1.00	0.00	844	101.46
	u.g.	423	2.89	0.63				u.g.	423	3.34	0.47		
33	l.g.	423	1.00	0.00	844	57.68	60	l.g.	423	1.00	0.00	844	54.97
	u.g.	423	3.20	0.79				u.g.	423	2.93	0.72		
35	l.g.	423	1.00	0.00	844	46.12	61	l.g.	423	1.00	0.00	844	15.14
	u.g.	423	2.50	0.67				u.g.	423	1.58	0.79		
36	l.g.	423	1.00	0.00	844	100.64	62	l.g.	423	1.00	0.00	844	59.25
	u.g.	423	3.40	0.49				u.g.	423	2.88	0.65		
37	l.g.	423	1.00	0.00	844	46.63	63	l.g.	423	1.00	0.00	844	50.01
	u.g.	423	2.53	0.67				u.g.	423	2.95	0.80		
39	l.g.	423	1.00	0.00	844	67.47							
	u.g.	423	3.02	0.62									

*p<.01

As seen in Table 4, Cronbach α values determined as .95 for the whole scale differ between .90 and .69 in lower dimensions. These values indicate that all items in the scale measure the same characteristics and the scale is a reliable measurement tool.

Table IV
Internal Consistency Coefficients Related with MAST and Sub-Scales

MAST and Sub-Scales	Cronbach α
MAST	.95
Mathematics Understanding Anxiety	.90
Mathematics Teaching Anxiety	.88
Problem Solving Anxiety	.87
Arithmetical Operations Anxiety	.76
Mathematical Self-Adequacy	.74
Mathematical Interpretation Anxiety	.69
Making Mathematical Mistakes Anxiety	.75

Discussion and Recommendations

Factor analysis was held in the scope of validity studies conducted with the aim of developing a mathematical anxiety scale relating to teachers and prospective teachers and a 39-items scale was obtained in which seven sub-scales are explained with 59.23% variance amount. MAST is a four rating scale composed of "I would not feel anxious," "I would feel a little anxious," "I would feel anxious," and "I would feel highly anxious" evaluation oriented to each item. High points obtained from the total scale and sub-scales indicate high anxiety.

Since the scale obtained is specific to teachers and prospective teachers, it was called MAST (Mathematics Anxiety Scale toward Teachers). Seven sub-scales obtained as a result of factor analysis were named by taking into account their contents. Items included in the first sub-scale are generally related to apprehending and learning mathematical concepts and problems parts of mathematical anxiety. There are items measuring anxiety felt against circumstances stated through such items as "About apprehending mathematical subjects," and "Studying mathematics." For this reason, the 1st sub-scale was called *Mathematics Understanding Anxiety*. The items included in the second sub-scale imply the part of mathematical anxiety which emerges while teaching mathematics or conveying information about mathematics to another person. There are items in this sub-scale measuring anxiety felt against circumstances stated with items such as "When a secondary school student asks me a question about mathematics," and "When I need to teach the volume concept to a friend." For this reason, the 2nd sub-scale was called *Mathematics Teaching Anxiety*. Items included in the third sub-scale reflect anxiety which emerges while engaging with a mathematical problem having a complex structure, requiring knowledge, including multiple operations and intensive symbols. There are items in this sub-scale measuring anxiety felt against circumstances stated with items such as "If I am asked to solve a problem by using an equation," and "When I need to represent a group of

numeric data in a graphic." For this reason, the 3rd sub-scale was called *Problem Solving Anxiety*. Items included in the fourth sub-scale indicate an anxiety which emerges in circumstances about mathematics requiring four arithmetical operations or only including numbers other than symbols on a basic level. There are items in this sub-scale measuring anxiety felt against circumstances stated with items like "In a group game requiring four arithmetical operations," and "When I am encouraged to join a group engaged in solving a numeric cross-word puzzle." For this reason, the 4th sub-scale was called *Arithmetical Operations Anxiety*. Items included in the fifth sub-scale have the characteristics of describing an anxious state, i.e. a person feels anxiety about his/her sufficiency in mathematics in daily or academic life when he/she must perform an activity related to mathematics. There are items in this sub-scale measuring anxiety felt against circumstances stated with items such as "If a specialist tells me that I am not capable in the issue of mathematics," and "When I think that I am unsuccessful in the field of mathematics." For this reason, the 5th sub-scale was called *Mathematical Self-adequacy Anxiety*. Items belonging to the sixth sub-scale are closely related to interpreting, analyzing multiple mathematical data and the synthesizing mathematical information part of mathematics anxiety. There are items in this sub-scale measuring anxiety felt against circumstances stated with items such as "While I calculate the area of my house in square meters," and "When I convert grades of students from the 100 system into a different system." For this reason, the 6th item was called *Mathematical Interpretation Anxiety*. Items included in the seventh sub-scale reflect the anxiety a person feels about making mistakes and the detection of these mistakes by other persons while making operations part of mathematical anxiety. There are items in this sub-scale measuring anxiety felt against circumstances stated with items such as "If I make a mistake while solving a mathematical operation related to my field on the blackboard," and "When I make mistakes in calculations I make in daily life." For this reason, the 7th sub-scale was called *Making Mathematical Mistakes Anxiety*.

Taking into account that variance amounts obtained as a result of factor analyses were found sufficient and explaining facilities of sub dimensions in terms of contents in this stage, it was thought that a healthy structure was introduced. Following the factor analyses, correlations between sub-scales and with the total were tested and it was determined that their correlation coefficients are statistically significant on $p < .01$ level. It is seen that correlation coefficients between the total scale and sub-scales differ between .56 and .91, and correlation coefficients among sub-scales differ between .15 and .79. It was expected that the correlation of sub-scales with the total scale will be significant and high; therefore, correlations among sub-scales with each other will be neither so high nor so low. Correlation coefficients obtained support the construct of the scale introduced with factor analysis. However, while statistical significance was ensured only in the Mathematical Self-adequacy Anxiety dimension, it is seen that the correlation between the scale with whole ($r = .56$) and with other dimensions is low (correlation coefficient differs between .15 and .40).

Item discrimination analyses dealt with in the scope of internal criterion validity were separately conducted for every item included in MAST, and they were also conducted by taking into account total points obtained from the whole scale and from sub-scales. According to independent group t-test applied in points obtained by 27% upper group and 27% lower group from all items of MAST separately, and

points they obtained from the whole scale and from sub-scales, all items were found discriminative in $p < .01$ significance level for the whole scale and for sub-scales. Discrimination analyses were also tested in terms of total points obtained from MAST and sub-scales and it was determined that the whole scale and sub-scales are significant as a result of analyses held. Since discrimination strength should be high in terms of validity (Ergin, 1995, s. 131), it can be emphasized that the validity of the scale was ensured in the direction of the discrimination results obtained.

Item remainder analyses were conducted relating to items constituting the MAST in the scope of reliability studies. Items in the scale were found to have a significant correlation to total points obtained from the scale with the exception of number two, stated as "If a specialist tells me that I am not capable in the issue of mathematics." This analysis is followed by item remainder analyses conducted in the scope of sub-scales and it was determined that correlations of all items included in sub-scales with the total points of the sub-scale they belonged to are significant ($p < .01$). As a result of item remainder analysis conducted in the scope of the 2nd item included in the Mathematical Self-adequacy Anxiety sub-scale, it was determined that it is in a significant correlation ($p < .01$). All analyses held were collectively evaluated and the 2nd item included in the Mathematical Self-adequacy Anxiety sub-scale remained in the scale.

Finally, internal consistency reliability was examined in the scope of reliability studies and the Cronbach α internal consistency coefficient determined for MAST was found to have a high value of .95. Cronbach α internal consistency coefficients of sub-scales differ between .90 and .69. Internal consistency coefficients show that the scale and sub-scales are reliable.

As a result of all validity and reliability analyses, it can be said that the MAST, composed of 39 items and seven sub-scales and developed for teachers and prospective teachers, is an original tool that can measure mathematical anxiety with its different dimensions. MAST is a tool to be used for measuring mathematical anxiety separately in the scope of sub-scales in addition to measuring mathematical anxiety from total points. Evaluating researches held and measurement tools developed on mathematical anxiety, Baloğlu (2001) established that there is a diversity of opinions about the dimensions of mathematical anxiety and the scales developed display an improvement from one-dimensional to multi-dimensional with time. Starting from this evaluation made, it should be stressed that the multi-dimensional structure of the mathematical anxiety scale developed in the scope of this research also supports the theoretical structure developed and agreed upon in this field.

Correlations between MAST and other mathematical anxiety scales developed originally in its field and adapted in Turkish can be tested so that validity studies can be continued. In addition, it is also recommended that MAST should be used to determine the mathematical anxiety of teachers and/or prospective teachers and to test its correlation to variables like age, seniority, education areas, gender, and gender roles. MAST can also be used as pre and post tests in gauging the effectiveness of the programs oriented to a decrease in mathematical anxiety.

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Öğretmen ve Öğretmen Adaylarına Yönelik Matematik Kaygı Ölçeği'nin Geçerlilik Güvenilirlik Çalışması

(Özet)

Problem Durumu: Matematik, tüm dünyada eğitimin önemli bir parçası olmasının yanı sıra aynı zamanda kişide kaygı uyandırıcı nitelikte de bir disiplindir. Matematik kaygısına ilişkin çevresel, bilişsel ve kişilik özellikleri ile ilgili faktörlerin de yıllardır eğitim psikologlarının ve matematik eğitimcilerinin üzerinde uğraşmakta oldukları popüler inceleme konularından biri olduğu söylenebilir. Matematik kaygısı genel olarak, test kaygısının bir alt tipi veya formu olarak kabul edilmekle birlikte, yapılan araştırmalarla bu ikisini eşdeğer görmemek için yeterli derecede kavramsal ve deneysel sebepler ortaya konmuştur. Matematik kaygısının, özellikle kişilerin matematiksel becerilerinin uygun olarak değerlendirildiği sayısal test ve sınavlarda, karşılaşılan her tür matematiksel içeriğe (sayılar, kavramlar, tanımlar) ve matematiksel işlemlere karşı ortaya konan bir tepki olarak kavramlaştırılmasının daha anlamlı olduğu da dikkatten kaçmamalıdır.

Matematik kaygısı günlük ya da akademik yaşamda sayılarla uğraşırken, matematik problemi çözerken, matematikle uğraşmayı gerektiren durumlarda ortaya çıkan mantık dışı bir kaygı olarak ya da benzer şekilde, özsaygıyı tehdit edici olarak algılanan, matematik içeren her türlü duruma karşı tepki niteliğinde ortaya çıkan bir kaygı durumu olarak tanımlanmaktadır. Kaygı kişide panik, telaş, gerginlik, umutsuzluk, korku, stres, utanç, baş edememe gibi duyguların yanı sıra, avuç içlerinin terlemesi, mide sorunları, nefes almada zorlanma ve konsantrasyon bozukluğu gibi daha başka birçok fizyolojik semptomun da ortaya çıkmasına neden olur. Belirtilen tüm bu olumsuz etkenler sebebiyle bu kaygıyı taşıyan kişilerin akademik başarıları ve kariyer tercihleri sınırlanmaktadır.

Matematik kaygısının nedenleri araştırmacılar tarafından genellikle, çevresel, zihinsel ve kişisel etkenler olarak üç boyutta ele alınmıştır. Çevresel etkenler içinde, sınıf içinde yaşanan olumsuz tecrübeler, öğrenci üzerindeki aile baskısı, öğrenciye karşı duyarsız ve alanında yetersiz öğretmenler, matematikle ilgili zaman içinde oluşan önyargılar (eğitimin ilk yıllarından itibaren matematiğin öğrencilere katı kurallar bütünü olarak tanıtılması gibi) ve öğretmen odaklı, öğrenci edilgen olduğu sınıf ortamı sayılabilir. Zihinsel etkenler ise, öğrencinin öğrenme stili ile öğretim yöntemlerinin örtüşmemesi, öğrenci tutumları, kolay pes etme, motivasyon eksikliği, öğrencinin kendi matematik yeteneğine karşı geliştirdiği yanlış düşünce ve önyargılar, kişinin öz değer algısının düşük olması, öz güven eksikliği, matematiğin gerekli olmadığını öne süren düşünce tarzı olarak sıralanabilir. Kişisel unsurlar ise, sınıfta soru sormaktan çekinme, utanma, tutukluk, kendine güvensizlik, matematiği erkeklerin başarılı olabileceği bir alan olarak görme gibi önyargılar sayılabilir.

Kaygının çoğu zaman, testlerle ölçülebilecek genel bir özellik değil de belirli uyarıcı durumlarında ortaya çıkan bir davranım olduğu gözlenmektedir. Ancak kaygının insanlara ait bir özellik ve kişiliğin farklı bir boyut olduğu kabul edildikten sonra, bu özelliğin değerlendirilmesi gereği doğmuştur. Özellikle bireyin kaygı ile baş edemediği durumlarda kaygıya neden olan çatışma kaynaklarının açığa çıkarılması amacıyla psikoterapi uygulanır. Fakat bu şekilde geniş insan kitlelerinde herhangi bir özelliği ölçmek pahalıya mal olacağından, diğer bir kişilik özelliği gibi kaygı boyutu da kendini-değerlendirme (self-report) tekniği kullanılarak ölçülmeye çalışılmıştır. Bu bağlamda matematik kaygısının ölçülmesinde de çeşitli güçlüklerle karşılaşılması söz konusudur. Matematik kaygısını belirlemeye yönelik ölçekler incelendiğinde, bu ölçekler arasında en sık kullanılan ve bir çok dile çevirisi ve uyarlaması yapılan ölçeğin Matematik Kaygısı Derecelendirme Ölçeği (MARS) olduğu anlaşılmaktadır. Bu ölçeğin ergenler için uygulanabilecek bir başka biçimi de (MARS-A) ayrıca geliştirilmiştir. Türkiye’de de çeşitli matematik kaygısı ölçeklerinin uyarlanmasına ve geliştirilmesine yönelik sınırlı çabalar bulunmaktadır. Ancak bu sınırlı çalışmalarda bağımsız bir matematik kaygısı ölçeğinin geliştirilmediği anlaşılmaktadır. Bu gerekçelerden hareketle, matematik kaygısını çeşitli boyutlarıyla ortaya koyacak ve değişik özellikler taşıyan kitlelere (yaş, meslek vb.) yönelik ölçeklerin geliştirilmesine hala gereksinim olduğu anlaşılmaktadır.

Araştırmanın Amacı: Bu çalışmada, problem durumunda belirtilen gerekçelerden hareketle, özellikle öğretmenlere ve öğretmen adaylarına yönelik bir matematik kaygı ölçeğinin geliştirilmesi amaçlanmıştır.

Araştırmanın Yöntemi: Araştırmada, geçerlilik çalışmaları kapsamında faktör analizi ve ayırt edicilik analizleri ile güvenilirlik analizleri kapsamında da madde kalan analizleri ile iç tutarlılık katsayıları hesaplanmıştır. Geçerlilik ve güvenilirlik çalışmalarında 1568 (502 öğretmen ve 1066 öğretmen adayı) kişiden yararlanılmıştır. Çalışma grubundaki öğretmenlere (erkek n:190, %38; kadın n:312, %62) İstanbul’un 4 ilçesinin her birinden (Kadıköy, Fatih, Maltepe, Beşiktaş) seçilen, ikişer ilköğretim ve ikişer ortaöğretim okulu olmak üzere toplam 16 okuldan ulaşılmıştır. Öğretmen adayları ise Marmara Üniversitesi Atatürk Eğitim Fakültesi’nin farklı bölümlerinde okumakta olan öğrencilerden (erkek 458, %43; kadın 608, %57) oluşmaktadır.

Bulgular ve Sonuçlar: İlgili alan yazından yararlanılarak oluşturulan 75 madde uzman görüşleri doğrultusunda değerlendirilmiş ve üzerinde yeterince uzlaşma sağlanamayan 12 madde ölçekten çıkartılmıştır. Böylece istatistiksel geçerlik ve güvenilirlik çalışmaları için ölçekte 63 madde kalmıştır. Faktör analizine başlamadan önce Kaiser Meyer Olkin (KMO) örneklem uygunluğu testi (.969) ile Bartlett küresellik testi ($\chi^2= 30069,1 - p<.01$) yapılmış ve elde edilen değerler faktör analizine devam etmeye uygun bulunmuştur. Yapılan geçerlilik ve güvenilirlik çalışmaları sonucunda, 39 maddelik ve 7 alt ölçekten oluşan ve toplam varyansın %59.23’ünü açıklayan bir ma-

tematik kaygı ölçeđi geliřtirilmiřtir. Ölçek öğretmen ve öğretmen adaylarına yönelik olarak geliřtirildiđi için MKÖ-Ö (Matematik Kaygı Ölçeđi-Öğretmen) olarak isimlendirilmiřtir. Ölçekte yer alan alt ölçekler ise Matematik Anlama Kaygısı, Matematik Anlatma Kaygısı, Problem Çözme Kaygısı, Aritmetik İşlem Kaygısı, Matematiksel Özyeterlilik Kaygısı, Matematiksel Yorumlama Kaygısı, Matematiksel Hata Yapma Kaygısı olarak isimlendirilmiřtir.

Öneriler: MKÖ-Ö'nün geçerlilik çalıřmaları kapsamında matematik kaygısına ya da matematik kaygısıyla iliřkili olabilecek diđer yapıları belirlemeye yönelik olarak geliřtirilmiř bařka ölçeklerle iliřkilerine bakılarak ölçüt geçerliliđi sınanabilir. Güvenilirlik çalıřmaları kapsamında da test tekrar test uygulamasıyla MKÖ-Ö'nün zamana göre deđiřmezliđi sınanabilir. MKÖ-Ö yapılacak yeni arařtırmalarda ise farklı alanlardaki öğretmen ve öğretmen adaylarının matematik kaygılarının belirlenmesinde kullanılabileceđi gibi matematik kaygısını azaltmaya yönelik programların etkililiđinin denenmesinde de ön ve son test olarak kullanılabilir.

Anahtar Sözcükler: Matematik kaygısı, matematik kaygı ölçeđi, öğretmen, öğretmen adayı

Pre-Service Teachers' Perceptions of Peace Education

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Abstract

Problem Statement: Wars between countries and violence cause immense destruction to societies. Education is one of the essential factors that will aid in stopping violence and establishing social peace. "Peace education", which has emerged as the consequence of various approaches regarding peace from an educational perspective, is a sine qua non component of teaching tolerance, sharing and honesty to adults and children. The main purpose of peace education is to encourage students to develop different strategies that would provide social justice, not only in their countries, but also around the world.

Purpose: The aim of this study is to determine pre-service teachers' perceptions about peace education.

Methods: This study was conducted using a semi-structured interview method, a qualitative method, in order to determine pre-service teachers' perceptions about peace education. The data was collected during the 2005-2006 academic year, using interviews conducted with 26 prospective teachers enrolled in primary education and social sciences education classes in the Department of Primary School Education. Through the employment of a survey method, the data obtained from interviews was analyzed and expressed in figures.

Findings and Results: The results indicate that pre-service teachers explain the concepts of peace and welfare using similar concepts, such as welfare/peace, love, respect and friendship. Additionally, the majority of the pre-service teachers in the study lay emphasis on the necessity of peace education in primary schools. They also state that civics, social studies and life knowledge courses are important for peace education because they include the teaching of social issues, such as war, peace, democracy, citizenship and human rights. Pre-service teachers who participated in the study state that peace education is significant, since it encourages values, such as social harmony, tolerance, global thinking, and individual development. The participants have offered the following suggestions: Teaching strategies and methods should be employed that emphasize peace education and in-service education seminars for teachers should be incorporated that develop peace education/peace awareness. Furthermore, pre-service teachers report that peace education is indicative of an environment in which students can easily

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express their opinions. Peace education offers opportunities for sincere relationships between teachers and students and encourages differences to be adopted and internalized.

Recommendations: Peace education courses should be incorporated into primary schools and teacher training programs; activities for an acquisition of peace awareness should take place in the classroom and during school-based activities; and in-service teacher training programs should be designed to include peace education.

Keywords: Peace, peace education, teacher education, pre-service teachers

As the world has become more connected with the approach of the new millennium, many nations have been talking about universal peace. However, what has been witnessed so far are the facts that natural resources are rapidly diminishing, wealth is becoming more unevenly distributed and disturbances on a universal scale have been increasing (Akyol, 2005). The attack of the World Trade Center towers in New York City on September 11, 2001, resulted in the loss of 3000 people, either dead or missing. There have been major reactions against this particular event, both in and outside the United States. Led by the United States, the process of reforming the world has begun; dramatic perceptual changes regarding tolerance and respect for differences has occurred, although social peace has been threatened by the possibility and fear of clashes among civilizations.

Individuals are exposed to different kinds of violence in the postmodern world. Violence on the streets and within families, ethnic adversaries and deteriorations caused by environmental damage have been threatening life by making it more complicated and difficult (Harris & Morris, 2003). Violence resulting from wars between countries has caused serious damage to societies. Education stands as one of the major precautions that may prevent violence and create and maintain social peace. It's not as useful to pursue social peace via other means. Developed as an outcome for instructional approaches to peace, "peace education" has recently gained attention all around the world (Yılmaz, 2003). Education serves as a basis for a peaceful setting. Furthermore, peace education is an indispensable part of teaching tolerance, sharing and sincerity to both children and adults (International Expert Meeting, 2004).

Defined by UNICEF, peace education furnishes both children and adults with skills to prevent violence, peacefully solve conflicts and create interactive settings for peace talks between individuals, groups or nations (UNICEF, n.d.). Fundamental topics of peace education include social justice, social change, ecological balance, economic well-being, universal points of view and conflict management (Monez, 1973). Expected outcomes of peace education include individuals who love and respect others, who are aware of social and ecological issues, who are honest and well-behaved and who can create peaceful settings to settle conflicting opinions (Bogart & Slaughter, 2001).

Peace education in classrooms aims at equipping students with necessary knowledge and attitudes through respectful, tolerant, participatory and cooperative techniques and methods. In addition, students are encouraged to shoulder their own responsibilities. Thus, peace education should be regarded as an opportunity to improve the social well-being and responsibilities of both teachers and students (<http://www.un.org>, n.d.).

'Peace Education' should be added to the instructional curricula of all educational institutions as early as preschool in order for peaceful cultures to dominate over violence, which currently leads to the death of 35 people across the world every hour (Kas, 2005). Peace education can foster respect for human rights; improve democracy, social justice, and solidarity among people and nations; encourage individuals to develop effective citizenship; and establish a type of peaceful culture based on universal human rights values. Resolving conflicts through negotiation and respect for others, developing empathy for individuals and nations, perceiving differences positively and living peacefully together as equals should be contemporary values gained by students. Of course, teachers are the crucial factor for undertaking this vital responsibility of achieving these values. That is why teachers should be equipped with universal values, such as freedom, justice, human rights, gender equality, tolerance and respect for the right to live. They should also develop an understanding of peace and a desire for an internalized peaceful culture.

Forming such values may be possible through pre-service education. However, as mentioned by Schmidt (2000), Reardon (1999), Miller & Ramos (1999), and Hutchinson (1996), literature lacks studies linking teacher training to peace education (Brantmeier, 2003). Developed by Brantmeier (2002), the "Peace River Model", shown in Figure 1, depicts how peace education can be integrated into and strengthened through teacher training. Moreover, the model points out how different forms of education, such as human rights, development, citizenship and values education and positive and negative peace, can influence participatory and dynamic conditions.

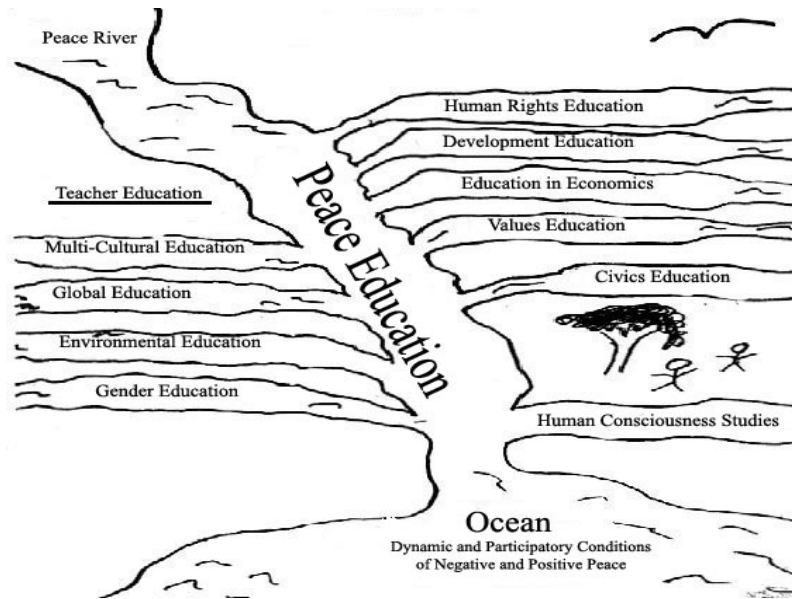


Figure 1. Peace river model (Brantmeier, 2002). Brantmeier's study (as cited in Brantmeier, 2003).

Tillman's (1995) study entailed the delivery of peace education to 135 students for 32 weeks. This individual collected data through observation, interviews and teacher questionnaires. Following this peace education, which provided students with activities of different natures, most of the students were determined to accept different languages, display positive behaviors within their society and solve conflicts through means of peace.

Leonard (1995) gave a basic level of peace education to preschool students in order to improve their social skills. At the end of the educational program, students were reported to have indeed strengthened their social skills. In addition, they began orally resolving conflicts, accepting other kids and sharing and acting cooperatively.

Harris, Glowinski and Perleberg (1998) attempted to investigate how the use of skills and knowledge during peace education affected the atmosphere of a classroom. For the purposes of research, thirty-one educational experts present in the classroom during peace education instruction were given questionnaires. These findings revealed that these experts were aware of certain events, including violence, and were suspicious of any generalization of subject matter taught in the class.

Bogart and Slaughter (2001) conducted a study in several multicultural classrooms. In their study, teachers taught their lessons using several communication techniques determined by the researchers. Results yielded various values, such as cooperation, respect for the environment, tolerating and respecting differences and self-respect.

Spears (2004) investigated the opinions of 5th graders regarding the effects of the peace education course. Nine students were interviewed during the study. Interview assessments showed that students who had taken the course were more open to differences, avoided negative verbal and non-verbal behaviors, took the time to think instead of abruptly reacting and exerted more effort to bring peace to a situation.

Teacher training curricula in many countries require courses on democracy and multicultural education. Such courses and themes may help future teachers grasp and develop an insight for peace. Teacher training curricula should cover courses on global education, environmental education, gender education, and multicultural education. Instructing pre-service teachers about these matters may help form a more peaceful world (Brantmeier, 2003).

Students who participate in peace education generally adapt themselves to various situations, including critical thinking, decision-making, interactions, negotiations, resolving conflicts, encouraging peace and preventing violence. Undoubtedly, teachers are key in furnishing students with these skills. Aimed at determining the perceptions of students studying social studies and participating in primary school teacher training programs on subjects and concepts within peace education, including resolving conflicts, accepting differences and expressing values, this study expects to underline the importance of peace education during the primary school years. Moreover, identifying pre-service teachers' opinions, attitudes, and behaviors may shed light on the right direction for those who prepare and develop curricula for teacher training programs.

Purpose of Study

The main purpose of this study is to determine pre-service teachers' perceptions of peace education. Accordingly, answers to the following questions are sought:

What are pre-service teachers' opinions regarding:

- peace and peace education?
- the need for peace education in primary schools?
- primary school courses that would include peace education?
- engaging in activities that may improve awareness about peace education in primary schools?
- their dream school profile relating to peace education?

Limitations/Restrictions

This study was conducted during the spring term of 2005-2006. Junior and senior students studying social studies and primary school teacher training programs in the Primary Education Department at Anadolu University, participated in the study. The study is limited to the answers given by pre-service teachers to the questions on the interview form.

Method

Research Model

This study uses the survey model. It was completed using semi-structured interviews, a qualitative research technique. During semi-structured interviews, each participant was questioned systematically and appropriately, but also given freedom to move out of the frame of questioning if desired (Berg, 1998).

Participants

Participants included 26 junior and senior students participating in social studies and primary school teacher training programs in the Primary Education Department at Anadolu University, during the spring term of 2005-2006. Basic criteria of the study concerning participants included students who had completed courses in teaching school experience and instructional techniques; thus, criterion sampling, a purposeful sampling method, was utilized to determine what junior and senior students should be recruited as participants for the study. Six of the participating students were juniors, while 20 of them were seniors. Seventeen were female and nine were male; twelve of them were enrolled in the Primary School Teacher Training Program, whereas 14 were registered students in the Social Studies Teacher Training Program.

Data Collection

The interview form used in the study was examined by field experts in order to check for content reliability. Later on, a pilot interview was conducted with a pre-service teacher to see if any necessary alterations were needed. Official approval had been guaranteed prior to the interviews. Each participant read the information booklet about the study and signed a contract indicating voluntary participation. An au-

dio-tape recorder was used for the interviews. All interviews were completed in May of 2006.

Data Analysis

The descriptive analysis technique was used to analyze obtained data. Afterwards, descriptive data was converted into numbers. All data was determined after the descriptive analysis was summarized and interpreted according to themes decided beforehand (Yıldırım & Simsek, 2005). Collected data was depicted, together with frequencies, on tables, while direct quotes from pre-service teachers have been cited. The reliability of the research was settled using a double analysis of the data by two researchers and using the formula 'P (Agreement %) = [Na (Agreement) / Na (Agreement) + (Disagreement)] X 100' (Miles & Huberman, 1994). The result of the formula was P = % 98.75, which means that the research is reliable.

Findings and Results

In this section, findings are presented as frequency tables. Furthermore, direct citations of pre-service teachers are included.

Pre-service Teachers' Opinions Regarding Peace and Peace Education

The first question directed to pre-service teachers was "What comes first to your mind when you think about peace and peace education". Table 1 displays the answers and distributions of these answers.

As seen in Table 1, pre-service teachers generally associate the concept of peace with serenity, love, friendship, respect, tolerance, solidarity and equality. Participating pre-service teachers verbalized the concept of peace as a happy life without war and the threat of nuclear weapons; building empathy; tolerating and accepting differences; loving self and others; a conflict-free life; and freely expressing oneself. Similarly, Table 1 also displays definitions by pre-service teachers for peace education, which include raising people's awareness about peace, approving differences among people and objectively furnishing students with the ideas of solidarity, equality, justice, respect and tolerance. Moreover, they also defined peace education as convincing students to live in harmony, respect others' opinions and rights and create a peaceful living atmosphere.

The following is a statement given by Coskun, one of the participants:

"Here is what I can say about peace education. There's a line dividing the world into two--the equator. Sometimes, I think that the equator really separates the north and the south from each other. Nations in the north are generally a bit better, actually much better, in terms of wealth, while nations in the south generally struggle and can't maintain anything due to the intervention of other nations. An individual in the north is not as well-informed about individuals in the south. It's also debatable how much individuals in the south know about individuals in the north. The most important thing within peace education is informing people about each other so that they can develop a holistic approach to world nations and issues concerning them". Another participating pre-service teacher, Elif, stated the following about peace and peace education: "Peace and peace education is people living together in peace and harmony. Besides, it is the right to live without impeding others' rights and living happily".

Table I*Pre-service Teachers' Opinions Regarding the Concepts of Peace and Peace Education*

Peace and Peace Education According to Pre-service Teachers	f
Peace	
Sereneness, love, respect, friendship, tolerance, solidarity, equality	16
A happy life	6
Living without wars and threats of nuclear weapons	5
Tolerating and accepting differences	5
Loving self and others	3
Building empathy	2
Respect for human rights	2
A conflict-free environment	2
Expressing oneself freely	2
Right to live	1
Transcending personal ambitions and interests	1
White, olive tree, pigeon, childhood, family	1
Interval between two wars	1
Peace Education	
Raising people's awareness about peace	5
A process directed to the approval of differences among people	4
Objectively furnishing students with the ideas of solidarity, equality, justice, respect, and tolerance	3
Making students live in harmony	3
Respecting others' opinions and rights	3
Creating an atmosphere to live peacefully	3
Life style reflecting oneself	2
Furnishing students with the ideas of world citizenship and world peace	2
Raising awareness of negotiation and prevention of conflicts	2
Educating individuals to avoid war	1
World knowledge that schools and families should gain the children	1
Start of love for humanity	1

Pre-service Teachers' Opinions Regarding the Need for Peace Education in Primary Schools

The second question directed to pre-service teachers was "Do you think peace education is a necessary inclusion in primary schools? Why or why not?" Answers and the frequencies for specific answers are found in Table 2.

As stated in Table 2, a majority of participating pre-service teachers agreed that peace education was a necessary inclusion for primary schools. The reasons why participators said peace education should be integrated into primary school curricula included establishing and maintaining social peace and harmony, developing tolerance in children, assuring globalization, helping children improve their personalities, preventing violence and covering any insufficiencies in education that would be provided by families. On the other hand, participants who objected to the inclusion of peace education within the curricula of primary schools stated that inconsistencies between what is taught and what is demonstrated in front of children were their main reason. Furthermore, one of the pre-service teachers expressed that peace education shouldn't be a separate course from other standard subjects.

Table II
Pre-service Teachers' Opinions Regarding the Need for Peace Education in Primary Schools

Yes, necessary	24
Reasons	
Establishing social peace and harmony	6
Developing tolerance in children	4
Assuring globalization	3
Helping individuals improve their personality	3
Preventing violence	2
Insufficiency of education provided by families	1
Raising individuals equipped with a universal perspective	1
Internalizing peace within children	1
Building empathy	1
Societal need for peace	1
Erasing bias	1
No, not necessary	2
Reasons	
Inconsistency between what is taught and what is lived around	1
No need for a separate course	1

Mustafa, a pre-service teacher, stated the following:

“Current tensions originating due to political and economic interests of some countries over the others clearly require integration of peace education into the curricula of primary schools”.

Similarly, Zubeyde stated her ideas about the necessity of peace education in primary schools by saying:

“Peace education should begin especially at early ages, because understanding peace starts with classmate interactions. That’s why it’s highly important for a child to build and pursue good relationships with his/her classmates and not push them away just because they have a different personality or identity”.

Pre-service Teachers’ Opinions Regarding which Primary School Courses should Include Peace Education

The third question asked “Into which primary school courses do you think peace education should be integrated?”. Table 3 depicts their answers and the frequencies of those given answers.

As is clearly seen in Table 3, most of the participants stated that peace education may be integrated into social studies, civics and life knowledge classes. Moreover, Turkish language, history, geography, math, science, physical education, art and music courses have also been mentioned as alternative courses that could host the integration of peace education. Some participants even expressed that all courses are suitable for the integration of peace education. The rationales behind selecting these courses as possible alternatives to which peace education can be added include the following: these courses discuss issues related to war, peace, and democracy; these courses aim at equipping students with the rights and responsibilities associated with being a human being and an upstanding citizen; they generally cover subjects concerning countries and international affairs; and students usually start learning about history within these courses.

Ozlem, another pre-service teacher, stated the following:

“Because it covers more social issues, I guess social studies would be most appropriate. Students learn about wars that we have had against other nations in a social studies course. But, the reasons that led to wars or whether it was possible or not to avoid the wars are never discussed in classrooms. That’s why a social studies course would make a good alternative for integrating peace education”. In addition, M. Ali, another pre-service teacher, stated the following: “All humans should develop a humanistic approach towards, not against, themselves, all other humans and the environment. In fact, it is not easy to decide which course is suitable; all courses may put humans and humanity into focus. The concept of peace can be applied to every discipline. Peace education can be associated with all courses”.

Table III
Pre-service Teachers' Opinions Regarding what Primary School Courses should Include Peace Education

Courses	f
Social Studies	5
Civics	11
Life Knowledge	10
Turkish Language	8
Into all courses	8
History	7
Geography	6
Math	4
Science	3
Physical Education	1
Arts	1
Music	1
Rationales	
These courses include issues related with war, peace, and democracy	9
These courses aim to equip students with rights and responsibilities of being a human and a citizen	4
They generally cover subjects concerning countries and international affairs	4
Students usually start learning about history within these courses	3
They are directed to skill gain and self-expression	2
Students feel involved in life	2
They are based on thought and opinions assessing social relationship with the individual in the center of the matter	2
They develop a humanistic approach in students	1
Moral related issues and values can only be taught through these course	1

Pre-service Teachers' Opinions Regarding Conducting Possible Activities in Primary Schools that may Improve Awareness about Peace and Peace Education

"What should be done to improve peace education/awareness?" was the fourth question directed to participants. The answers provided by the participants to this question and the frequencies of those answers can be found in Table 4.

Table IV

Pre-service Teachers' Opinions Regarding Conducting Possible Activities in Primary Schools that may Improve Awareness about Peace and Peace Education

Possible Activities	f
Activities leading to effective participation should be developed and used	19
Teachers should take in-service training about peace and peace education	2
Teacher training programs should expand to cover peace education	8
Students should be given opportunities for self-expression	6
Students should be equipped with necessary tolerance tools to accept differences	6
Pre-school education should also include peace education	5
Experts or famous characters should be consulted	5
Activities introducing different countries to students should be organized	4
Activities concerning the influence of wars' causes & effects over people should be conducted	4
Coursebooks should be prepared objectively	4
Student exchange programs between various countries should be developed	3
Social activities should bear importance	3
Mass media should be directed towards qualified publishing	3
Students should be familiarized with different cultures via the Internet	3
Cheap book projects should be run to increase reading rates	3
Conferences should be held	3
Trips to other countries should be organized	3
Skills to build empathy should be developed and strengthened	3
Schools and families should cooperate	3
Students should be informed about peace and help organizations	2
Government officials should actively be involved in resolution of social problems	2
Peace week activities should be organized	2
Peace representatives should be chosen among students	2
Students should be equipped with an objective point of view	2
A democratic school atmosphere should be created	2
A common world culture should be formed	2
Students' awareness about international alliances should be enriched	2
Students should get into touch with other students from different cultures	2
Parents should also be trained	2
The idea of being a citizen of the world should prevail	1
Children should learn social behaviors such as sympathy, respect, and helping	1
Universities should project peace education to all parts of the society	1
Non-governmental organizations, Ministry of National Education, and Ministry of Interior should cooperate	1
Documentaries should be filmed	1
Brochures should be published	1

As depicted in Table 4, a majority of participants expressed that activities leading to effective student participation should be conducted. Furthermore, they mentioned that teachers should become engaged in in-service educational seminars concerning peace education. Peace education should also be integrated into teacher training programs. Candidate teachers suggested that students be given opportunities to express themselves and develop tools to create tolerance. They also believed that peace education should be included in the curricula of even preschool institutions.

Harun, a pre-service teacher, put forward a suggestion about improving peace awareness:

“I believe social studies courses must include peace education”.

Another participant, Vasfi, believed that “we could organize activities, such as a peace week. Within this week, students would be introduced to poems or articles about peace”.

Pre-service Teachers' Dream School Profiles Related to Peace Education

The last question directed to pre-service teachers was “What is your dream School/Education profile related to peace education?”. The answers provided by the participants and the frequencies of those answers are shown in Table 5.

Table V
Pre-service Teachers' Dream School Profiles Related to Peace Education

Pre-service Teachers' Dream School Profiles Related to Peace Education	f
A school environment that/where;	
is democratic	9
students adopt and internalize differences	4
student-teacher relation is genuinely sincere	3
managers build a loving, respectful, and tolerant dialogue with students	3
friendly and sympathetic teachers and managers work	3
students are involved in all processes actively	3
students are valued	3
students feel safe and peaceful	2
perceives society as a whole	2
is not formal, but relax	1
students from different places and cultures study together	1
places importance on the introduction of other countries and societies	1
is conflict-free	1
equality matters the most	1
classrooms are not crowded	1
international projects are conducted	1

As can be observed from Table 5, when pre-service teachers think of peace education, what first came to mind was a school environment where democracy prevails and where students adopt and internalize differences. This environment also should be a setting where genuinely sincere relationships between students and teachers exist, managers build a dialogue based on love, respect, and tolerance with students, friendly and smiling teachers and managers are employed at the school and students become actively involved in processes. Moreover, pre-service teachers perceived a school where students were valued.

Regarding this issue, a pre-service teacher, Emel, stated the following:

"I imagine a school where individuals can freely express their feelings; a school free from mocking, humiliation, and judgment".

Similarly, Sibel – another participant – expressed her opinions by saying:

"School should be free from any form of privileges, should approach differences democratically and should be based on equality. Peace should prevail within the school."

Discussion and Conclusion

The results indicate that a majority of participating pre-service teachers associate the concept of peace with serenity, love, respect, friendship, tolerance, solidarity and equality. Concepts used in association with peace include a happy life, a setting free from wars and nuclear threats and respect for different ideas. Pre-service teachers believe that peace education should include raising people's awareness about peace, teaching students how to tolerate differences among people and objectively furnishing students with values, such as solidarity, justice, respect and tolerance.

Pre-service teachers define peace education as encouraging students to live in harmony, respect others' rights and opinions and form a peaceful society. These findings are consistent with those determined by Burstermann (1973). In Burstermann's study, students identified peace as the "non-existence of wars; living in solidarity; understanding each other; freedom; freedom of expression; the union of people living in a better world; and a lack of conflicts". Furthermore, the findings of this study display similarities with the definition of peace given by Duffy (nd), which reads as the non-existence of conflicts and violence, a harmonious society, safety and agreement, tolerance, empathy, respect for differences, and cooperation. Likewise, the findings of this study are consistent with those of Smith (nd), which concludes that peace is tolerance, respect for human rights, establishing social justice, and teaching techniques for resolving problems and conflicts.

Most pre-service teachers believe that peace education should be integrated into the curricula of primary schools. Their rationales include establishing social peace and harmony, developing tolerance in children, assuring globalization, helping individuals improve their personality and preventing violence. The pre-service teacher who stated that there was no need for the addition of peace education into primary school programs as an extra course also mentioned that it should be taught in tandem with other disciplines. Peace education has also been applied in studies by Leonard (1995), Tillman (1995) and Spears (2004) in which dramatic, positive changes in students' behaviors have been observed. Furthermore, Marr (2003) reported that primary school students learn about differences among people and become aware of

their own roles and responsibilities through activities focusing on human rights and peace education, which is consistent with the findings of the present study.

Again, a major portion of participants point out that integrating peace education into primary school curricula should be carried out through the use of social studies, civics, and life knowledge courses, although some state that other courses might also be used. Some of the reasons for selecting these specific courses are that these courses include issues related to war, peace, and democracy and that these courses aim at equipping students with the rights and responsibilities of being a human being and citizen.

Many participants suggest that methods and activities that encourage student participation should be used, that in-service training programs for teachers should be organized and that a peace education course should be added to teacher training programs. These findings are also similar to those of Brown, Reynolds and Taylor (1994), who believed that using various activities, such as reading excerpts, brainstorming and creating settings where students could freely express their opinions, were highly influential in furnishing students with "listening, problem-solving, cooperation, decision-making, and communication" skills necessary for peaceful living. Likewise, the findings do not contradict answers given to the question "What is peace?" in Burstermann's (1973) study; the answers were as follows: tolerance and love, a better condition of life, bravely facing problems and trying to overcome them, better management and developing sensitivity for differences. Pre-service teachers imagine a school environment where democracy prevails, differences are adopted and internalized, relationships between teachers and students are genuinely sincere and school managers engage in a dialogue with students based on love, respect and tolerance.

Based on participating pre-service teachers' perceptions of peace education, it would be correct to conclude that peace and peace education are vitally necessary for mankind and some alterations within curricula for primary schools and teacher training programs should be conducted in order to equip students with this vital information. Therefore, these alterations should cover the inclusion of 'peace education' in primary schools and teacher training programs. Social studies, national awareness, and world knowledge courses may host peace education for primary schools. Activities directed to improve peace awareness also should be included in schools. Moreover, teachers should undergo in-service training on peace education. In addition, schools may organize peace week activities. Peace representatives should be chosen from among students and students' attention should be drawn to creating peace.

A democratic school environment where students are involved in decision-making processes and where teachers, managers, and school staff are good models in terms of peace education should be established in order to match the dream school profile. School and family cooperation should be increased through workshops, sharing information and forming a family center. Other studies linking peace education with teacher training programs and primary school students may substantially contribute to this field.

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Öğretmen Adaylarının Barış Eğitimi Algıları

(Özet)

Problem Durumu: Post-modern dünyada insanlar çeşitli biçimlerde şiddetle karşı karşıya kalmaktadır. Sokakta yaşanan şiddet, aile içi şiddet, etnik düşmanlık ve çevresel zararların yol açtığı yıkımlar her geçen gün yaşamı daha da zorlaştırmakta, karmaşıklarıyla ve tehdit etmektedir. Ülkeler arasında yaşanan savaş ve bunun halka yansımaları olan şiddet, toplumlarda büyük yıkımlara yol açmaktadır. Şiddetin önlenmesi, sosyal barışın sağlanması ve egemen kılınmasında en önemli unsurlardan biri eğitimidir. Eğitim dışındaki yöntemlerle toplumda bir süre barış sağlansa bile, böylesi bir barışın kalıcı ve sürekli olması güç bir olasılıktır. Bu nedenle, barışa eğitsel açıdan yaklaşan anlayışların bir ürünü olarak geliştirilen 'barış eğitimi' yetişkinlerin ve çocukların hoşgörü, paylaşım ve içten olma gibi değerlerin öğretim biçiminin ayrılmaz bir parçasıdır. Barış eğitimi, çatışmaları çözme, çeşitliliği anlama ve değerleri açıklama gibi çocukların günlük yaşantılarında yer alan konuları içerir. Ayrıca, öğrencilere iyi niyet, hoşgörü, karşılıklı anlayış, empati gibi beceri ve değerler kazandırır. Barış eğitiminin temel amacı, öğrencilerin sosyal adaleti sağlayabilecek bir dünya düzeni oluşturmalarına katkıda bulunacak stratejiler geliştirmelerine yardım etmektir. Bu nedenle birçok ülkedeki öğretmen eğitim programları demokrasi ile ilgili derslere ve bu derslerde çok kültürlü eğitim ve öğretime gereksinim duymaktadır. Bu tür dersler ve konular geleceğin öğretmenlerinin huzur ve barış kavramlarını daha iyi anlamalarına yardım edecektir. Öğretmen eğitim programları küresel eğitim, çevre eğitimi, cinsiyet eğitimi, çok kültürlü eğitim gibi konuları içermelidir. Öğretmen adaylarına bu tür dersler ve konuların verilmesi daha barışçıl bir dünyanın yapılmasına katkı sağlayacaktır. Ayrıca barışçıl bir eğitime sahip olan öğrenciler, eleştirel düşünme, karar verme, etkileşim, uzlaşma, çatışmaları çözme, barış ortamı

oluşturma, şiddeti önleme gibi özel durumlara uyarlanabilen becerileri edinen öğrencilerdir.

Araştırmanın Amacı: Bu araştırma, öğretmen adaylarının barış eğitimine ilişkin algılarını belirlemek üzere gerçekleştirilmiştir. Bu amacı gerçekleştirmek için şu sorulara yanıt aranmıştır: Öğretmen adaylarının; barış ve barış eğitimi konusundaki düşünceleri nelerdir?, İlköğretim okullarında barış eğitimi gereksinimi konusundaki görüşleri nelerdir?, İlköğretim okullarında barış eğitimi verilmesi gereken derslere ilişkin görüşleri nelerdir?, İlköğretim okullarında barış eğitimi bilincinin geliştirilmesi konusunda yapılabilecek çalışmalara ilişkin görüşleri nelerdir?, Barış eğitimi ile ilgili hayallerindeki okul profilleri nelerdir? Sosyal Bilgiler ve Sınıf Öğretmenliği öğretmen adaylarının algılarının belirlenmeye çalışıldığı bu çalışmanın, ilköğretimde barış eğitimi kavramının önemini ortaya koyacağı umulmaktadır. Ayrıca öğretmen adaylarının bu konudaki tutum, davranış ve görüşlerinin belirlenmesinin ilköğretim ve öğretmen eğitimi öğretim programlarını hazırlayanlara ışık tutması konusunda etkili olacağı düşünülmektedir.

Araştırmanın Yöntemi: Araştırma, tarama modelindedir. Araştırma, nitel araştırma tekniklerinden yarı yapılandırılmış görüşme yoluyla gerçekleştirilmiştir. 2005-2006 öğretim yılı bahar döneminde Anadolu Üniversitesi Eğitim Fakültesi İlköğretim Bölümü Sınıf Öğretmenliği ve Sosyal Bilgiler Öğretmenliği üçüncü ve dördüncü sınıfta okumakta olan 26 öğretmen adayından görüşme ile elde edilen verilerin çözümlenmesinde betimsel çözümleme tekniği kullanılmış ve elde edilen veriler sayısallaştırılarak sunulmuştur. Betimsel çözümlemede, elde edilen veriler, daha önceden belirlenen temalara göre özetlenmiş ve yorumlanmıştır. Elde edilen veriler, frekanslarla birlikte tablolar biçiminde sunularak öğretmen adaylarının görüşlerinden doğrudan alıntılar yapılmıştır. Araştırmada öğretmen adaylarının okul deneyimi ve öğretim ile ilgili dersleri almış olmaları temel ölçüt olarak belirlendiğinden araştırmada amaçlı örneklem yöntemlerinden ölçüt örnekleme kullanılmış, araştırma üçüncü ve dördüncü sınıf öğrencileri ile gerçekleştirilmiştir. Araştırmaya katılan 26 öğrenciden 6'sı 3. sınıf, 20'si 4. sınıfta okumaktadır. Öğrencilerin 17'si kız, 9'u erkektir. Yine öğrencilerin 14'ü Sosyal Bilgiler Öğretmenliği, 12'si Sınıf Öğretmenliği programında öğrenim görmektedir.

Bulguları ve Sonuçları: Araştırma sonucunda öğretmen adaylarının barış ve barış eğitimi kavramlarını benzer biçimde tanımladıkları görülmektedir. Araştırma kapsamındaki öğretmen adayları barışla ilgili olarak; huzur, sevgi, saygı, dostluk, hoşgörü, kardeşlik, eşitlik, mutlu bir yaşam, savaş, nükleer silah vb.'nin olmadığı bir ortam gibi tanımlamalarda bulunmuşlardır. Öğretmen adaylarının büyük çoğunluğu ilköğretim okullarında barış eğitimi dersini gerekli gördüklerini belirtmişlerdir. Öğretmen adayları, sosyal uyum ve barışı sağlama, çocukların diğer bireylere hoşgörülü yaklaşmasını sağlama, küreselleşmeyi tam olarak sağlama, bireyin kişilik gelişimine yardımcı olma gibi nedenlerle barış eğitiminin gerekli olduğunu vurgulamışlardır. Öğretmen adayları barış eğitimine sosyal bilgiler, vatandaşlık, hayat bilgisi gibi derslerde yer verilebileceğini belirtmişlerdir. Özellikle bu derslerin içeriğinin savaş, barış ve demokrasi kavramları ile vatandaşlık, insan hak ve sorumluluklarının kazandırılmasına uygun olmalarını, neden olarak göstermişlerdir. Öğretmen adayları barış eğitiminin/barış bilincinin kazandırılması için öğrencilerin etkin olmalarını sağlayacak yöntem ve etkinliklere yer verilmeli, öğretmenlere hizmet içi eğitim verilmeli, öğretmen eğitimi programlarına barış eğitimi dersi konulmalı, öğrencinin kendini

ifade etmesine olanak tanıyacak olanaklar sunulmalı gibi görüş ve öneriler ileri sürmüşlerdir. Ayrıca öğretmen adayları, barış eğitimi denilince, demokratik, farklılıkların benimsenip içselleştirildiği, öğretmen-öğrenci etkileşiminin yoğun olduğu bir ortam hayal etmişlerdir.

Öneriler: Öğretmen adaylarının algılarına dayalı olarak, ilköğretim okullarında çeşitli dersler aracılığıyla barış eğitimi verilmesinin gerekli olduğu, buna paralel olarak da öğretmen adaylarının öğretim programlarına barış eğitimi dersinin konulması gerektiği söylenebilir. Ayrıca, okul ve sınıf içi etkinliklerde barış bilinci ile ilgili etkinlikler düzenlenmeli, öğretmenlere barış eğitimi ile ilgili hizmet içi eğitimler verilmelidir. Ayrıca, barış eğitimi kapsamında okulda aile çalışmaları düzenleme, paylaşım ortamları ve aile merkezi oluşturma gibi çeşitli etkinliklerle ailenin okula katılımı artırılmalıdır.

Anahtar Sözcükler: Barış, barış eğitimi, öğretmen eğitimi, öğretmen adayı

The Effects of the Blended Teaching Practice Process on Prospective Teachers' Teaching Self - Efficacy and Epistemological Beliefs

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Abstract

Problem Statement: The purpose of pre-service teacher training processes is to ensure that prospective teachers are well-equipped and have the skills necessary to succeed as teachers. The most important step in this process, which includes theoretical and applied activities, is teaching practice. In this process, prospective teachers try to solve real problems, observe learning processes, and witness differences between the planned environment and the real world. In addition, this process gives them a chance to benefit from a variety of approaches in the real world. Therefore, by creating new experience opportunities, the process of teaching practice should offer opportunities for prospective teachers to recognize their needs, and to make changes in their ways of thinking and modifications to their belief systems, since these facts are the fundamental dynamics used in guiding our actions.

Purpose: The study was conducted to examine the effects of Information and Communication Technology (ICT) supported blended teaching practice processes on prospective teachers' teaching self-efficacy and epistemological belief.

Methods: A pretest and post test design without a control group was employed in the experimental study. The study group consisted of 43 male and female students enrolled in the Department of Computer Education and Instructional Technology, Hacettepe University, for the 2006-2007 spring semester, and the BTÖ 492 Teaching Practice course, which is compulsory for senior students, of 112 hours, with a minimum of eight hours a week. For this research, theoretical activities in the course are composed of a face-to-face environment and the web media. In this study, the Teaching Self-Efficacy Scale and Epistemological Belief Scale were used. Descriptive statistics and t-tests were applied in the analysis of data obtained from these scales.

Findings and Results: At the end of the process, a meaningful maturation has been recorded in the epistemological belief that "learning is based on effort." Maturation is meaningful for students having both high and low general academic success levels. While no meaningful maturation has been observed in males, meaningful maturation has been detected in females. The process has also resulted in meaningful and positive changes in the teaching self-efficacy belief of prospective teachers. The change in the teaching self-efficacy belief has been observed to be similar in groups different from

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each other in terms of academic success levels. When analyzed in terms of gender, a meaningful change has been revealed in favor of males.

Recommendations: These environments should be tested with new practices; similar environments can enrich teaching practice lessons and can meet the expectations of students at a higher level. It is felt that teaching self-efficacy and the epistemological belief are processed as contradictory beliefs. This situation should be tested with new studies in future.

Keywords: Teaching practice process, blended teaching practice, epistemological belief, teaching self-efficacy belief, self-efficacy belief

The purpose of pre-service teacher training processes is to ensure that prospective teachers are well-equipped and have the skills necessary to succeed as teachers. The first and foremost step of this process – which includes theoretical and applied activities – is teaching practice. In the process of teaching practice, a prospective teacher meets – as a partner of the process – the real conditions under which they will reflect their experience. In this process, prospective teachers try to solve real problems, observe learning processes, and witness differences between the planned environment and the real world. In addition, this process gives them a chance to benefit from the variety of approaches in the real world. Therefore, by creating new experience opportunities, the process of teaching practice should offer opportunities for prospective teachers to recognize their needs and to make changes in their ways of thinking and modifications to their belief systems. In this study, an ICT supported blended teaching practice process was created and the changes that the process has brought about in the teaching of self-efficacy and epistemological belief were analyzed.

Epistemological Belief

It can be said that all of the decisions made and all of the behaviors exhibited by individuals are based on belief systems they adopt (Hofer & Pintrich, 1997; Pajares, 1992). According to Perry (1981), epistemological beliefs, which have quite a significant place among these highly complicated and multi-dimensional belief systems, point out the beliefs related to “what information is,” “how it is obtained” and the “accuracy, limits and criteria of information.” Schommer (1994), on the other hand, defines epistemological beliefs as subjective beliefs related to “what information is” and “how (the) understanding and learning processes occur.”

It seems important to mention different views about the generation processes and sources of epistemological belief systems composed of the answers given to many questions including “Is information absolute or relative?” “Is it simple or complex?” and “Is learning based on effort or ability?” According to Perry (1981) and Magolda (1993), information-related beliefs of individuals show a development course from a bilateral structure towards the belief that information is subjective. For Schommer (1994), the evolution of epistemological beliefs shows a multi-dimensional structure rather than a linear structure. An individual believing that “information is relative and subjective” can also believe that “some information is not changeable” (Cited from Brownlee, 2002).

Epistemological beliefs have decisive effects on variables such as an individual’s method of processing and interpreting newly provided information, their compre-

hension levels, the criteria adopted in testing comprehension levels, the study strategies selected and applied, high level of thinking and problem-solving approaches, the efforts they exert, and the time they spend on learning (Brownlee et al., 2001; Brownlee, 2002; Hofer & Pintrich, 1997; Tolhurst, 2007).

The relationship between differing epistemological beliefs deemed to have important effects on our learning and in guiding our actions and factors which can lead to the formation of these beliefs such as past experiences, gender and academic success, have been examined in many researches. According to the results in these researches, female students when compared to male students (Schommer, 1993a; 1993b; Paulsen & Wells, 1998; Eroğlu & Güven, 2006; Deryakulu & Büyüköztürk, 2005); adults when compared to the young (Schommer, 1998); and seniors when compared to freshmen (Eroğlu & Güven 2006) have a stronger belief that learning capability is not a stable ability acquired by birth and can be improved with time.

A study conducted by Brownlee et al. (2001) with university students attending education psychology lessons was found to be relevant as it revealed that learning settings can change epistemological beliefs. During the study, a group of students was asked to keep diaries regularly and reflect on their epistemological beliefs. Another group was not exposed to such a reflective process. Epistemological beliefs determined at the end of the year revealed that students in the group asked to keep diaries and reflect on their beliefs had more complex and mature epistemological beliefs when compared with the other group.

Briefly, epistemological beliefs have significant effects on the structuring of learning settings, and the quality of these learning settings which cannot be explained independently from the epistemological beliefs of individuals. Moreover, from the studies conducted, it was found that there is a mutual decisiveness between learning settings and epistemological beliefs, and that, consequently, learning settings lead to changes in epistemological beliefs (Schommer, 1998; Brownlee et al., 2001; Tolhurst 2007).

Teaching Self-Efficacy Belief

Self-efficacy refers to the individual's thoughts about their ability to organize and succeed in a task assigned to them. Bandura (1986) defines self-efficacy as "thoughts of individuals on how well they perform the necessary actions to overcome possible situations." It is observed that, when compared with individuals of low self-efficacy, individuals of high self-efficacy exert more effort, continue these efforts for quite a long time, do not give up when encountering a barrier, choose challenging settings and create new environments to complete a task successfully (Bandura, 1994; Scholz et al., 2002).

It is also known that self-efficacy belief can be used to explain individual differences which appear during activities arranged by the teacher in the learning-teaching process (Riggs & Enochs, 1990). Teaching self-efficacy belief is defined as the teachers' belief that they will exhibit behaviors necessary to perform teaching functions successfully, and is emphasized as one of the teacher abilities closely related to student success. It is stated that the effort exerted by teachers on achieving their teaching targets and desire levels changes depending on self-efficacy beliefs (Tschannen-Moran & Woolfolk-Hoy, 2001).

The self-efficacy belief is explained by four main information sources: complete and correct experiences, indirect experiences, oral persuasion and emotional state; these interact with one other. The success shown by an individual in any work s/he has undertaken is an indicator of the potential success to be shown in the future by them in a similar task. Therefore, the success experienced serves as a reward and a way of motivating the individual in terms of exhibiting similar behaviors (*complete and correct experiences*) in the future. Many expectations are derived from the experiences of others; observing the success of other individuals can make the individual expect to be successful (*Indirect Experiences*). Encouraging an individual with incentives and making suggestions about how to complete a task successfully can lead to changes in self-efficacy expectations (*Oral Persuasion*). Being in a well state, both physically and psychologically, when launching the task increases the possibility of actually launching the assigned task (*Emotional Condition*) (Bandura, 1994; Schmitz & Schwarzer, 2000; Yavuzer & Koç, 2002).

Then, the experiences to be gained from the settings where the individual will directly take action will be decisive in terms of the self-efficacy belief, related to the assigned area, of the individual. In this framework, teaching practice processes can be expected to make changes in the teaching self-efficacy beliefs and the direction of this change can give clues about whether the process undergone is positive or negative. In light of this fact, an ICT-supported blended teaching practice process has been developed and the effects of this process on teaching self-efficacy and epistemological beliefs of prospective teachers are examined in the scope of this article.

Method

A pre/post test design without a control group has been employed in the study.

Study Group

The study group is composed of a total of 43 students enrolled in the Department of Computer Education and Instructional Technologies at Hacettepe University from the 2006–2007 spring semester and taking the Teaching Practice course. The break down of the group on the basis of gender and academic success level is as follows:

Table I
Characteristics of the Study Group

Academic Success Level		Gender	
Lower group	Upper Group	Male	Female
22	21		
Academic Average = 2.06 - 2.85	Academic Average = 2.86 - 3.66	27	16

The Process of ICT Supported Blended Teaching Practice

The Teaching Practice course is comprised of 112 hours, with a minimum of eight lesson hours a week. The lessons should be timed so as to encourage change; the chart below shows the organization of the course and describes the course elements.

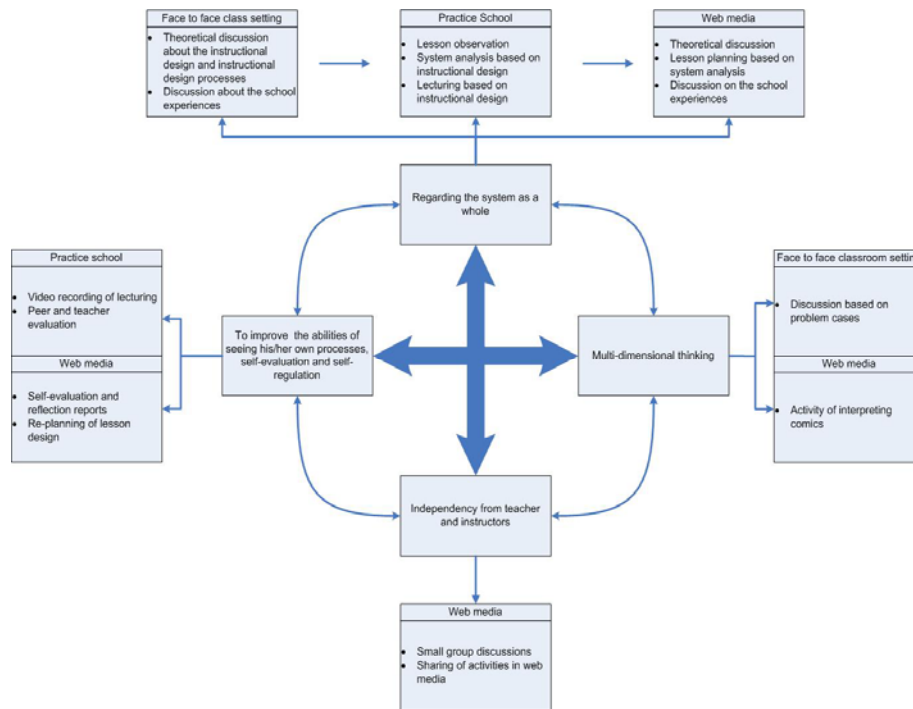


Figure 1. The process of ICT supported blended teaching practice

Theoretical activities. These are composed of two segments; (i) activities performed face-to-face in the university classrooms and (ii) activities supported by the activities and discussions in web media.

Face-to-face classroom setting. The process is initiated with face-to-face lessons and the discussions on the meaning, processes and requirements of teaching practice. In the following steps, students attended the face-to-face lessons over two-week periods. In these meetings;

- Information and opinions exchanged with students has been concerned with the activities conducted in practice schools and explanations have been given about the activities and teaching design process.
- Problem cases rarely encountered in school settings have been created to make exercises of finding solutions in the context of teaching the design process. Thus, an improvement in abilities such as multi-dimensional thinking, realizing situational and even individual solutions and developing new strategies in the case of differences, has been attempted.

Web media. A part of the theoretical activities which have been carried out in web media. With this, students are required to answer the questionnaires used; discuss the theoretical infrastructure of teaching design; follow project instructions related to

lecturing; participate in group and class discussions; share personal reflections and activity reports with all classmates and instructors; use their theoretical knowledge in a different way by using a “cartoon interpretation” activity.

Practice process. The main practice setting is in the schools. In these settings where they have played the role of both teacher and student, prospective teachers have been assigned the full responsibilities expected of a teacher. The student teachers were asked to plan their lessons in the framework of the “Teaching Practice Project Guide” provided in electronic media. This “Guide” is structured to take into consideration the teaching design process and lessons should be organized in the following stages:

- Detection of learner characteristics; definition of teacher qualifications; detection of learning setting facilities; detection of teaching tools and materials and learning-teaching strategies and methods on the basis of learner and teacher qualifications; gains; and teaching setting facilities; planning of practice and evaluation activities.

Pre-practice

- Each student was asked to film their lesson during pre-practice and then to watch and evaluate their performance. In addition, they were expected to ask other student teachers in the same class and their mentors to fill in the standard evaluation form to assess their performance.
- Each student was asked to perform the following practices making necessary changes to the lesson plan on the basis of pre-practice evaluations.
- Each student was asked to prepare self-evaluation and reflection reports.

Data Collection Tools

Teaching Self-Efficacy Scale: As developed by Çapa, Çakıroğlu and Sarıkaya (2005), it is composed of 24 items using a nine-point Likert Type scale. When responding to the items on this one dimensional scale, participants mark the value they deem the most appropriate for each item 1 (insufficient) to 9 (highly sufficient). The lowest possible score that can be taken from the scale is 24 while the highest score is 216. The Cronbach Alpha reliability coefficient of the scale was calculated as .93.

Epistemological Belief Scale (EBS): The Epistemological Belief Scale was used in this study to measure the epistemological beliefs of students. The validity and reliability of this scale, developed by Schommer (1990), has been confirmed using Turkish university students, Deryakulu and Büyüköztürk (2005). The scale has a three-factor structure and is composed of 34 items. There are 17 items in the first factor of the scale: “The Belief That Learning is Based on Effort;” nine items in the second factor: “The Belief That Learning is Based on Ability;” and eight items in the third factor: “The Belief that there is Only One Truth.” The Cronbach Alpha internal consistency coefficients were calculated as .84 for Factor 1, 0.69 for Factor 2, 0.64 for Factor 3 and 0.81 for the whole scale. The highest score was taken from each factor of the scale showing whether the individuals had immature/undeveloped beliefs related to this factor.

Data Analysis

Descriptive statistics and t-tests were applied in the analysis of data obtained from the scales.

Findings

What is the effect of the ICT supported blended teaching practice process on the epistemological beliefs of prospective teachers?

To answer this question, the differences between the scores taken in the first application of the epistemological belief scale at the beginning of the process and the scores taken in the second application of the scale at the end of the process were tested for each sub-scale via t-tests. The results obtained from these tests are given in

Table II
The Significant Differences between the First and Second Application of the Epistemological Belief Scale

Epistemological Belief Scale		<i>N</i>	\bar{X}	<i>ss</i>	<i>sd</i>	<i>t</i>	<i>p</i>
LBoE	First Application	43	31.56	6.57	42	3.43	.001*
	Second Application	43	28.74	6.86			
LBoA	First Application	43	18.00	4.25	42	.000	1.000
	Second Application	43	18.00	4.82			
OOT	First Application	43	24.65	5.18	42	1.46	.153
	Second Application	43	23.65	4.58			

Table 2 shows the epistemological belief levels of prospective teachers before the teaching practice and the changes created by the process in the beliefs. When the pre-practice results are examined in this perspective, it can be concluded that prospective teachers enter into the process at a mature level which can be deemed sufficient in terms of “the belief that learning is based on effort” (LBoE) and “the belief that learning is based on ability” (LBoA). “The belief that there is only one truth,” on the other hand, seems stronger than other sub-dimensions. After teaching practice, while maturity has been observed in “the belief that learning is based on effort” and “the belief that there is only one truth” (OOT), no change is recorded in “the belief that learning is based on ability.” When t-values are related to the significance of the differences between the first and second application of the scale, it has been revealed that only the value related to “the belief that learning is based on effort” is significant at the 0.05 level.

The t-test outcomes showing whether results obtained in relation to the epistemological beliefs differ on the basis of the general academic success levels of students are listed in Table 3.

Table III

The Significant Differences Observed in the General Academic Success Levels between the First and Second Application of the Epistemological Belief Scale

Academic Level	Success	N	Epistemological Belief Scale	\bar{X}	ss	t	p
Lower Group		22	First Application	33.18	6.85	2.43	.024*
			Second Application	30.00	7.52		
Upper Group		21	LBoE First Application	29.86	5.94	2.43	.025*
			Second Application	27.43	5.98		
Lower Group		22	LBoA First Application	18.86	4.44	.04	.970
			Second Application	18.82	5.42		
Upper Group		21	First Application	17.10	3.95	-.09	.933
			Second Application	17.14	4.04		
Lower Group		22	OOT First Application	25.82	5.16	.95	.352
			Second Application	24.68	3.98		
Upper Group		21	First Application	23.43	5.03	1.27	.220
			Second Application	22.57	5.01		

Table 3 has two perspectives: epistemological belief levels of prospective teachers before their teaching practice, and the changes created by the process in the beliefs. When the pre-practice results are examined, in parallel with the literature (Schommer-Aikins, Mau, Brookhart & Hutter, 2000), students with a lower academic success level have stronger belief in all sub-dimensions of epistemological belief when compared with the students of higher academic success levels. When the differences between the first and the second application are examined to detect the changes created by teaching practice, a significant difference has been recorded in students of both high (upper group) and low academic success (lower group) levels in terms of "the belief that learning is based on effort."

The t-test findings that show whether results obtained in relation to epistemological beliefs change on the basis of prospective teachers' gender are given in Table 4.

Table IV

The Significant Differences in Gender of Prospective Teachers between the First and Second Application of the Epistemological Belief Scale

Gender	N	Epistemological Belief Scale	\bar{X}	ss	t	p
Male	27	First Application	33.19	6.46	1.86	.074
		Second Application	31.30	6.46		
Female	16	First Application	28.81	5.96	3.25	.005*
		Second Application	24.44	5.28		
Male	27	First Application	18.67	4.34	.05	.965
		Second Application	18.63	4.89		
Female	16	First Application	16.88	3.98	-.05	.957
		Second Application	16.94	4.64		
Male	27	First Application	25.26	5.35	.72	.478
		Second Application	24.59	4.32		
Female	16	First Application	23.63	4.87	1.56	.140
		Second Application	22.06	4.71		

In Table 4, the epistemological beliefs before teaching practice are examined in terms of gender and it has been found that females have more developed epistemological beliefs than males in all sub-dimensions. There are many references in the literature which support this finding, particularly in terms of “the belief that learning is based on ability” (Schommer, 1993a; 1993b; Paulsen & Wells, 1998; Eroğlu & Güven, 2006; Deryakulu & Büyüköztürk, 2005). When the changes created in the epistemological beliefs of females and males by the teaching practice processes are examined, it is revealed that female students showed a substantial improvement in terms of the “belief that learning is based on effort;” in other words, they have matured while no meaningful change was observed in male students.

What is the Effect of the ICT Supported Blended Teaching Practice Process on the Teaching Self-efficacy Beliefs of Prospective Teachers?

To respond to this question, the differences between the scores taken in the first application of the teaching self-efficacy belief scale at the beginning of the process and the scores of the second application of the scale at the end of the process were tested via a t-test. The results obtained from these tests are given in Table 5.

Table V

The Significant Differences between the First and Second Applications of the Teaching Self-Efficacy Belief Scale

Teaching Self-Efficacy Belief	<i>N</i>	\bar{X}	<i>ss</i>	<i>sd</i>	<i>t</i>	<i>p</i>
First Application	43	164.95	20.29	42	-3.28	.002*
Second Application	43	175.07	18.96			

$\alpha = .05$

When the table is analyzed, bearing in mind that the highest possible score to be taken from teaching self-efficacy scale is 216, it can be concluded that self-efficacy belief levels of the prospective teachers at the beginning of the process are high. The development course of this result throughout the process has been found to be significant at ($t = -3.28$) 0.05 level; prospective teachers completed their process with a stronger self-efficacy belief.

The t-test outcomes showing whether results obtained in relation to the teaching self-efficacy belief change on the basis of the general academic success levels of prospective teachers are given in Table 6.

Table VI

The Significant Differences Observed in the General Academic Success Level between the First and Second Application of the Teaching Self-Efficacy Belief Scale

Academic Success Level	<i>N</i>	Teaching Self-Efficacy Belief	\bar{X}	<i>ss</i>	<i>t</i>	<i>p</i>
Lower Group	22	First Application	168.50	18.21	-2.48	.022*
		Second Application	180.68	13.88		
Upper Group	21	First Application	161.24	22.09	-2.13	.045*
		Second Application	169.19	21.96		

Table 6 shows that students of both high and low general academic success levels were positively affected to a significant level by the practice process in terms of the teaching of the self-efficacy belief. This leads to the conclusion that prospective teachers had positive experiences during their teaching practice processes and this is parallel with the study findings suggesting that observation and experience, especially if it occurs in a positive way, does improve the self-efficacy belief (Bandura, 1977, 1994; Schmitz and Schwarzer, 2000; Yavuzer & Koç, 2002).

The t-test findings related to whether the results obtained from teaching the self-efficacy belief differ depending on the gender of prospective teachers are given in Table 7.

Table VII

The Significant Differences Observed in terms of the Gender of Prospective Teachers between the First and Second Application of the Teaching Self-Efficacy Belief Scale

Gender	N	Teaching Self-Efficacy Belief	\bar{x}	ss	t	p
Male	27	First Application	168.63	15.73	-2.56	.017*
		Second Application	178.78	12.42		
Female	16	First Application	158.75	25.65	-1.98	.066
		Second Application	168.81	25.94		

When Table 7 is analyzed, it is seen that the teaching practice process has led to a positive and significant change in teaching the self-efficacy belief of male students. However, there is no evidence as to whether there is a significant change in female students. Furthermore, female students had a weaker belief structure at the beginning of the process in terms of teaching the self-efficacy belief when compared to male students.

Conclusions and Discussion

There were some limitations in this study. First of all, there was neither a control nor an experimental group. Such an experimental pattern was not used in the study since it was not possible to find a suitable control group without that group experiencing a disadvantage in the learning process. Hence, this situation makes it difficult to explain the results obtained on the basis of the setting created for this study. In addition, the fact that most of the practice has taken place in schools makes the control of the process a difficult task, which points out the need to be careful in evaluating results obtained.

The study was conducted to examine the effects of the process of ICT supported blended teaching practice on prospective teachers' teaching self-efficacy belief and epistemological beliefs. Statistical analyses have shown that a significant maturation has only been observed in the "learning is based on effort" sub-dimension of epistemological beliefs. While no significant difference has been recorded in terms of academic success levels (a meaningful maturity development has been observed in both groups), a significant change has been observed in females in terms of gender.

This result is thought to be the product of multi-dimensional evaluations and positive feedback related to the differences between the performances of prospective teachers at the beginning and at the end of the process. In addition, prospective teachers watching video recordings of their own teaching practices and witnessing their positive improvement is thought to be another important factor in the maturity aspect. Observations of prospective teachers regarding their students at practice schools may have also strengthened their belief in the importance of effort in learning. The result is thought to be in agreement with the research findings suggesting that there is inter-decisiveness between learning settings and epistemological beliefs and that learning settings cause changes in epistemological beliefs (Schommer 1998; Brownlee et al. 2001; Tolhurst 2007).

The finding that suggests that maturation of prospective teachers in "the belief that learning is based on effort" is independent from general academic success levels (in other words, the finding that suggests that students with different academic success levels show similar maturation) is found to be more important, generally, than the contribution of arranged settings to maturity. When Schommer's findings (1993)

are taken into consideration, suggesting that general academic success levels of students strongly believing in all epistemological belief dimensions (students with immature epistemological beliefs) are comparatively lower, it can be expected that students of lower academic success levels have stronger epistemological beliefs. However, this study has provided some evidence suggesting that students of lower academic success levels can also mature in terms of their epistemological beliefs as long as appropriate settings and conditions are provided.

The statements in the reflection report of a student, who was in the lower group in terms of academic success, are given below as supporting the result.

At the end of the observations I made and the application activities I carried out in the course of teaching practice lesson, I have realized that it is not an easy task to plan a course and to put this plan into practice...It is clearly understood that enough time (any time out of the lesson and may be longer than the time allocated for the lesson) should be allocated for the planning of teaching process so as to ensure effective learning.

The fact that a positive maturity has been observed in females in the same sub-dimension of epistemological beliefs while no evidence has been found pointing out a significant maturation in males can be explained with the study findings that suggest that females are generally more developed in terms of epistemological beliefs, and males have a stronger belief in "learning is based on ability" (Schommer 1993a; 1993b; Paulsen & Wells 1998; Eroğlu & Güven 2006; Deryakulu & Büyüköztürk, 2005).

Statements which support this view are given below, from the reflection reports of both a female and a male student:

Female Student:

... I exerted too much effort to observe and analyze the features of the target group...I wrote down the gains complying with the students' characteristics after the phases of work analysis and subject selection...I tried to design the features of the most appropriate setting where the teaching-learning process would be performed by evaluating the features of the setting where I would carry out the implementation. I decided on the teaching strategies and methods complying with the learning perceptions of the target group...Regarding material selection, I thought about sharing the phonebook, in relation to the subject, with the students in the classroom setting. In this way, I attracted the attention of students and increased their motivation for the lesson...I paid special attention to using the blackboard.

Male Student

Since my practice teacher had work to do, I had the opportunity of teaching in the 3rd week of my practice. The fact that I was successful in teaching despite being unprepared has eliminated my concerns about teaching when I am prepared... The most important experience I have gained in my lecturing practices is to leave room for flexibility in plans. The events that occur in the lesson may sometimes not be in parallel with your plans. I have learned the importance of leaving room for flexibility in the plans and making changes in the plan during the course of the lesson.

Findings related to the teaching self-efficacy belief have shown that the process affects the teaching self-efficacy belief in a positive way and at a significant level. While no difference was observed, in this sense, in terms of academic success level (a meaningful improvement was observed in both groups), significant differences were detected in terms of gender in favor of males.

When considering the results that suggest that the self-efficacy belief can be explained with complete and correct experiences, indirect experiences, oral persuasion and emotional condition (Bandura 1994; Schmitz & Schwarzer, 2000; Yavuzer & Koç, 2002), the results obtained in this study point out that prospective teachers had positive experiences during their teaching practice processes. Again, multi-dimensional assessments and the opportunity for prospective teachers to witness their own processes are thought to have positive contributions in this sense.

The positive development observed in the teaching self-efficacy beliefs of the students with lower academic success level is considerably higher than that of the students with higher academic success levels; this is regarded as a remarkable result. Generally, lower academic success may have led to the development of negative thoughts about the possibility of being successful in practice. Students with lower general academic success levels who had observed the practice performance of both themselves and others may have started to question the relationship they had established between academic success and practice performance and this may have, in turn, changed their thoughts in a positive and a more apparent way when compared with students of higher academic success.

Statements from the reflection report of a student having a lower level general academic success:

...I had difficulty in the planning of the lesson. Since I had problems with the timing and I encountered unexpected problems in the first lesson, I prepared the plan in a more careful way and succeeded. I had no more problems with timing. Some unexpected problems appeared; however, I easily solved them. I avoided making the mistakes I had made in the first lesson. I gave the instructions not on individual-basis but on class-basis. I could give due care to each student as I had no timing problem any more. While preparing the plan, I thought the students would not have enough time to do the evaluation; however, they easily had sufficient time for the evaluation... In conclusion; I avoided the mistakes I had made in the previous lesson. However, I do still have problems in using my voice effectively. I do believe that I can overcome this problem in time.

When the teaching self-efficacy belief is studied in terms of gender difference, it is seen that the self-efficacy belief of males has changed in a positive direction and at a significant level while no evidence has been found suggesting a significant change in females. This result can be found to be surprising when thinking of the widely accepted assumption that females are more inclined to choose teaching as a profession. However, when considering that participants are students from the department of Computer and Teaching Technologies Education and that their experiences are limited to computer teaching, this result can be deemed an expected outcome.

Statements from reflection reports of two female students:

Student A

The computer laboratory was a well-equipped one. I tried to use the broadcasting method in the last lesson for all students; however, the connection was disconnected at the beginning of the lesson and we could not re-connect it despite all efforts. Students had to watch the material on the blackboard. I planned teaching via broadcasting method. When the broadcasting was disconnected, the lesson was a bit disrupted; however, I succeeded in re-organizing it. I learned that I should be ready for any kind of challenge to occur in the lesson.

Student B

...I taught first, second and third grades during my practice. I saw how different from each other these three grades are... Some students could not even use the mouse while some others could not find the letters on the keyboard... I realized during my practice that the classroom setting is as important as the student characteristics... When I locked the student computers, the students who had difficulty in seeing the blackboard easily lost their attention on the lesson. It would be better to transmit information not only on the blackboard but also to the students' computers. In this way, students could easily watch me from their computers as well. However, hardware problems could happen. I tried many alternatives during my practice; however, I have not still been able to find the best way. I thought about the best possible solutions for these problems whenever I encountered such problems during my practice. We discussed different solution alternatives with the other student teachers in the same classroom.

Suggestions

- The effect of the arranged settings should be tested with new practices.
- Settings similar to the setting arranged can enrich teaching practice lessons and can meet the expectations at a higher level.
- It is felt that teaching self-efficacy and the epistemological beliefs are processed as contradictory beliefs. This situation should be tested with new studies to be conducted.

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Karma Öğretmenlik Uygulaması Süreçlerinin Öğretmen Adaylarının Öğretmenlik Öz yeterlik ve Epistemolojik İnançlarına Etkisi

(Özet)

Problem Durumu: Hizmet öncesi öğretmen eğitimi süreçleri, öğretmen adaylarının iyi bir öğretmenin sahip olması gereken becerilerle donanık olarak öğretim süreçlerine katılmasını hedefler. Bu sürecin en önemli aşamasını ise öğretmenlik uygulaması oluşturur. Öğretmenlik uygulaması süreçleri yeni yaşantı olanakları yaratarak öğretmen adaylarının bilgi alt yapılarında, düşünme biçimlerinde, inanç sistemlerinde değişimler oluşturmaya çalışır. Bu noktada temel soru şudur. Bilgi, ve İletişim Teknolojileri (BİT) destekli karma bir öğretmenlik uygulaması sürecinin öğretmen adaylarının öğretmenlik öz yeterlik ve epistemolojik inançları üzerindeki etkisi nedir?

Yöntem: Bu çalışma, BİT destekli karma öğretmenlik uygulaması sürecinin öğretmen adaylarının epistemolojik inançlarına ve öğretmenlik öz yeterlik inançlarına etkisini belirlemeye dönük deneysel bir çalışmadır. Çalışmada kontrol grupsuz ön - son test desen kullanılmıştır.

Çalışma grubunu, 2006-2007 Bahar döneminde Hacettepe Üniversitesi Bilgisayar ve Öğretim Teknolojileri Eğitimi Bölümünde okuyan ve Öğretmenlik Uygulaması dersini alan toplam 43 öğrenci oluşturmaktadır. Öğrencilerin 27'si erkek, 16'sı kızdır ve 22'si alt akademik başarı grubunda, 21'i ise üst akademik başarı grubunda yer almaktadır.

Kuramsal çalışmalar, üniversitede sınıf ortamında yüz yüze gerçekleştirilen ve web ortamdaki etkinlik ve tartışmalarla desteklenen iki dilimden oluşmuştur.

Süreç yüz yüze derslerle başlatılmış ve öğretmenlik uygulamasının anlamı, süreci, gereklilikleri tartışılmıştır. Sonraki aşamalarda öğrenciler yüz yüze derslere 2 haftalık periyotlarda katılmışlardır. Bu buluşmalarda;

- öğrenciler ile uygulama okullarında yürütülen çalışmalarla ilgili bilgi ve görüş paylaşımı sağlanmıştır.
- okullarda nadiren karşılaşılabilecek problem durumları üretilerek çözümler geliştirme alıştırmaları yapılmıştır. Böylece çok yönlü düşünme, seçenek üretme, çözümlerin durumsallığını hatta bireyselliğini görme, farklılıklar karşısında yeni stratejiler ortaya koyma becerileri geliştirilmeye çalışılmıştır.

Teorik çalışmaların bir kısmı web ortamında gerçekleştirilmiştir. Bu ortam aracılığı ile öğrenciler,

- kullanılan ölçekleri cevaplamış; öğretim tasarımının kuramsal alt yapısı üzerinde tartışmış; bireysel yansıtma ve etkinlik raporlarını bütün sınıf ve öğretim elemanları ile paylaşmış; düzenlenen karikatür yorumlama çalışması ile kuramsal bilgilerini farklı bir pencereden kullanmışlardır.

Uygulamanın gerçekleştirildiği asıl ortam okullardır. Hem öğrenci hem öğretmen rolü üstlendikleri bu ortamda öğrenciler; bir öğretmenden beklenen her görevden sorumlu olmuşlardır. Bu çalışmada onlardan derslerini elektronik ortamda sunulan “Öğretmenlik Uygulaması Proje Kılavuzu” çerçevesinde planlamaları istenmiştir. Bu çerçevede klavuzda aşağıdaki adımlara göre öğretim süreçlerinin düzenlenmesi öngörülmüştür.

- Öğrenen özelliklerini belirleme; öğreten özelliklerini tanımlama; öğrenme ortamı olanaklarını tanıma; öğretim araç ve materyalleri ile öğrenme-öğretme strateji ve yöntemlerini, öğrenen, öğreten özellikleri; kazanımlar ve öğretim ortamı olanaklarına göre belirleme; uygulama ve değerlendirme etkinlikleri planlama.
- Ön uygulama yapma.

Ön uygulama sırasında her öğrenciden dersini videoya çekmesi ve izleyerek değerlendirmesi istenmiştir. Ayrıca aynı sınıfı paylaştıkları diğer stajyer arkadaşından ve uygulama öğretmeninden standart değerlendirme formu ile kendilerini değerlendirmelerini istemeleri beklenmiştir.

- Ön uygulama değerlendirmelerine dayalı olarak gerekli düzenleme ve değişiklikleri yaparak, sonraki uygulamaları gerçekleştirme.
- Öz değerlendirme ve yansıtma raporları hazırlama.

Veri Toplama Araçları: Öğretmenlik Öz-Yeterlik Ölçeği: Çapa, Çakıroğlu ve Sarıkaya (2005) tarafından geliştirilen Öğretmenlik Öz-Yeterlik Ölçeği 9’lu likert tipi 24 maddeden oluşmaktadır. Ölçeğin Cronbach Alpha güvenirlik katsayısı .93 olarak hesaplanmıştır.

Epistemolojik İnanç Ölçeği: Araştırmada, öğrencilerin epistemolojik inançlarını ölçmek amacıyla Schommer (1990) tarafından geliştirilen ve Deryakulu ve Büyüköztürk (2005) tarafından Türk Üniversite öğrencileri üzerinde geçerlik ve güvenirliği saptanan Epistemolojik İnanç Ölçeği (EİÖ) kullanılmıştır. Ölçek üç faktörlü bir yapı göstermekte ve 34 maddeden oluşmaktadır. Cronbach Alpha iç tutarlılık katsayıları Faktör 1 için .84, Faktör 2 için .69, Faktör 3 için .64 ve ölçeğin bütünü için .81 olarak hesaplanmıştır. Ölçeğin her bir faktöründen alınan yüksek puan, bireyin o faktöre

ilişkin olgunlaşmamış / gelişmemiş inançlara sahip olduğunu, düşük puan ise olgunlaşmış / gelişmiş inançlara sahip olduğunu göstermektedir.

Verilerin Analizi: Ölçeklerden elde edilen verilerin çözümlemesinde betimsel istatistikler ve t testi kullanılmıştır.

Bulgular: T destekli karma öğretmenlik uygulaması sürecinin öğretmen adaylarının epistemolojik inançlarına etkisi nedir?

Bu soruya yanıt bulmak amacıyla epistemolojik inanç ölçeğinin sürecin başındaki ilk uygulamasından elde edilen puanlarla sürecin sonundaki ikinci uygulamasından elde edilen puanlar arasındaki farklılıklar, her bir alt ölçek açısından, t testi ile test edilmiştir. Sonuçlar, yalnızca “öğrenmenin çabaya bağlı olduğu inancı” ile ilgili olarak .05 düzeyinde anlamlı bir olgunlaşmanın oluştuğunu göstermiştir. Durum akademik başarı düzeyleri ve cinsiyetler açısından incelendiğinde ise, epistemolojik inançlarda, akademik başarı düzeyine bağlı anlamlı bir değişme gözlenmemişken; Yine “öğrenmenin çabaya bağlı olduğu inancında” kız öğrenciler anlamlı olgunlaşma göstermişlerdir.

BİT destekli karma öğretmenlik uygulaması sürecinin öğretmen adaylarının öğretmenlik öz yeterlik inançlarına etkisi nedir?

Bu soruya yanıt bulmak amacıyla öğretmenlik öz yeterlik ölçeğinin sürecin başındaki ön uygulamasından elde edilen puanlarla sürecin sonundaki son uygulamasından elde edilen sonuçlar arasındaki farklılık t testi ile test edilmiştir. Sonuçlar, öğretmen adaylarının öğretmenlik uygulaması sürecinden anlamlı derecede daha güçlü bir öz yeterlik inancıyla çıktıklarını göstermiştir. Durum genel akademik başarı düzeyi ve cinsiyetler açısından incelendiğinde ise, hem akademik başarı düzeyi düşük öğrencilerin hem de yüksek öğrencilerin öğretmenlik öz yeterlik inancında anlamlı ve olumlu değişme oluştuğu gözlenirken; kız öğrencilerin öğretmenlik öz yeterlik inançlarında anlamlı bir değişme olmadığı saptanmıştır. Ayrıca genel akademik başarı düzeyi düşük öğrencilerin öğretmenlik öz yeterlik inançlarındaki değişimin genel akademik başarı düzeyi yüksek öğrencilerden anlamlı derecede yüksek olması dikkate değer bir sonuç olarak değerlendirilmiştir.

Anahtar Sözcükler: Öğretmenlik uygulaması, karma öğretmenlik uygulaması, epistemolojik inanç, öğretmen özyeterlilik inancı, öz yeterlik

Opposite Curriculum

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Abstract

Problem: This theoretical study addresses the factual and intellectual bases of opposite curriculum which was developed and introduced to the literature on education as a new and original type of curriculum. Embedded in legal and hidden curriculum, opposite curriculum can develop by taking advantage of the weaknesses of these curricula and turn into legal curriculum after passing through five phases.

Objective: What are the similarities and differences between legal, hidden and opposite curricula? What can we say about the development of opposite curriculum?

Method: Presenting a theoretical structure by reviewing the relevant literature.

Findings: Opposite curriculum is embedded in legal and hidden curriculum; it becomes legal after passing through five phases.

Keywords: Legal curriculum, hidden curriculum, opposite curriculum.

Curriculum can be defined as a dynamic structure that comprises behaviours selected for observing in individuals, the content of these behaviours and the status of education and testing (Sönmez, 2007). Educationists divide curricula in two categories: legal and hidden. This paper will examine opposite curriculum which has not been addressed so far and which is missed in education literature. No matter how they are coined, curricula are expected to consider the cultural nature of a given society at a given time, the characteristics of subjects to be educated, the properties of a given topic and the related environments. Furthermore, educational philosophy, educational economics, education psychology and educational sociology are also influential in developing curricula.

Curricula can be arranged for classes, courses, schools, institutions and organisations, communities, associations, educational systems and the state itself. For instance, curricula can be developed for courses in mathematics, Turkish, physics, chemistry, football, dancing, driving, etc., to be delivered by classes, schools, etc. The state may use education and training as an effective tool to realise its long-term targets (vision). If the ultimate goal of the state is a contemporary, laic, democratic and social state where there is rule of law, its citizens must be educated and trained as individuals adopting and defending all these, since the state can attain its goals only with the existence of such citizens. In this context, education is, in a sense, a deliber-

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ate process of culture building through which the official ideology of the state is imparted to citizens. This process is steered by using legal curricula.

Legal Curriculum

Legal curriculum can be defined as the process by which the state (institutions, communities, associations, organisations and orders) train people in line with its short- and long-term objectives. This is done by legal curricula adopted and implemented by the state and other organisations. The most relevant type of this curriculum is the one developed by the state and implemented by the Ministry of Education. The state designs this programme in line with its Constitution. The Constitution sheds light on political targets to be pursued. Each state develops and implements legal curricula in line with its Constitution to be used in schools and supervises its implementation. This is what we call legal curricula. All state organisations and bodies have to train and employ citizens in conformity with this curriculum.

A legal curriculum must be in conformity with far reaching, political, general and specific objectives of the state. In other words, the most general and distant objectives must be interlinked with narrowest and specific targets. This should be supported in both logical terms and in practice. If no attention is paid to practical implementation, even logically consistent objectives may not be attained. For example, the far reaching goal is to be the strongest country in the world, so other objectives as intermediaries of the former should be consistent and mutually supportive. This is necessary, but not sufficient. Even when sets of objectives appear logically consistent, they may not serve the ultimate goal if not pursued meticulously in practice. This means waste of money, time and efforts. If a state wants to have tolerant citizens, it must insert tolerance, encouraging elements in all courses and supplement these with other activities that also build tolerance. Otherwise, intended goals may not be attained because of poor working coordination. As a matter of fact, although some values are exalted on paper, individuals adopt different paths in many education systems. There may be various reasons explaining this divergence, which can be addressed as follows:

1. No matter how scientific its base may be, no curriculum can cover life as a whole. There may be shortfalls any time. A curriculum is related to natural, social, political, economic, cultural and individual realities. At any given time, we lack full knowledge of these realities. Furthermore, life is in constant change. When we start implementing a given curricula, that facts that lay at its base may have changed. Therefore, one cannot talk about a fully mature and completed curriculum.

2. Each curriculum is experimental since it embodies suggestions developed to solve problems. A curriculum is built upon suggestions that are expected to bring solutions to some problems. Let's take "training individuals capable of solving problems" as a target. All solutions proposed in the curriculum for ensuring this are experimental. Suppose that the solution is set as "including students in decision making processes will enable them to solve problems." Even when student participation in education environments is attained, the objective may not be reached since participation may not be the only method of solving the problem. Furthermore, the decision making process may be learned but not practiced by all students and it may not solve a given set of problems fully. Therefore even when processes are enriched by

phasing in different methods, including problem solving, brainstorming, case study, learning station techniques, six hat thinking method, etc., problems may be so multi-dimensional and profound as to fail all these methods.

3. Each curriculum is based on a philosophical and educational current. Each philosophy and current in education is a construal of and an outlook on life. Perennials and essentialism curricula are based on idealistic and realistic philosophies which maintain that life remains unchanged and propositions of general validity can be reached through reasoning and experience. As such, curricula have to take universal truth as their basis. Universal truth, in turn, is to be built on unchanged reality, nature and social life. According to perennials understanding of curriculum based on idealist philosophy, all propositions with universal validity are intrinsic to the human mind. The teacher must undertake the duty of depicting this knowledge that students find out through reasoning and checking the outcomes by posing rational questions. On the other hand, in essentialism curriculum based on realist philosophy, the human mind is a *tabula rasa* from the very start. Therefore, all correct information needs to be imparted by teachers.

The task in education is to train people in line with predominant cultural values in a given society. This, in turn, requires the communication of the outcomes of experiments and observations. It must be further checked through exams whether students have indeed absorbed this communication. In both of these philosophical and educational currents, we observe that the principle "only wise persons can get an education" is predominant. On the other hand, in educational currents based on Marxist and pragmatic philosophical tenets, life is in a continuous process of change. Thus there can be no universally valid propositions. The truth is only metaphorical and individuals may grasp this by life experience. The duty of the teacher is to guide individuals in this process. The Marxist curriculum has the objectives of making individuals productive, ensuring their resistance to exploitation and creating individuals who think and live dialectically, work for a better society, humanity and to establish communism.

The existentialist philosophy defends individual-based training since single individuals constitute the basis of any education and training. Curricula must be developed and phased-in by taking due account of individual potentials, desires and needs. Curricula must carry individuals to their natural boundaries. Education and testing environments also must be organized accordingly. On the other hand, in the post-modern approach, the principle is "anything will do." In other words, education can take place anywhere, not just at a school. An individual may learn through various activities and by contacting various persons and institutions. It rejects science, reasoning, enlightenment philosophy and objectivity while defending pluralism, community forming, virtual reality, tolerance and religious orders. In the post-modern approach, the use of daily absurd information in philosophy, religion, traditions and politics is legitimate. There is no such thing as a proposition reflecting the truth or any method for reaching the truth. Under the likelihood: philosophy, all propositions are for the present time. There is no definitive and stable truth for any given time. We may have propositions whose plausibility is relatively high and we can solve our problems by referring to these. When a problem is given, there may be a single or multiple ways of solving it or no way at all. Education and training can be

taken as an incessant process continuing throughout life. In this process, school, society, other individuals, institutions and organisations have their specific places depending upon given circumstances. One may full fill it or all may fail. A dynamic balance may be considered as more relevant. There can be single or multi-dimensional reflection and analysis. Propositions may range from zero to one, including both of them. There can be one-way reasoning, multiple forms of reasoning, or none may be used (Sönmez, 2002).

Taking a look at the educational and philosophical trends we observe that all differ from each other. Each curriculum may be built upon at least one of these trends. For the time being there is no immunity from philosophy and its basic assumptions. Consequently, curricula still remain experimental and singularly insufficient.

4. Each curriculum is limited to the power of those developing, implementing and supervising it and its subjects. Curricula are mostly developed by those who have adopted and defend the policies and philosophies of the state, institutions, associations and organisations. Even when this is an outer appearance, not all of them can share the same policy, philosophy and conviction, since in fact there are, at least for the present, no individuals and groups that are exactly identical in their mental capacity and cultural background. Hence, there must be a consensus in this context. Consensus may entail reconciliation. Further, not all people understand the same from a given stance. Those who are to try and implement a given curriculum must first grasp its underlying assumptions, principles and logic. This may not come instantly since some of these people or groups may still adhere to and defend some elements from the former curriculum. For the present, this is inevitable. It must be noted that no established conviction or practice can be immediately and totally erased upon will. Each new practice may entail references to the past since a new value is formed and re-formed by interacting with the former. Only after this interaction can a new thing become truly new. This is an incessant course. Another point to note is that there is always a natural resistance against what is novel. As a result of the doubt about what is new, both implementers and supervisors inevitably feel the threat of being unsuccessful. All we have mentioned above may be valid for the new curriculum when it comes to the subjects (students). Now, it does not seem possible to develop, implement, evaluate and improve a curriculum that fits all students because each student is at a different level of preparedness. Neither time, efforts and money nor scientific and technological endowments is ready to come up with such a universality valid curriculum. Implementation of a curriculum is susceptible to the influence of a wide range of factors including the following: the level of preparedness of school administrators, managers, teachers, personnel, students and parents; their understanding of curriculum; formal and informal rules prevailing in school environments; natural, economic, political, social and cultural environments; architectural characteristics of school buildings; number and endowment of classrooms, workshops, labs and halls; number of students using these facilities; economic, ethnic and class background of students; textbooks and their content; time allocated for teaching; extracurricular activities; values attributed to the school and curriculum by managers, teachers, parents, students and communities, etc. What is more, all these factors may lead to the emergence of hidden and opposite curricula.

5. Specificities of educational status may also influence curriculum. Teaching-learning strategies, theories, methods, techniques and tactics used in education environments are also important variables that affect the working of a given curriculum. No matter how well trained they may be, not all teachers can give effect to the same activities in their respective classes. Just as each brave man has his style of eating, each teacher has his/her style of delivering a course. Furthermore, there may not be a standard learning strategy, theory, method, technique and tactic applicable to all students at all times. These may preclude the full implementation of any given curriculum. In some circumstances, the directive to "implement the curriculum exactly as it is instructed" may not be realistic. Suppose that imbuing tolerance to students is one of the targets of the curriculum. While working on this, teachers may display different styles and attitudes in class. From another point, if a student cannot raise any opinion contrary to what is written in his textbook or what is adopted by the teacher or the state, if he is scolded, teased, humiliated or penalised when he attempts to do this, one cannot speak of any possibility that the curriculum will attain its target related to "tolerance." The target of tolerance is further endangered if a single ideology, belief, view, thought, sect, etc., is taught. The method and technique of learning-teaching used attain this target may also affect the outcome. For instance, if the teacher heavily relies on one-way straightforward methods such as lecturing and conferencing, the target will not be attained. In contrast, if the teacher resorts to methods and techniques such as brainstorming, learning stations, decision making processes, problem solving, six hat reasoning technique, case studies and cooperative learning, then students may attain the original target. It should not be forgotten that each teacher may not use these methods and techniques in the same way and effectiveness.

6. Specificities of being tested are among important variables affecting curricula. If tests consist of questions that call in monolithic responses, depend on learning by rote and the repetition of given skills, it can be said that the curriculum is realistic in general. It has an idealistic base if it requires reasoning. Further, if tests are geared to problem solving, construing or developing new solutions, then there is dominancy of the pragmatist or Marxist approach. The post-modern line of thinking comes in if the approach consists of "all solutions may work and there is no absolute need to think scientifically." Multi-dimensional tests entail probability. It is clear from here that the type of questioning and testing affects the structure of curriculum. Also, while a given curriculum may on paper want students to think, solve problems and come up with original views, teachers may not arrange exams in compliance with these. This may stem from various factors including teachers' traditional attitudes, lack of information, features of hidden and opposite curricula, students and parents, admittance tests (to schools, jobs, promotions), exams and the expectations of supervisors.

7. Theory and practice may not match. Each curriculum remains within a theoretical framework. This framework may also determine how curriculum is to be implemented. As stated earlier, no matter how meticulously and scientifically a curriculum may have been developed, it may not cover the full range of life and life practices. There may always be shortfalls in implementation. Possible reasons for this were touched upon earlier. There is an interaction between theory and practice. To solve problems, valid and reliable propositions developed thus far are used to con-

struct a theory, or a new frame of thinking is developed on the basis of phenomena. In both cases, theory is put to practice. Depending on outcomes, working elements are maintained while others are repaired, replaced or totally discarded. In other words, there is again recourse back to theory to reconstruct it. This is the close relationship between theory and practice. If this relationship is not established, the system (curriculum) slides to entropy. The process is never-ending since life changes constantly.

8. Hidden and opposite curricula emerge in the implementation of each legal curriculum. This is also inevitable for the time being. Change, development, maturation and recourses back can happen only through this. Furthermore, potential achievements of legal curriculum can be real through hidden curriculum. Next to hidden curriculum, challenging both hidden and legal curricula and trying to take their place, we see another curriculum which may be called opposite curriculum.

Hidden Curriculum

Hidden curriculum can be defined as one outside legal curriculum, operated implicitly to realize legal curriculum's potential objectives while, at the same time, ensuring the adoption of further objectives. In a sense, hidden curriculum can be taken as the sum total of what students acquire from legal curriculum. It can be inferred from this definition that hidden curriculum may embody elements both supporting and challenging legal curriculum. This point is emphasised especially by Dewey (1933), Martin (1976), Gordon (1982) and Yüksel (2004). Still, those who worked on hidden curriculum maintained that it is operated implicitly to attain potentials of legal curriculum which may end up in the emergence of different, unexpected and undesired objectives (Vallance, 1980; Anyon, 1981; Gordon, 1984; King, 1986; Lakomski, 1988; Margolis and Romero, 1998; Hemmings, 2000; Gair and Mullins, 2001; Castello, 2001; Gair, 2003). Jackson (1968), the first to use the concept and examine it, finds that this type of curriculum is carried out implicitly in order to prepare students for social life. All class-based activities are considered in this context to ensure that students take part in social life as adults. This approach stems from essentialism education current that is based on realist philosophy; in this philosophy, the principal aim of education is to prepare individuals to join society. In other words, it aims at imparting the dominant cultural values of a given society to its individuals.

Scholars working on this maintain that hidden curriculum is phased in by school managers, teachers, inspectors and others in order to achieve the overt and covert objectives of legal curriculum by using school rules, time, cultural and natural structure, including physical, social, economic and psychological characteristics. In fact, neo-Marxists and structural-functionalists working on this theme assert that persons adopting and defending the dominant cultural values of society and official ideology of the state are those who have been educated and trained through hidden curriculum. With this curriculum, students subscribe to emotions, ideas and skills that confirm to political, economic and social values upon which the state is built. However, some undesired behaviour, including the following may emerge: cheating in exams; lying; organising gangs; carrying weapons; injuring others; homicide; using drugs; engaging in illicit relations; disrupting educational activities; disobeying rules; rebelling; dividing into ethnic, ideological or religious camps; and resistance. All these may stem from the eight items stated above in relation to legal curriculum. Each legal

curriculum may contain, in itself, both hidden and opposite curriculum. This is the most salient feature of its structure. Further, since change is inevitable until temperature - 273, each legal curriculum may change by generating its opposite within.

Opposite Curriculum

Opposite curriculum can be defined as one that is developed to train persons who will defend exactly the opposite of objectives adopted by legal curriculum. Its difference from hidden curriculum should be noted: hidden curriculum may be phased-in to impart individuals with the potential objectives of legal curriculum. In other words, it has no mission to fully eliminate legal curriculum and replace its objectives with its own. Opposite curriculum, on the other hand, is mobilized to train individuals who are expected to do away with legal curriculum, defend opposite objectives and overthrow any established ideology, order, structure, institutions, convictions and values. Initially, these intentions are not explicitly stated since it is, in any case, embedded in hidden curriculum and it is not powerful enough to do so in early stages. There is this opposite curriculum in all novelties and revolutions in human history. Passages from pastoral life to settled agriculture, from feudalism to industrial and information society have all taken place, in a sense, through opposite curricula. This can also be observed in the biological and cultural evolution of human beings. As long as there is an opposite curriculum working biologically, there is also one working culturally.

At earlier stages, the intellectual content of opposite curriculum is generally provided by persons of wisdom from upper socioeconomic classes (Moses, Jesus Christ, Confucius, Voltaire, Marx, Lenin, etc.). However, there also may be such intellectual generators from lower classes who are in dissidence with legal and hidden curricula (Atatürk, Mao, Lumumba, etc.). Whatever the case may be, these persons carry out propaganda to recruit their supporters who are also in dissidence with established curricula. Still those who first notice the shortfalls, gaps and mistakes in legal curriculum are generally persons raised in upper socioeconomic groups. Opposite curriculum can attain its objectives by passing through five stages.

A. Incubation Period

Opposite curriculum may undergo this period within hidden curriculum. Initially it is embedded in it and derives the power necessary for its survival from hidden curriculum. Emergence of a new curriculum may be fed by various factors, including shortfalls of legal and hidden curricula; dissatisfaction with these; their failure to respond to the expectations and needs of society; the emergence of new and original understandings of life and political and social upheavals. Society and individuals in it may turn discontent with what society and life offer them. This discontent is the essence from which opposite curriculum emerges. Opposite curriculum starts to surface when legal and hidden curricula fail to respond to discontent, needs, and the material and spiritual expectations of society and individuals. There may be some natural, social, economic, political and cultural variables that support and expedite this process. In such circumstances, opposite curriculum embedded in hidden curriculum starts flourishing. At this stage, this emergence may not be noticed since a large majority of society still adheres to legal and hidden curricula. For example, Christianity, Islam and Republicanism, democracy, etc., initially went unnoticed in

times of paganism and feudalism, respectively. They were rather ignored as values cherished only by a few. At these initial stages, the opposite curriculum started gaining strength by taking advantage of the inconsistencies, mistakes, shortfalls and discontent associated with legal curriculum. Again at this stage, small groups formed around leaders, which may be called a "core group." These are people who have totally adopted the objectives of opposite curriculum and who are ready to propagate and defend it at all costs. Examples include core groups around Moses in Judaism, Jesus Christ in Christianity, Mohamed in Islam, Voltaire and Robespierre in French Revolution, Lenin in Russian Revolution, Atatürk during the War of Independence, Mao Tse Tung in China and Khomeini in Iran. One of the features of these core groups is their full commitment to the objectives of a newly emerging opposite curriculum and their dedication to convince others of the same. They perform their functions effectively—especially during the weak moments of legal and hidden curricula—clandestinely and in a way not to attract the excessive attention and worries of the defenders of legal and hidden curricula. It is because they are still not strong enough in the initial stages to rout the crushing attempts of the dominant powers.

B. Period of Growth

During this phase opposite curriculum may declare to the public its objectives in selected times and occasions. These objectives may focus on some phenomena that bother society and its individuals, but the ultimate goal is still secret and is kept as such. Defenders of opposite curriculum try to gather economic, social and political strength to gain new people on their side and to full fill their promises to others. Organisation efforts flourish, gain speed and expand. Persons with superior talents, strong ones and persons admired by the public are won to the side of the defenders of opposite curriculum. These people are trained in line with the objectives of opposite curriculum and they may be provided specific economical, social and political opportunities and means. Those who do not behave in this line or betray their cause are immediately penalised, since concessions may lead to the collapse of opposite curriculum. Since the defenders of opposite curriculum are now noticed at this stage they work by dividing into smaller groups. They concentrate their activities in areas and among groups which display discontent with legal and hidden curricula. They recruit new supporters mostly from urban suburbs where lower socioeconomic groups exist. They may gather further economic, social and political strength by working in these spaces. Then they try to insert reliable supporters trained in line with opposite curriculum into key institutions and their top level positions so they can work at key points within legal and hidden curricula. Education, health, security and justice are among these key areas. Priority is given to these areas since they are crucial in responding to people's most urgent needs and where principal veins of legal curriculum exist. The defenders of opposite curriculum take advantage of every means to insert or place their supporters in these key positions. They may even pretend to be defenders of legal curriculum. They mostly cover their true faces and established objectives and use all means of legal curriculum to serve to their own ends. They are keen at attending the best and most prestigious schools and grabbing key positions mentioned above after their graduation. During their school years they find intelligent but poor and alone students to bring them in line with their curriculum and provide them many opportunities. This phase may therefore be called the period of "recruiting militants."

C. Emergence

Opposite curriculum starts to imply its real objective in this phase. Now it has sufficient economic, social and political support. There are quite a few persons trained in and committed to defend opposite curriculum. The organisation may now continue its work in different and promising places by dividing into small groups each consisting of four-five persons. It is important that each of these groups has a doctor, nurse, lawyer, teacher, who are well positioned to solve the problems of other community members in order to gain new supporters. Education, health, and law are among the leading fields where many citizens face daily problems. For example, a small group may visit other people who are identified as dissidents especially during specific occasions such as holy days. During these visits, solutions are offered for people's health, education, legal or security problems without asking for anything in return. This is a way to gaining people's loyalty. Further, they may provide some material assistance (cash, food, housing, clothing, stipends, loans, etc.) to needy people as far as their economic means allow. They can support them in their difficulties. The objectives of opposite curriculum are conveyed to these people in such processes. While the number of supporters increases, those who oppose are immediately inhibited or excluded from activities. The most "annoying" ones may even be murdered. There also may be alliances with other opposing circles inside and outside. They instantly take advantage of the weaknesses of legal curriculum. Political, social and economic structures are turned into the means of serving their specific objectives. For example, they may make use of democracy, liberalism, human rights, courts and schools for their own purposes until they attain full power. They may also adopt defensive positions if legal curriculum turns out to be strong enough to pose a deadly threat and maintain their activities in more covert forms. They may even pretend they are taking sides with legal curriculum while secretly mobilizing activities to undermine its renewal and development. If the opposition they encounter is too strong, they act as if they are conceding to dominant values or even deny their original objectives while continuing to declare it in hidden forms. They may try to use hidden curriculum with their supporters for their own clandestine purposes. They may show resistance either actively or passively when they are under threat. Now they have this power since they enjoy rather tight material and spiritual solidarity as adherers of opposite curriculum.

D. Period of Rebellling and Resisting

By this stage, the number of defenders of opposite curriculum has increased significantly. Furthermore, they have considerable economic, social and political power. In all bodies and key positions of the state which are still characterised by legal curriculum, there are staff members trained along and working for opposite curriculum. Also by this stage, even legal curriculum has imparted some elements from opposite curriculum. Established institutions have no power to effectively resist opposite curriculum by this stage. Opposite curriculum now have material and other powers to protect it from threats. A large majority of society sees no threat in opposite curriculum and even believe that many problems can be solved through it. Earlier propagators of opposite curriculum now make their real goals open to the public as was the case with Atatürk, Robespierre, Lenin, Hitler, Franco, Mohamed, Christ and Moses.

Opponents are convinced or, if this does not seem possible, imprisoned, purged or murdered.

E. While Holding Power

Opposite curriculum is now in effect. All institutions are overhauled by visible and desired political, economic and social structure. Individuals are educated and trained accordingly. Those taking sides with opposite curricula hold key positions. With these, opposite curriculum becomes legal curriculum. Hidden and opposite curricula start to evolve within it. This is an inevitable process where change cannot be stopped until – 273 degrees. The new legal curriculum is destined to face the same fate that legal curriculum faced, overthrow.

Factors Influencing the Evolution of Opposite Curriculum

As mentioned earlier in regards to legal curriculum, many variables may influence the process. These variables can be addressed under the headings of economic, political, social, natural, intellectual, artistic, scientific and technical developments and individual characteristics. A brief explanation is given below.

Economics

It is one of the most important variables affecting the evolution of opposite curriculum. Legal curricula strive to adopt measures needed to sustain and defend a given economic structure. Legal curriculum has to provide for the labour force needed by an economy in both qualitative and quantitative terms. In the course of time, it fails to fully meet this need. There may be a continuous contrast between those holding economic power and others deprived of it. The income differentials between the wealthiest and poorest may become wider. The unemployed and poverty stricken groups may be dissatisfied with legal curriculum. The level of income may fall and there may be problems in a range of dimensions including trade, production, consumption, distribution, national income, per capita income, valuation or devaluation of local currency, exports, imports, taxation, tax collection and service delivery. Legal curriculum may be troubled in solving problems in these areas. These factors may affect legal, hidden and opposite curricula while they may, in turn, influence economic activities. In fact, throughout the history of civilisation, hunting and gathering gave rise to settled farming, farming to industry and industry to the formation of information society. So far each economic system has developed and mobilised curricula that respond to its needs. In turn, these curricula influenced and reshaped economic systems. Opposite curriculum gathers strength in times of economic shortfalls and crises by suggesting solutions and thus improves its chances of adoption by more.

Political Structure

Each institution is based on at least one political stance. There are states based on capitalist, fascist, communist, democratic, theocratic and monarchist political stances. The system of education is erected upon the political stance adopted by the state. In any case, all states want individuals committed to and defending their state. In fact, that the purpose of education institutions. As a given political structure stimulates corresponding curricula (legal, hidden and opposite), they too have their effects on political systems. Indeed, people resisting and eventually overthrowing absolute

monarchies were those educated by the schools of such monarchies and, similarly, people opposing capitalism had their education in the schools of this order. Moses, Marx, Lenin and Atatürk were educated in the schools of Pharaoh, capitalists, the Tsar and Sultan, respectively. Each of these people was under the influence of opposite curricula and reached success by adopting and giving effect to these curricula. Opposite curricula were influential in the emergence of all religious and political leaders.

Social Structure

One of the major functions of education is to transmit the dominant cultural values of a society to individuals. These values may change with respect to different economic, political, intellectual, artistic and religious understandings. A dominant value which is accepted in one country at a given time may be totally undesired in another. It may once have been a dominant and desired value to hail the sultan and obey his orders without question while it totally loses its desirability in the Republican era. Similarly, honour killings may have been upheld by many in some periods. There may be efforts to imbue such values and structures to all to ensure the sustenance of a given society. Legal and official curricula are the primary means to do this. However, experienced shortfalls as well as changes in social, economic, political, scientific, artistic and intellectual spheres may fail both hidden and legal curricula and may no longer respond to changing stances and desires. This is the point where opposite curriculum phases in. Opposite curriculum may claim to have responses to shortfalls and failures of legal and hidden curricula and as far as it fulfils its claims, it gathers adherers. Often, legal and hidden curricula may oppose these changes and developments due to their very nature. For instance, it was once considered improper for an individual citizen to take his unsettled case with the state to authorities out of his country; but now the wife of the Minister of Foreign Affairs in Turkey may apply to the European Court of Human Rights with legitimate right to do so. Legal and hidden curricula may sustain themselves if they make the necessary adjustments to respond to newly emerging situations; however, they often fail to do so due to the very nature and assumptions on which they are based. Hence opposite curriculum may find a vacuum to fill.

Nature

Each human being and society has a natural environment. Changes taking place in nature directly influence and change human beings and societies. Legal and hidden curricula are developed and used taking account of nature as well. For example, the needs of people living in deserts may not be the same as those living by the sea or in polar zones, so legal and hidden curricula need to be structured to respond to different needs. Nature is also in a process of continuous change. Earthquakes, floods, avalanches and fire have found their places in certain curricula. Air, soil, water and noise pollution were unknown to any legal or hidden curricula a century ago, but now they enjoy their specific places in almost all curricula. Curricula may be able to sustain themselves as long as they respond consistently to these changes and renew themselves. However, they often fail in this and opposite curricula steps in and may in time replace them both.

Intellectual, Artistic, Scientific and Technical Developments

All achievements in curricula are presented to individuals and society as connected with content. This content is intellectual, artistic, scientific and technical. Novelties and studies in science, arts, intellectual fields and technology often constitute the driving force of change. These are considered as dynamics of change in society and nature. At present, science, arts and intellectual production can account for 30-60 percent of ongoing social change. There is even the dominant view that development and change must take place in intellectual fields first. It is quite hard for life to change without changes in ideas, views, beliefs and values. Opposite curriculum also assigns priority to thoughts and beliefs. Scientific innovations and novelties profoundly affect and change life. The domestication of horses, dogs and sheep gave way to stock breeding; culturing wheat, barley and rye to settled farming; the invention of mills, textile machines and weapons to industrial revolution; and atomic bomb, space sciences, satellites, computers, genetic engineering and nanotechnology to information age. All of these may affect and change legal and hidden curricula. Use of technological changes in education environments may influence the structure and essence of curricula. Now there is distance teaching and curricula have had to adapt accordingly. We may have bio-technological education in near future. School buildings, endowments, teachers, managers, inspectors, students and parents all may undergo changes. In fact there are radical differences between schools and education 20 years ago and at present. These differences might have stemmed from the impact of changes in science, arts and technology on education systems. Mostly, legal and hidden curricula cannot keep pace with these developments and changes and this may provide a space for opposite curricula. Education may start without schools and teachers. Computers, satellites and Web sites may replace them all. It may even go as far as the point where each person may develop and implement his or her own special curriculum. Consequently, the essential components of all established understandings of curriculum may be affected and eventually thoroughly restructured.

Individual

Individual is the essential basis of all curricula. Desired behaviours are designed for and are to be imparted to individuals. Without it, no curriculum may be needed. The individual also is changing in biological and cultural terms. Society, economic and political structure provide opportunities, pose obstacles and raise expectations while individuals in turn provide these and also have expectations of the former. This is a reciprocal relationship. Provisions, obstacles and expectations of hunting/gathering societies in relation to individuals may be totally different from those of an information society. Curricula pertaining to the earlier must have had few to impart in individuals and a low level of qualification. Individuals of these ancient societies may have learned these by experience in less than a year. On the other hand, behaviours expected from individuals in an information society are much more complex in both qualitative and quantitative terms. Moreover, individuals of the contemporary society have much more and altered needs. With the exception of the most basic ones, the needs of contemporary individuals would be just unthinkable to individuals of the prehistoric ages. Today an individual cannot acquire these within just one year; he has to be in the life-long process of education and learning. The level

of preparedness has also changed. Individuals have become more conscious and have radically changed the ways of looking at, analysing and interpreting events. Changes in natural and cultural structure affect individuals' outlook on life. As explained above the individual in turn influences and changes this structure. Legal and hidden curricula are used to respond to this process and they can indeed respond for some time, but shortfalls and related discontent emerge after some time for reasons stated above. Again, it is the point where opposite curriculum tames stage.

Conclusion and Suggestions

Just as death is intrinsic to any living organism, there is opposite curriculum embedded in legal and hidden curricula. This is inevitable for now. Opposite curriculum is a new response to life. It may offer solutions to what cannot be solved by legal and hidden curricula and a new way for the emancipation of individual and society. In fact, monarchy against feudalism, republic and pluralistic representative democracy against monarchy and direct democracy and technological governance against all these oppose another; in other words, all syntheses arrived at by mankind and each civilisation newly created stands for an opposite curriculum. Conversely, settled farming is an opposite curriculum for pastoral communities while it is legal one for industrial society. An industrial society is an opposite curriculum vis-à-vis feudalism but legal vis-à-vis information society. An opposite curriculum is indeed opposite curriculum when its scientific, artistic, philosophical, religious, political, economic and social models are new and original, when it re-moulds and re-synthesizes life, and when it challenges and refutes the assumptions of earlier curricula. Opposite curriculum itself becomes legal when it replaces legal and hidden curricula. The same is true at almost all historical turning points. When Ptolemaists' concept of universe becomes legal curriculum, the Galileo-Newton concept challenging it operates as opposite curriculum to become legal when it completely replaces the former. Then enters the concept of Einstein as opposite curriculum, and it goes like this. In general, opposite curricula may take individuals and societies forward to a happier and fuller life. In such a case, opposite curriculum may help in reproducing life. This is an important contribution—in fact, a resurrection. However, there are still some opposite curricula which may push society backwards, bring along new despair, exterminate some desirable values or may even cause the end of all humanity. In fact there are episodes in history where slavery replaced independence, and totalitarian and oppressive regimes ruled out pluralistic and democratic societies. In cases, opposite curriculum may be developed and put into effect by a single leader. Peter the Great in Tsarist Russia and Atatürk in Turkey are two examples. Each opposite curriculum emerges as a reaction to legal and hidden curricula. The period in which opposite curriculum is in its weakest stage is the period of incubation and early growth. In this critical period, if its intellectual, economic and human resources are cut out, if legal and hidden curricula can respond to shortfalls, discontent and unmet expectations, and if they can manage to mobilize contemporary science, arts and ideas, opposite curriculum will have a meagre chance to survive. Although not as easy, another way to rout opposite curriculum is to disarm it within the framework of legal and hidden curricula by paying attention to and materialising its basic propositions.

There are plenty of studies on legal and hidden curricula. In Turkey, though yet insufficient, there are some studies and publications on hidden curriculum (Yüksel, 2004; Yüksel, 2003; Aksöz, 2001; Çiftçi, 2001; Tavşancıl and Aslan, 2001; Turan, 2001; Baykal, 1999). Yet no study could be found on opposite curriculum; this is natural since this stance has just recently been articulated and presented to the academic world by Sönmez. There is a need for new publications on this issue. If there is no scientific and comprehensive study on hidden and opposite curricula, rearrangements, reforms and restructuring efforts in legal curriculum may fail. As a matter of fact, one of the reasons explaining the failure of curricula within the Turkish education system is the absence of information about hidden and opposite curricula.

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Karşıt Program (Özet)

Problem durumu: Bu kuramsal çalışmada, yeni ve özgün bir yetişek türü olarak belirlenip eğitim literatürüne sunulan karşıt yetişeğin olgusal ve düşünsel temelleri ele alınmıştır. Devletin uzak ve yakın hedeflerine göre insanları yetiştirme sürecine, resmi yetişek denebilir. Bu iş, devlet ve diğer kurumlarca kabul edilip yürürlüğe konan resmi yetişekler yoluyla yapılmaya çalışılır. Devlet bu tür programı, kendi anayasasına göre hazırlar. Anayasa onun politik hedeflerini gösterir. Her devlet, anayasasına göre okullarda okutulacak resmi yetişekleri düzenleyip yürürlüğe koyar ve bunları denetler. İşte bu tür yetişek, resmidir. Devlete bağlı tüm kurumlar, bu yetişeğe göre insan yetiştirmek ve istihdam etmek zorundadır.

Örtük Yetişek, resmi yetişeğin dışında, genellikle onun gizil hedeflerini gerçekleştirmek için el altından işletilen, bu arada farklı hedeflerin de kazanılmasını sağlayan yetişeklere örtük yetişek denebilir. Örtük yetişek, bir bakıma resmi yetişeğin dışında öğrencilerin kazandıklarının tümü olarak ele alınabilir. Bu tanımdan hem resmi yetişeği destekleyen, hem de desteklemeyen öğelerin örtük yetişekte yer alabileceği çıkarılabilir.

Karşıt Yetişek; resmi yetişeğin hedeflerinin tam karşıtını savunan kişileri yetiştirmek üzere oluşturulan yetişek olarak tanımlanabilir. Dikkat edilirse, o; örtük yetişekten farklı bir özellik içermektedir. Örtük yetişek resmi yetişeğin gizil amaçlarını kişilere kazandırmak için devreye girebilir. Onun resmi yetişeği tümüyle ortadan kaldırmak, onu yok etmek, yerine tam tersi olan kendi amaçlarını koymak gibi bir ereği yoktur. Oysa karşıt yetişek, resmi yetişeği ortadan kaldıracak, yani onun savunduğu amaçların tam tersini savunan, kurulu ideolojiyi, düzeni, yapıyı, kurum ve kuruluşları, değer ve inançları yıkıp yenisini kuracak bireyleri yetiştirmek için işe koşulur. Bunu önceleri açıkça yapamaz; çünkü örtük yetişeğin içine gömülü haldedir; üstelik ilk başları gücü de buna yetmez. İnsanlık tarihindeki tüm yeniliklerin, devrimlerin içinde bu karşıt yetişek vardır. Göçebe toplumdan, yerleşik tarım toplumuna, oradan feodal topluma, sonra sanayi ve bilgi toplumuna geçişlerin her biri, bir bakıma karşıt yetişekler yoluyla gerçekleşmiştir. Ayrıca insanın biyolojik ve kültürel evriminde de bu özellikler gözlenebilir. Yani biyolojik olarak çalışan bir karşıt yetişek olduğu gibi, kültürel olarak çalışan bir karşıt yetişek de vardır. Resmi ve örtük yetişeğin içinde önceleri gömülü halde olan karşıt yetişek, onların zaaflarından yararlanarak gelişir ve beş evreden geçerek resmi yetişek haline gelebilir.

Araştırmanın amacı: Resmi, örtük ve karşıt yetişeğin benzer ve farklı yanları nelerdir? Karşıt yetişek nasıl bir gelişme göstermektedir?

Yöntem: Kaynak taraması yapılarak kuramsal bir yapı ortaya konulmuştur.

Bulgular: Karşıt yetişek resmi ve örtük yetişeğin içinde gömülü haldedir ve Kuluçka Dönemi, Palazlanma Dönemi, Ortaya Çıkış Dönemi, Baş Kaldırma ve Direnme Dönemi, İşbaşında Olma Dönemi olmak üzere beş aşamadan geçerek oluşumunu tamamlar. Her yaşamın içinde, onun karşıtı olan ölümün bulunması gibi, her resmi ve örtük yetişeklerin içinde de karşıt yetişek vardır. Bu, şimdilik kaçınılmazdır. Karşıt yetişek, yaşama yeni bir yanıttır. Resmi ve örtük yetişeğin çözümediklerine yeni bir çözüm, bireyin ve toplumun kurtuluşu için yeni bir yol olabilir. Nitekim feodaliteye karşı krallık, krallığa karşı cumhuriyet ve çoğulcu temsili demokrasi, bunlara karşı doğrudan demokratik ve teknolojik yönetim birbirlerinin karşıtıdır; yani in-

sanoğlunun yaptığı her sentez, oluşturduğu her yeni uygarlık, bir karşıt yetiştir. Bir başka deyişle tarım, göçebe topluma göre karşıt, sanayi, toplumuna göre ise resmi yetiştir. Sanayi, toplumu da feodal topluma göre karşıt; fakat bilgi toplumuna göre ise resmi yetiştir. Tüm bilimsel, sanatsal, felsefi, dinsel, politik, ekonomik, toplumsal vb. modeller ve görüşler yeni ve özgün olunca, yaşamı yeniden oluşturunca, sentezleyince; kendinden öncekine tepki oluşturup onun temel sayıltılarını ve önermelerini ret edince karşıt yetiştir. Karşıt yetiştir resmi ve örtük yetiştirin yerini alınca, kendisi resmi yetiştir olur. Sanayi toplumu, tarım toplumunun yerini alana kadar karşıt yetiştir; alınca ise, resmi yetiştir olur. Diğer her türlü sistem de aynı özelliği taşır. Batlamyus'un evren görüşü resmi yetiştir olunca, ona karşı çıkan Galileo-Newton görüşü karşıt yetiştir olarak işler. Onun yerini alınca, resmi yetiştir dönüştür. Ona da karşı çıkan Einstein'ın evren görüşü, karşıt yetiştir olarak devreye girer. Bu süreç biteviyedir. Genellikle çoğu karşıt yetiştir, bireyi ve toplumu daha ileriye, mutluluğa, tutarlı bir yaşama doğru götürebilir. Böyle bir durumda, karşıt yetiştir yaşamın yeniden üretilmesini sağlayabilir. Bu çok önemli bir katkıdır. Yeniden dirilmiştir. Böyle olmasına rağmen, bazı karşıt yetiştirler toplumun geriye gitmesine, tutarlı değerlerden vazgeçmesine, mutsuzluğa itilmesine, hatta toplumun, insanlığın yok olmasına neden olabilir. Tarihte bunun örnekleri; bağımsızlıktan köleliğe, çoğulcu demokratik toplumdaki totaliter, baskıcı yönetimlere geçişte görülebilir. Bazen karşıt yetiştir, tek bir lider oluşturup uygulayabilir. Bu tür liderler çok azdır. Deli Petro ve Atatürk bunlardan ikisidir. Her karşıt yetiştir, resmi ve örtük yetiştirin bir tepki olarak ortaya çıkar. Karşıt yetiştirin en zayıf olduğu zaman, kuluçka ve palazlanma dönemidir. Bu dönemde onun düşünsel, ekonomik ve insani kaynakları kesilir; resmi ve örtük yetiştirler memnuniyetsizliklere, kısa düşmelere, karşılanmayan gereksinimlere yanıt verir, çağdaş bilim, sanat ve düşünüyü işe koşarsa, karşıt yetiştir yaşayamaz. Bunu başarmanın diğer bir yolu da, resmi ve örtük yetiştirlerin içinde, onun savduklarını savunup yaşama geçirmekle, yani elinden silahlarını ve kozlarını alarak boğulmasını sağlamakla olabilir; fakat bu iş, o kadar kolay değildir.

Resmi ve örtük yetiştirler üzerinde yapılan pek çok araştırma bulunmaktadır. Bizde de örtük yetiştir üzerinde bazı incelemeler ve yayınlar yapılmıştır; fakat bunlar yetersizdir (Yüksel, 2004; Yüksel, 2003; Aksöz, 2001; Çiftçi, 2001; Tavşancıl ve Aslan, 2001; Turan, 2001; Baykal, 1999). Karşıt yetiştirle ilgili şimdiye dek hiçbir araştırmaya rastlanmadı; çünkü bu görüş Sönmez tarafından yeni oluşturulup bilim dünyasına sunuldu. Bu konuda yeni yayınlara gereksinim vardır; çünkü örtük ve karşıt yetiştirler bilimsel olarak çok boyutlu araştırılmazsa, resmi yetiştirde yapılacak düzenlemeler, reformlar, hatta yeniden yapılandırılmalar başarılı olamazlar. Nitekim Türk Eğitim Sisteminde yetiştirlerin başarısız olmalarının nedenlerinden biri de, örtük ve karşıt yetiştirlerin neliğinin bilinmemesidir.

Anahtar Sözcükler: Resmi yetiştir (legal curriculum), örtük yetiştir (hidden curriculum), karşıt yetiştir (opposite curriculum)

A Qualitative Assessment of the Quality of Turkish Elementary Schools*

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Abstract

Problem Statement: New international assessment results place Turkey well behind most of its counterparts on student learning achievement. Turkish students also performed poorly in national assessments. It is interesting however, that in spite of the students' general failure in the national and international assessments, a few schools produce good results with an average level of resources. A qualitative analysis of these schools can explain what is going right in those schools and why.

Purpose of the Study: The purpose of this study is to construct a picture of "what is a good school" in urban areas of Turkey and to identify their characteristics. The focus is on elementary schools that produce effective results with limited resources and are therefore identified as "good schools." The identified characteristics and the practices of good schools that produce good results with limited resources can then be transferred and improved by other schools.

Method: The qualitative research method was used in this study. The data were collected through observations, interviews, and focus group meetings from the schools selected as samples. The schools within the scope of the research were selected by using extreme or deviant case sampling. A total of four schools were selected, two from developed provinces (Ankara, Antalya), and two from developing provinces (Ordu, Samsun). The school principals, the teachers, the students, and the parents were the sources of data. Content analysis was used to analyze the data.

Findings and Results: The findings show that the selected schools have very limited resources while serving a low income clientele. High parent interest and very positive climate were found. Although none of the schools has written down their vision and institutionalized it formally, they have a *shared hidden vision*: being at the top in national assessments. It is also found that the core values of schools have a big impact to achieve micro and macro level quality. The schools, despite all the constraints, are successful in getting the micro and macro level results. However, they do not have any shared vision and practices related to the mega level results.

Conclusion and Recommendations: It is concluded from this study that the four schools in this study have macro level quality focus. Although no school was able to present a formal vision statement based on the focus group meetings with teachers, parents, students, and administrators, the following was found as the informally (or hidden) shared ideal vision in these schools: "There will be no student who fails to graduate and every-

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one will get accepted into Anatolian High Schools and Science High Schools or other preferable high schools through High School Entrance Test (HSET).” This shared ideal vision identifies students’ and parents’ as the primary client and beneficiaries of the schools. Based on the results of the study, the following recommendations can be made. First, society is the primary client for elementary education. Therefore, schools must select mega level quality because this level focuses on societal usefulness and consequences of education. Variety in high school type should be eliminated and HSET should be abolished. To move from macro level quality to mega level quality, class sizes should be reduced and a working curriculum for society should be developed.

Keywords: School quality, international education, educational development, elementary education

Turkey has achieved remarkable progress in education system coverage in recent years. After the eight-year compulsory Basic Education Law (Law No. 4306) was signed in August 1997, Turkey embarked on an unprecedented expansion of public schooling. This Basic Education Program entails a broad range of actions, financed largely by government revenues, but also by major private enterprise contributions and international loans and grants. Total annual expenditures for the Basic Education Program are in the order of US \$3 billion annually. These outlays include investment outlays for the construction of new schools and the renovation or expansion of existing ones, a massive provision of computers, educational equipment and educational materials, recurrent spending on the remuneration of teachers and other educational staff, new recruitment, and additional staff training to expand the provision and quality of schooling.

These investments have contributed to a dramatic increase in coverage. Specifically, whereas total basic education enrolments declined during the six years prior to the Basic Education Law, enrolments increased by 1.5 million after the law became effective. According to official figures, this increase raised the net enrolment ratio for eight-year basic education from 76 percent to 95 percent in 2002. Girls’ enrolments in rural areas made the swiftest gains. In sixth grade classes located in rural schools, the enrolment rate of girls increased by 162 percent in the first year of the Program, and has since continued to make sharp gains (MONE, 2004). There are few cases in the history of any national education system that can compare with the initial achievements of Turkey’s Basic Education Program.

Nonetheless, improvement on other measures of education system quality and performance, such as school quality and learning achievement, are not commensurate with the gains in access. New international assessment results, such as the Third International Mathematics and Science Study (TIMSS) and the Progress in International Reading Literacy Study (PIRLS), and other comparative measures, place Turkey well behind most of its counterparts on student learning achievement. In TIMSS 1999, Turkey was ranked 31st according to mathematics results and 33rd according to Science results among the 38 participating countries. Thirty-five countries participated in the PIRLS 2001 and Turkey was ranked 28th among them.

Turkish students also performed poorly in national assessments such as Students’ Achievement Determination Study (SADS). In SADS 2002, 1/3 of the students were in the bottom quartile, meaning that at least 4/5 of the answers of the students in this

quartile were wrong. The results of the High School Entrance Test (HSET) in 2003 and in 2004 were disappointing. Among the 591.181 eighth grade elementary school students who took the HSET in 2003, 40.586 (about 4%) received a "0" (zero) score. In 2004 about 10% of those taking the test (634.787) received a "0" (zero). These results suggest that increases and improvements in educational inputs do not guarantee the quality of education. Parallel to the quantitative progress, the effectiveness and the quality of school education must be a priority objective.

It is interesting however, that in spite of the students' general failure in the national and international assessments, a few schools produce good results with an average level of resources. At this point there are no comprehensive research studies of the best practices of elementary schools in Turkey. The qualitative analysis of these schools can explain what is going right in those schools and why. Through this analysis, the characteristics and practices of these schools can be identified then shared and emulated. The practices and characteristics that make a school a "good school" within the Turkish context should be evaluated and examined.

The purpose of this study is to construct a picture of "what is a good school" in urban areas of Turkey and to identify their characteristics. The focus is on elementary schools that produce effective results with limited resources and are therefore identified as "good schools." The identified characteristics and the practices of good schools that produce good results with limited resources can then be transferred and improved by other schools. The results of this study will help policymakers to identify what makes a good elementary school and help them establish educational priorities.

Defining the Quality School

Though often used in discourses about education, quality is a difficult and elusive term to define. While everyone is in favour of building the quality school, the arguments start when a definition of quality is put forward. In the management literature, the term quality has different meanings and has been variously defined as excellence (Peters & Waterman, 1982), value (Feigenbaum, 1951), fitness for use (Juran & Gryna, 1988), conformance to specifications (Gilmore, 1974), conformance to requirement and defect avoidance (Crosby, 1979), meeting and exceeding customers' expectations (Parasuraman, Zeithaml, & Berry 1985).

According to Sallis (2001), the relative definition of quality has two aspects to it. The first one is the procedural concept of quality. From this aspect, quality can be achieved by putting systems and procedure into operation and ensuring that those systems are efficiently and effectively operated. It ensures that activities conform to requirements. Measuring educational results against performance indicators is a good example of this. The second concept is the transformational concept of quality. It is based on the need to make the organization 'customer focused' rather than 'product focused.' Transformational quality is achieved through establishing customer requirements and then building structures, and particularly organizational cultures, which empower employees to meet them. Quality can be defined as that which best satisfies and exceeds customers' needs and wants. It is the consumers who make the judgment on quality. The learners, parents, employers and society are the external or primary customers of the educational services.

National Centre for Education Statistics' report (2000), *Monitoring school quality: an indicators report*, explores why some schools may be better than others at helping students learn. The research described in this report indicates that school quality affects student learning through the training and talent of teaching force, what goes on in the classrooms, and the overall culture and atmosphere of the school. Within these three areas this report identifies 13 indicators of school quality: (1) school leadership; (2) goals; (3) professional community; (4) discipline; (5) academic environment; (6) teacher academic skills; (7) teaching assignment; (8) teacher experience; (9) professional development; (10) course content; (11) pedagogy; (12) technology; and (13) class size.

European report on the quality of school education: sixteen quality indicators (2000) were published by the European Commission. This report on the quality of school education is based on the 16 indicators selected by the working group in cooperation with the Commission. These indicators cover four broad areas: attainment levels; educational success and transition; monitoring of school education; and educational resources and structures. Attainment level in some fields can be considered as strong indicators of the quality of school education. In some fields—'mathematics,' 'reading,' 'science'—the data from TIMMS, PIRLS, and IEA were used to evaluate the quality of school education in European countries. Reading, mathematics, science, and social studies claim their place as indicators because they provide essential knowledge tools and provide the foundations for life long learning skills. SADT includes evaluation in mathematics, reading, science, and social studies. Therefore, SADT results served as one of the main reasons for the selection of the schools in this study. Elementary school supervisors provided valuable information on other indicators, such as drop out rates, parental participation, resources, and evaluation.

In order to address what the term 'quality school means' Fuller (1986) explores four categories of quality definitions, namely technical production process, individual abilities and perceptions, school and classroom organizations, and institutional signals. He agrees that determining a definitive answer for school quality, one that will apply to all contexts, is a formidable, if not an impossible task. We have a sense of what we are looking for, but are at a loss to articulate how it is to be measured and under what conditions. Glasser (1990) admits that it would be extremely difficult to come up with an exact definition of quality education that would apply to all situations. Even without being able to define it, however, we can almost always recognize it when we see it.

Methodology

The qualitative research method was used in this study. The data was collected through observations, interviews, and focus group meetings from the schools selected as samples. Although the data for this study were mainly collected through qualitative research methods, quantitative data in the form of school test results and data about school resources were used in the process of selection of the schools to be included in this study.

Selection of the Provinces and the Schools

The schools within the scope of the research were selected by using extreme or deviant case sampling. This approach focuses on cases that are rich in information

because they are unusual or special in some way. The logic of extreme case sampling is that lessons may be learned about unusual conditions or extreme outcomes that are relevant to improving more typical programs. With limited resources and limited time, an evaluator might learn more by intensively studying one or more examples of really excellent programs. The evaluation focus, then, becomes a question of understanding under what conditions programs exemplify excellence (Patton, 1987).

On April 12, 2002 the Ministry of National Education (MONE) in Turkey conducted an assessment study, namely Student Achievement Determination Test 2002 (SADT 2002). The purpose of this assessment was to gather the information necessary to increase students' successes rather than to rank the schools, teachers, and students according to their performance in the test. Five-hundred and forty-one public elementary schools participated in the assessment study. Turkish, mathematics, science, and social studies tests were administered to the fourth, fifth, sixth, seventh, and eight grade students. The contents of these tests are similar to TIMMS and PIRLS. As stated earlier, the results of SADT 2002 were very disappointing. Among the 541 participating schools, only 20 were found to be very successful. These 20 schools were in the fourth quartile. Four schools were selected among 20 successful schools through the following processes:

1. The names of the schools were given to the school supervisors from the provinces and they provided information about (a) reputation of the schools among the public, (b) general performance assessment of the school teachers given by the school supervisors, (c) limited resources but good results in high school entrance tests, (d) high attendance rate, (e) parental involvement, (f) discipline and order in the school, (g) extra curricular activities and success in these activities, (h) openness to the public, and (i) commitment to success.
2. Good performing schools with average clientele and resources were determined based on the information provided by the supervisors from the provinces.
3. The schools that are on the university campus or in the official housing units, and supported by the foundations were eliminated.
4. A total of four schools out of the remaining ones were selected, two from developed provinces (ANKARA, ANTALYA), and two from developing provinces^{††} (ORDU, SAMSUN). These schools have the best SADT score average in their provinces and the school in Antalya has the best score average amongst the 541 schools.

Since the MONE did not announce the SADT results in public, the following pseudonyms will be used: Ankara Central Elementary School, Antalya Sub-Province Elementary School, Samsun Central Elementary School, and Ordu Central Elementary School.

Student achievement has been considered a key indicator of educational quality, and student scores on large-scale assessment is the subject of public scrutiny. Student

^{††} The provinces have been classified into two categories as developed and undeveloped (regions having precedence in development) according to their levels of development determined by State Planning Organization in Turkey.

test scores, particularly on large-scale assessments such as TIMMS, PIRLS, HSET, and SADT, are considered important elements of school quality. To find and focus on cases that are rich in information and to learn from extreme outcomes, the results of these assessments are highly appropriate. However, test scores can only be interpreted meaningfully in the context of the school and the educational system that produces them. Therefore, the other components of the school that produced assessment results should be understood. To understand and evaluate the quality of education requires not just numerical values or quantitative measures, but a more vivid picture of a unique and complex character of schools. Using a qualitative method this research intends to provide this kind of detailed information.

Collection and Analysis of Qualitative Data

The data were collected through individual interviews and focus group interviews. A semi-structured interview form developed by the researcher was used to collect data. The school principals, the teachers, the students, and the parents were the sources of data. The interview schedule was initially pilot-tested with five elementary teachers, five parents, five students and two principals. After each interview, interviewees' comments were elicited, followed by a number of fundamental changes in the schedule.

Interviews were conducted with four school principals. A typical interview ran about 50 minutes. Focus group interviews were conducted with the teachers, the students, and the parents. In this study eight to ten people participated in each focus group interview for one to one-half hour. A total of four teacher focus group interviews, four student focus group interviews, and four parent focus group interviews were conducted. Following Patton (1987) our participants were organized in focus groups that were relatively homogenous within each category; i.e., teachers, students, and parents. They were asked to reflect on the questions posed to them by the researcher as they interacted with each other. Their discussions often extended beyond the original question. The goal was to elicit high quality data in a context where views could be shared and disagreements acknowledged. In this way participants were able to check and balance each other, and in the process, weed out false or extreme views.

Content analysis was used to analyze the data. Content analysis involves identifying coherent and important examples, themes, and patterns in the data. Thus, the complexity of the data was organized into categories. The five elements of the quality management process (Kaufman, 1993) were used as the main categories: inputs, processes, products (micro-level results), outputs (macro-level results), and outcomes (mega-level results). Sub-categories were established under each main category. Three of the elements relate to results (outcomes, outputs, products), one relates to methods (processes), and the other to resources (inputs):

The researcher took notes during the interviews and focus group meetings. By using the word processor program, the responses of the participants were cut and pasted under each category. Then, thematic similarities and differences were identified under each category.

Findings

The five elements of the quality management process (Kaufman, 1993) were used as the main categories: inputs, processes, products (micro-level results), outputs (macro-level results), and outcomes (mega-level results). The findings of this research will be presented under these main categories.

Inputs/Resources

The selected schools in this study must represent good performing schools with median clientele and resources. The schools selected for this study had to demonstrate good performance in spite of serving communities of a low socio-economic level and having scarce resources. It was found that the schools have serious input related constraints, such as poor school facilities and crowded classes. The average class size is 41, however, there is still a serious demand for registering students in these schools. The pressure from senior authorities and false registry documents are well known situations experienced in every registry period.

The four schools of this study are well-performing schools in terms of student achievement; however, there are large differences in their enrolment. They range from 450 to 1670. However, research studies on the relationship between school size and student achievement have found that enrolment data cannot be assumed to have a direct causative effect on achievement (Duke, 1998; Heck & Mayor, 1993; Howley, 1996; Lee & Smith 1997; Stockard & Mayberry, 1992). The literature has shown no consistent relationship between class size and student achievement. In one study, for instance, class size demonstrated no significant effect on achievement (Lytton & Pyryt, 1998). However, with smaller class sizes, teachers are able to provide a wider variety of instructional methods and learning activities (Blatchford & Mortimore, 1994). With smaller class size students benefit from more individualized instruction (Betts & Shkolnik, 1999), and students are more proficient at basic skills and master more subjects.

Although three of the schools are double shifted in order to accommodate a larger population, the average class size is still high. Because of the good reputation these schools have among the public, parents prefer to send their children to these schools.

School facilities play a significant role in the teaching and learning process. The accessibility of science and computer labs, physical education facilities, libraries, and the number of volumes of books available for circulation can be used as quality indicators. Each of the schools included in this study has one well-equipped science laboratory which has been used very effectively by the students and teachers. The laboratories were established through their own budgets or by donors.

Samsun Central Elementary School and Ordu Central Elementary School do not have computer facilities. The number of students per computer in Ankara Central Elementary School is 66, and in Antalya Central Elementary School there are about 23. Ankara Central Elementary School has a rich school library. They have collected about 5000 books that were collected through several campaigns. The other three schools also have libraries; however, they are not rich in resources or are in poor physical condition. The schools have a low number of overhead projectors. The

number of students per overhead projector is shown in brackets: Ankara CES (214), Antalya CES (113), Samsun CES (134), and Ordu CES (418).

Parent characteristics are considered to be a very important part of the input in education. The selected schools' parent profile is composed of parents who work mainly in the public sector with low or middle income, small shopkeepers, workers, the unemployed or the daily employed.

These findings show that the selected schools have very limited resources while serving a low income clientele. They represent less than an average school in terms of their inputs. Then what makes these schools good? To answer this question in regards to their good practices, we must examine the processes level.

Operations / Processes

Parent participation. Research studies are consistent in finding a positive correlation between parental participation and student achievement and performance (Reynolds, 1992; Stevenson & Baker 1987; Fehrmann, Keith, & Reimers, 1987). This positive influence is not restricted only to achievement. Parental involvement in school events is also associated with better student attendance and behaviour (Griffith, 1996; Keith et al., 1996; LeRae, 1992; Stevenson & Baker 1987).

This research revealed that the school administrators and teachers were satisfied with the participation and support of their school's parents. The parental contribution was not only financial, it also revealed itself as involvement in the process, expression of expectations and creation of factors to affect the realization. A close cooperation with the parents based on mutual trust and respect was found in the schools. Parental participation has taken place in different ways in these schools. Ankara CES has more good practices than the other three schools. The practices of the school regarding parent participation are shown in Table 1.

Table I
Parent Participation and Contributions

Schools	Parent Contributions
ANKARA CES	Financial aid, participation at meetings, organization of charity meetings, voluntary employment in the school library, repairing the book covers, classification of books, organizing and participating in trips, involvement in school development management team studies, annex building architectural project design, active involvement in ceremonies and celebrations...
ANTALYA CES	Financial aid, participation at meetings, creating high academic expectations such as high success in high school entrance tests, and therefore, creating an impact on teachers for the purpose of creating a competitive environment...
SAMSUN CES	Financial aid, participation at meetings, annex building architectural project design, involvement in school development management team studies, creating high academic expectations...
ORDU CES	Financial aid, participation in meetings, fulfilment of the demands from the school

The principals' and the teachers' statements in individual interviews and focus group interviews related to parent participation are as follows:

"Everyone in the school knows that it is not possible to have improvements in the school without parent support. That's why the parents are important to us and why we call them if they can not call us. (Teacher)"

"We invite parents to the school one by one and show them what we have done with parent contributions. This has created a mutual trust as a result of which the parents are doing whatever demands we have for them. (Principal)"

"The parents should first be convinced about what his/her contribution will mean for the student. We try to explain this with patience and with clarity. (Principal)"

School climate. The research suggests that principals can have an indirect influence on school effectiveness through actions and attitudes that shape the school's learning climate (Hallinger, Bickman, & Davis 1996; Heck, Larsen, & Marcoulides, 1990; Leithwood, Jantzi, & Steinbach, 1999). For example, principals in high-achieving schools involve teachers to a much greater extent in instructional decision-making. Principals are also found to have a more direct influence on their school's student achievement rates through their leadership practices (Heck & Larsen et al., 1990).

The principals, the teachers and the students commonly reported that the school climate is very positive in the schools connected to this research. Some of their statements follow:

"The teachers and the administrators come to school with joy and motivation every day. It is a pleasure for us to be teachers in this school. (Teacher)"

"In the history of our school, there has never been an investigation or discipline related action against our teachers and administrators. (Principal)"

"I miss my school during holidays because I am treated as a mature individual despite being an elementary school student. They love the students. (Student)"

"Our school has a very cozy ambiance! (Teacher)"

"There is mutual tolerance and good will. Everyone is always sincere and ready to help each other. (Teacher)"

"The duties are never assigned in a bureaucratic way. Everyone takes the responsibility of tasks suitable to his/her potential automatically. (Teacher)"

The mentioned practices of the school that help to create a positive school climate are shown in Table 2.

According to Glasser (1992), a school is a quality school when all students who are asked to describe their school will say: "I like school; I look forward to going each day." "I am learning things at this school that I believe are good for me." And all teachers would say: "I like working in this friendly school. No one coerces me, and I do not coerce anyone else." "I am treated like a professional; I am encouraged to teach the curriculum the way I believe is best for my students." "I am pleased with the new way of evaluating students." "I no longer even think about discipline problems, they have disappeared from my classes." During the individual interviews and the focus group interviews, the students' and teachers' statements were very similar to Glasser's points.

Table II
Practices That Create the Positive School Climate

SCHOOLS	PRACTICES
ANKARA CES	<p>“What we do is focus on humans. That’s why we thought that it would be necessary to reduce the formalities and to change the government office look. We have started every new day with different kinds of music. It was the administrators who first started to move with the music and the students have joined them immediately. The teachers were surprised at first, but they also participated later on. The parents, who did not at first understand what we were doing, have started to enjoy this as well...(Principal)”</p> <p>Distribution of responsibility based on volunteerism, democratic management, respect even to marginal ideas.</p>
ANTALYA CES	<p>“Everyone feels a mutual responsibility. (Principal)”</p> <p>“We come together for a lot more informal circumstances. (Teacher)”</p>
SAMSUN CES	<p>Participation in decision-making, teamwork, transparency and democratic approaches.</p>
ORDU CES	<p>“In ceremonies what we do is real ceremony; we do not give long speeches or make announcements. We only say what has to be said and we do it in the classrooms. This has created a more positive communication between us and the students. (Principal)”</p> <p>“Our principal rarely uses his office; he makes use of every opportunity to be with the teachers, students, and parents (Teacher).</p> <p>“The principal comes to our classroom instead of calling us to his office when he wants to talk with us. (Teacher)”</p> <p>“I am always ready to take risks in favour of the teachers and the students. (Principal)”</p>

Teaching-learning environment. The physical environment of the classrooms was observed in this study. All the classrooms were visited during the break times to examine the classroom arrangements. All the classrooms were formally arranged classrooms with chairs and desks facing forward and students sitting neatly in rows starting ahead at the individual in front. Even in classrooms where the student number is appropriate for different classroom organization, the row alignment was used. In some classrooms with the row alignment, it was observed that some of the chairs were fixed to the floor. The arrangement of this type of classroom determines the role behaviour of both teacher and students. This type of classroom is not likely to stimulate and challenge students. Therefore, the teachers become more active than students in the learning process. Rows of desks reduce interaction among students and make it easier for them to concentrate on individual assignments. Rows also direct students’ attention toward the teacher, so they are particularly appropriate for teacher-centred instruction (Weinstein & Mignano 1993).

Six classes were selected randomly in the four schools in order to observe the teaching and learning processes. It was observed that all the students in the class were asked to focus on a single activity. Individual Education Plans (IEP) were not observed in any of the classrooms. The teachers applied the presentation technique and used questioning techniques from time to time in the courses observed. It was observed that in two different music courses flute and lute were played and that the overhead projector was used to demonstrate “the eye and its structure” in a science

course. No other utilization of educational technology or material was observed. The teachers described their teaching and learning strategies as follows:

"Description and discussion are intensively done in my classes. The students are receivers. They also express their own ideas but it is me who eventually determines right and wrong."

"We unfortunately do not have a creative learning process because of the system, we are always focused on exams. The majority of the issues we discuss in the class are related to exams, such as "Will this question be asked on the exam?"

"There is no time to create students who can freely think, comment, and change. The examination system forces the students to memorize and us to use teacher centred methods."

"I give the lecture, I even doubt whether they listen to me enough or not because the classrooms are over-crowded."

"Our senior administrators take the centralized exam results as the main performance criteria. Therefore, the teaching process of 5 hours is comprised of 3 hours with teacher led course description and 2 hours of test solving."

In addition to the teachers' views, the students' also expressed their views on the learning and teaching processes as follows:

"Our teachers mostly use the overhead projector in the lessons."

"We go to the science lab a lot. We do experiments in groups if there is enough material, if not the teacher does the experiment and we watch."

"The subjects that we learn from the VCDs are easier to remember."

"We have not seen any teacher apart from the computer teacher while using a computer."

It was also found that the existing computer facilities were not used to achieve the curriculum objectives. Even the computer teachers are too far away to teach computers to support curriculum activities. The following dialogue took place between the researcher and the students in a school with a well equipped science lab and IT lab:

- Kids, as an authorized officer I am going to close down your science lab. What do you think about this?

- No! Never, it is very ridiculous! We learn many things there, we do experiments. It is an important place for us...

- OK, I have changed my mind. I will not close down your science lab, but I will close down the IT lab.

- No, do not close it!

- What will you lose if I do so?

- Ehmm... We will only be deprived of the games, that's all.

Rescigno (1988) reports that the use of technology in the classroom enabled students to progress through lessons at their own pace, increasing student achievement levels. Recent research indicates that computers can raise student achievement, but when used the wrong way they can do more harm than good (Archer, 1998).

Time outside school hours. The high number of students (school size), the academic pressure on the students, and the constraints of the physical environment reduces student participation in social activities (chess, modern dance, chorus, theatre, different sport branches). In Antalya CES, there are no students going to a private course. However, all of the teachers spend three more hours after class with students in order to revise the subjects and make tests. They do this free of charge. In the other three schools, the number of the students from 5th and 6th grade that go to private course is rare. As for the 7th grade, this number is around 30% and approximately 55% of 8th graders go to a private course.

Approximately three hours for homework and two hours for test solving adds up to 5 hours per day. The homework is given mainly for review purposes. The assessment of the homework varies from teacher to teacher: "I do not control homework." "I asked them whether they did it or not." "I find out during the lesson." "I randomly pick one or two out of the class to check the homework." "Those who do not do it come forward." "I only check the homework of the students whom I doubt."

The students of the Ankara CES have been using their library in an effective way. On average a student takes two books a week. In the other three schools, the students said that they cannot find time for free reading.

Supporting professional development and leadership. Descriptions of usually quality schools indicate that in-service training and other forms of professional development generally are on-going activities which are carried out at the school site. In addition to this, leaders emerge at all levels in quality schools. Table 3 summarizes the findings related to the professional development and leadership.

Table III
Supporting the Professional Development and Leadership

SCHOOLS	LEADERSHIP BEHAVIORS AND PRACTICES
ANKARA CES	Computer training for all the teachers. Support for continuation of the university graduate program (masters or doctorate). Cooperation with the universities as well as seminars on hyperactivity, physical education and active learning. Following up technology and technology transfer. Strong human relations. Committing the teachers to the school vision. Classroom visits. Creation of democratic school environment.
ANTALYA CES	The school principal is an acting one. She does not have any encouragement in the education process. There is, however, a sense of responsibility and determination at every level. The teachers are active in launching and conducting the process.
SAMSUN CES	Launching the total quality management applications. Involving the parents actively in the process. Continuation of the professional development for teachers through school-university cooperation.
ORDU CES	Presence of all the factors that form a school. Democratic attitude and behaviours. Taking risks and supporting those who take risks.

Products / Micro Level Results

Products are the micro-level building-block results we get from the transformation of the inputs through application of our process (Kaufman, 1993). Attendance, drop-out rate, course completed, and competency test passed are some examples of

micro level results. A strong positive relationship between attendance and student performance has been reported in a number of studies (Caldas, 1993; Lamdin, 1995). Young people without a complete education may experience greater difficulty than others with regard to social integration and active participation in democratic society (European Commission, 2000).

The micro level results of the schools are presented in Table 4. It is found that the schools give great attention to this level. The schools really care about the specific skills, knowledge, attitudes, and abilities of the students as they move from course to course, and level to level. The tests are the primary focus.

Regular attendance at the school, completion of a course, and good test results do not assure success in life. Therefore, higher-order results become important: macro level results.

Table IV
Micro Level Results

SCHOOLS	MICRO LEVEL RESULTS
ANKARA CES	There is no continuous absenteeism or drop-outs from the school. Daily attendance is full. The students are happy to be at school. All of the students finish the school. The school has an average of 75% in school level identification exam. The school has successful results in many social and sportive activities (Turkish Champions and runners-up previously in volleyball, good performances in handball...) The school teachers, administrators, and the students are all satisfied with what has been put into life.
ANTALYA CES	There is no continuous absenteeism or drop-outs from the school. Daily attendance is full. All of the students finish school. They have the best score in the sub-province regarding the achievement level identification test. The students are tired and worried because of the high academic expectations and relevant activities. They mentioned that the teachers prefer teaching math to physical education, music, and arts and crafts.
SAMSUN CES	There is no continuous absenteeism or drop-outs from the school. Daily attendance is full. The 6 th , 7 th , 8 th grade teachers believe that the students that come from the primary level are well prepared. The school always finishes at the top three levels in the annual level identification exams in the province. They have had important achievements in social and sportive organizations amongst the school.
ORDU CES	There is no continuous absenteeism or drop-outs from the school. Daily attendance is full. The students are worried because of the exam-based high expectations of the teachers, administrators and the parents. The school is always in the top three in the annual level. identification exams in the province.

Outputs/Macro Level Results

Outputs are the macro-level results we can do and deliver to our external clients. Outputs are the integration, the adding-up of all of the products (Kaufman, 1993). Graduates, completers, job placements, acceptance to the finest upper level schools, etc. are some examples of the macro level results. If the schools care about the quality and competence of the completers and the leavers when they leave their educational system, macro level results become important.

Although the schools state their visions as: "Happy and successful students;" "Self-sufficient, productive and modern individuals;" "To see every one of our

graduates as a happy and successful member of the society;" "To make the school a centre that changes the society;" "Happy people who are good at doing their job in whatever profession they have." It is found that their common vision is "to be at the top in Science and Anatolian High School's Entrance Tests." This point is especially obvious in their learning and teaching practices. The macro level results of the schools are presented in Table 5.

Table V
Macro Level Results

SCHOOLS	MACRO LEVEL RESULTS
ANKARA CES	In 2002-2003, 35% of the students taking the exam hwon entry to Anatolian or Science High Schools. The students eligible for Anatolian Fine Arts High School are also in that portion. An important part of the remaining students earned the right to go to a super high school and the rest did not have any difficulty registering in a general high school. The teachers and administrators mentioned that their graduates are more successful in the next educational level than the graduates of other schools. The school does not have a planned follow-up system for its graduates.
ANTALYA CES	In 2002-2003, 49 (69%) of the 71 students taking the exam earned the right to go to Anatolian and Science High Schools and the Police College. No student applied to enter The Anatolian Fine Arts School. The other students preferred going to general high schools. The .6546 SADT average makes this school the best among 541 public elementary schools.
SAMSUN CES	In 2002-2003, 85 (46%) of the 182 students taking the exam earned the right to attend Anatolian and Science high schools. Some of the graduates went on to the super high school while some others went to the general high schools. The .6097 SADT average makes them the top school in the province.
ORDU CES	In 2002-2003, 94 (51%) of the 186 students earned the right to go to Anatolian and Science high schools. Two students went to Kuleli military high school. None of the students went to Anatolian Fine Arts High School. The other students went to super and general high schools. The students do not have any problem with acceptance or attendance in the next level of education.

Outcomes/Mega Level Results

Mega level results are concerned with societal and community outcomes and consequences. One example of a mega level result is that all learners are self-sufficient and are not under the care, custody, or control of another person, agency, or substance; all learners are productive individuals who are socially competent and effective, contributing to the self and others; financially independent, etc. (Kaufman, 1993). Schools that have a mega focus are concerned with the current and future of self-sufficiency, self-reliance, and quality of the word. When the graduates have started to use the skills, attitudes, and knowledge gained from the school, there is an impact on consequences in and for the society.

There is no doubt that the teachers and the principal of the schools selected for this study are very dedicated, self-sacrificing, and caring people. They are doing their best to do things right. However, as Peter Drucker reminds us, doing things is not as important as doing the right things. Mega level results show us whether or not we do the right things. The teachers and the principals have no clear answers for the ques-

tions about who are the clients of the schools and what should be delivered to them. They do not have any identified shared vision. Besides, they do not have any practice to evaluate whether or not they are doing the right things. The mega level results of the schools are presented in Table 6.

Table VI
Mega Level Results

SCHOOLS	MEGA LEVEL RESULTS
ANKARA CES	The school does not have any method to determine the external client satisfaction and societal outcomes. However, the graduates are proud to be naming themselves as from this school. Being from this school is perceived as a privilege in the environment. The parents want to send their children to this school. The parent satisfaction is not only related to the exam results. They believe that the students acquire the basic skills, behaviors and habits in a good way.
ANTALYA CES	The school does not have any method to determine the external client satisfaction and societal outcomes. The parents are very satisfied with the competitive process. They cannot think of a better result than having their children go to an Anatolian or Science High School. The parents prefer this school when compared to the other local schools.
SAMSUN CES	The school is well known by the society. The main reason it is preferred is because of the achievement in the exam results. The school does not have any practice to determine the external client satisfaction and societal outcomes.
ORDU CES	The school does not have any practice to determine the external client satisfaction and societal outcomes. "The parents whose first kid graduates from our school sends their youngest kid to us as well."

Core Values

Based on the findings it is possible to identify several common qualities of the schools of this study:

- Although none of the schools has written down their vision and institutionalized it formally, they have a shared hidden vision: being at the top in national assessments.
- Their performances in assessments evoke admiration.
- They place strong emphasis on basic curriculum, including Turkish, Math, Science, and Social Science.
- Academic achievement is high.
- Parents speak well of the school and the schools have a very good reputation among the public.
- Parental involvement and support is high.
- A school climate that is conducive to learning and teaching was found in the schools.

What might explain these schools' results? How might they be different from other schools that had the same opportunities, resources, and purposes in the same educational system, but did not attain the same stature? To identify the underlying characteristics and dynamics common to these schools, the following question was

asked to the participants from the schools, and the answers of the participants were presented in Table 7: "Imagine that all of us were suddenly transported to the year 2075. Many of the things at your school have been changed by developments we cannot anticipate. But no matter what changes might have occurred at the school, you want two or three things to remain the same. What would they be?"

Table VII
The Core Value Statements

SCHOOLS	"Wish to see it remained same in 2075."
ANKARA CES	<p><u>Student expressions</u>: "Having fun while learning," "Affection of our teachers," "The presence of teachers caring about us," "Interest for all of our friends without discrimination as lazy, hard working or others."</p> <p><u>Parent expressions</u>: "Achievement," "Safe and orderly environment."</p> <p><u>Teacher and principal expressions</u>: "Openness to innovations," "Parent interest and contribution," "The passion, willingness, excitement, and enthusiasm of teachers," "Freedom of expression," "Easy communication," "Respect the principles of Ataturk (the founder of modern Turkey) on which our country is founded."</p>
ANTALYA CES	<p><u>Student expressions</u>: "Dedication and the sacrifice of the teachers," "Love and respectful atmosphere."</p> <p><u>Parent expressions</u>: "Achievement," "Caring teachers," "Hard working," "Mutual respect and love."</p> <p><u>Teacher and principal expressions</u>: "The motivation and competitiveness of the students," "Determination of the students to win," "Respect and interest from students and parents," "Trust of students and parents," "More teaching time."</p>
SAMSUN CES	<p><u>Student expressions</u>: "The affection from our teachers," "Our effort to win," "Fair treatment to all people."</p> <p><u>Parent expressions</u>: "Achievement," "Mutual respect," "Solidarity," "Self-sacrificing teachers," "Safe school."</p> <p><u>Teacher and principal expressions</u>: "Love of the profession," "Love of children," "The solidarity between parents and the school," "Being optimistic about life."</p>
ORDU CES	<p><u>Student expressions</u>: "Determination and enthusiasm to win," "Respect and love in the school," "Joy of learning," "Teachers' support."</p> <p><u>Parent expressions</u>: "Achievement," "Honesty," "Tolerance," "Order in school," "Respect and love."</p> <p><u>Teacher and principal expressions</u>: "The existence of the school," "School administrators who listen to and care about everyone," "Acting in the best interest of students," "Democratic behaviours in school administration."</p>

Answering this question, the participants addressed the core values of the schools. According to Collins and Porras (2002) core values are the organization's essential and enduring tenets— a small set of guiding principles not to be confused with specific cultural or operational practices; not to be compromised for financial gain or short-term expediency. The core values are very important because they define the schools' character and serve as the schools' timeless guiding principle. Car-

ing, compassion, respect, fairness, integrity, commitment, honesty, passion to win, safeness and order, and academic achievement were commonly noted as the core values of these schools. While preserving these values, it is expected that these values stimulate the progress. *What did the core values provide these schools?* The answers of the participants were presented in Table 8.

Table VIII

What did the Core Values Provide?

SCHOOLS	What did the core values provide?
ANKARA CES	<p>"They forced everyone to make efforts to contribute." "I started to love my job more, and we are all connected as a family." "The students enjoy coming to the school." "We have taken more valid decisions. "We love being adored and preferred."</p> <p>"We have seen individual differences and offered education accordingly."</p> <p>"We had to come to the school a lot more, even spent weekends at school."</p>
ANTALYA CES	<p>"A lot more students have been placed in better schools"</p> <p>"We have won the interest, support, and appreciation of the parents."</p>
SAMSUN CES	<p>"A peaceful atmosphere to work in."</p> <p>"Strength to handle the situations such as low salary, heavy work load etc."</p> <p>"Academic success." "Maintaining the good reputation of the school."</p>
ORDU CES	<p>"Consistency and permanency in academic success."</p> <p>"A competitive and strong school."</p>

Discussions Conclusions and Recommendations

Kaufman's (1993) elements of quality management process were used to evaluate the findings of this study. Three of the elements relate to results (outcomes, outputs, products) and each of them indicates a different level of quality. The quality management process includes the European Commission's sixteen quality indicators classified in four broad areas. The main difference between them is that Kaufman stresses the societal usefulness and consequences of school education as mega level quality. Delivering education that provides societal good must be the main focus of an educational system. Table 9 compares the two approaches of quality in education.

Table IX

Comparison of Kaufman's Quality Elements with European Commission's Quality Areas

Kaufman's Quality Elements	European Commission's Quality Areas
Outcomes (Mega level results)	↔ (Missing element)
Outputs (Macro level results)	↔ Success and Transition
Products (Micro level results)	↔ Attainment (Mathematics, Reading, Science...)
Processes	↔ School Education
Inputs	↔ Resources and Structures

It is concluded from this study that the four schools in this study have macro level quality focus. Although no school was able to present a formal vision statement based on the focus group meetings with teachers, parents, students, and administrators, the following was found as the informally (or hidden) shared ideal vision in these schools: "There will be no student who fails to graduate and everyone will get accepted into Anatolian High Schools and Science High Schools or other preferable high schools through High School Entrance Test (HSET)." This shared ideal vision identifies students' and parents' as the primary client and beneficiaries of the schools.

Quality is what the client wants, can use, and should have. The four schools of this study deliver what their students and parents want: to be accepted into Anatolian High Schools or Science High Schools. In 2003, 600,289 eighth grade students took the HSET, and only 10% of them were placed into these prestigious high schools. However, 35% of Ankara CES students, 69% of Antalya CES students, 46% of Samsun CES students, and 51% of the Ordu CES students were placed based on HSET results. Thus, these schools have a very good public reputation regarding results. Parents prefer to send their children to these schools, and as a result of this achievement and client satisfaction, the contribution and participation of parents is very high.

The mega level quality focus was not found in any of these schools. It is difficult to state that these schools view education as a means to societal ends. Because of a highly competitive environment, the schools ignore the mega level results and only focus on the micro and macro level of quality. But passing courses or achieving HSET does not assure a desirable society for people.

This research showed that in spite of the limited resources, such as poor physical facilities, overcrowded class size, poor educational technologies, the participating schools are similarly successful in getting micro level results (passing courses, daily attendance, zero dropout rate, etc.) and macro level results (transition to upper level education, success in HSET, etc.). How do they achieve these results despite all these input related difficulties? To answer this question the processes in these schools should be examined.

At the process level there are some common practices observed in the schools, and these practices are consistent with their informally shared vision. The learning-teaching process is mainly teacher centred and teacher led methods are used a lot more. In addition to this, the learning and teaching activities are mainly focused on pencil and paper. Considering the existing resources, crowded class sizes, and informally shared ideal vision, which focuses on HSET, these in-class activities are not surprising. Using the teacher centred approach, teachers save time, increase on-task behaviours, and thus cover all the objectives of a heavily overloaded curriculum. Besides these elements, extra assignments and homework prepare students for HSET. At this time there are no complaints from students, teachers, principals, and parents because they have a shared vision.

Teachers were found to be very dedicated and caring toward their students. Therefore, they are greatly respected by students and parents. The school climate was described as very positive by the students, parents, teachers, and the school administrators. The core values of the school have a big impact on achieving micro and macro level quality.

The practices of these schools mentioned above can be seen as very traditional or old-fashioned but it is obvious that these practices serve to deliver macro level quality. However, the students sacrifice a lot to achieve macro level results. After a long school day, usually from 9am to 4:30pm, they go back home and have to spend 3 to 5 hours test solving and doing homework. More assignments are given for weekends. If students do this, they have a better chance at success in HSET; if they don't they not only fail in HSET, but also jeopardize their chance to continue their education at the university level in the future, because Anatolian High School graduates and Science High School graduates are more successful than the graduates at other schools.

Based on the results of the study, the following recommendations can be made. First, society is the primary client for elementary education. Therefore, schools must select mega level quality because this level focuses on societal usefulness and consequences of education. Variety in high school type should be eliminated and HSET should be abolished. To move from macro level quality to mega level quality, class sizes should be reduced and a working curriculum for society should be developed.

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Türk İlköğretim Okullarının Kalitesinin Nitel Bir Değerlendirmesi

(Özet)

Problem Durumu: Üçüncü Uluslararası Matematik ve Fen Değerlendirme Çalışması (TIMSS) ve Uluslararası Okuma Yazma Değerlendirme Çalışması (PIRLS) gibi uluslararası öğrenci başarısını değerlendiren karşılaştırmalı araştırmalarda Türkiye'nin diğer katılımcı ülkelerin oldukça gerisinde kaldığı görülmektedir. Ulusal düzeyde yapılan değerlendirmelerde de Türk öğrencilerin ortalama puanları oldukça düşüktür. Bu sonuçlar, Türk eğitim sistemindeki niceliksel gelişmenin ve iyileşmenin eğitimin kalitesindeki gelişmeyle paralel olmadığını ortaya koymaktadır. Ulusal ve uluslararası ve değerlendirmelerdeki genel başarısızlığa rağmen bir grup okulun sınırlı kaynaklarıyla etkili sonuçlar elde etmeleri dikkat çekicidir. Bu okulların nitel boyutta bir analizi nelerin bu okullarda doğru olarak gerçekleştiğini ve bu okulları farklılaştırdığını ortaya koyabilir.

Araştırmanın Amacı: Bu çalışmanın amacı "iyi okul" olarak belirtilen okulları değişik yönleriyle incelemek ve ayırıcı özelliklerini ortaya koymaktır. Çalışmada sınırlı olanaklarla iyi sonuçlar elde eden ilköğretim okullarına odaklanılmıştır. Bu okulların özellikleri ve uygulamaları benzer özelliklere sahip diğer okullara örnek olabilir. Ayrıca eğitim politikalarını belirleyenler için, belirlenen iyi okul özellikleri önceliklerin belirlenmesi açısından katkı sağlayabilir.

Araştırmanın Yöntemi: Bu araştırmada nitel araştırma yöntemi kullanılmıştır. Araştırmanın verileri gözlem, bireysel ve odak grup görüşmeleri yoluyla toplanmıştır. Bireysel ve odak grup görüşmelerinde araştırmacı tarafından geliştirilen yarı yapılandırılmış görüşme formu kullanılmıştır. Okul müdürleri, öğretmenler, öğrenciler ve veliler araştırmanın veri kaynaklarını oluşturmuştur. Araştırma kapsamına alınan dört okul uç örneklem tekniği kullanılarak seçilmiştir. Okulların seçiminde Öğrenci Başarısını Belirleme Sınavı sonuçları ve ilköğretim müfettişlerinin görüşleri dikkate alınmıştır. Verilerin analizinde içerik analizi yaklaşımı kullanılmıştır. Girdiler, süreçler, çıktılar, makro düzey sonuçlar ve mega düzey sonuçlar verilerin analizinde kullanılan ana kategorilerdir. Bu ana kategoriler altında alt kategoriler oluşturulmuştur.

Bulgular ve Sonuçlar: Seçilen okulların çok sınırlı kaynaklarla genel olarak düşük ve orta gelir grubundan ailelerin çocuklarına eğitim hizmeti sunduğu söylenebilir. Bu okullarda veli ilgisinin ve olumlu örgüt ikliminin yüksek olduğu gözlenmiştir. Araştırma kapsamındaki okulların yöneticileri ve öğretmenleri okullarının vizyonlarını dosyalara başvurarak ifade edebilmişlerdir. Veliler ve öğrenciler ise bu dosyalarda ve okulların giriş kısmındaki levhalarda yazılı vizyon ifadelerinden habersizdirler. Katılımcılara bütün bu özverili çabalarla neyi gerçekleştirmek istedikleri sorulduğunda *örtük bir vizyonun* paylaşıldığı görülmüştür: "Tüm öğrencilerini mezun eden, mezunlarını başta Fen Liseleri ve Anadolu Liseleri olmak üzere Orta Öğretim Kurumları Giriş Sınavıyla (OKS) öğrenci kabul eden liselere yerleştiren bir ilköğretim kurumu olma". Bu örtük vizyonun genel olarak paylaşıldığı, öğrenciler ve velilerin bu vizyonun temel alıcısı olarak görüldüğü söylenebilir. Paylaşılan örtük vizyonun okulları farklılaştıran en önemli özellik olduğu söylenebilir. Paylaşılan örtük vizyonun yanında okulların yine yazılı olmayan fakat paylaşılan bir dizi *öz değere* sahip olduğu görülmüştür. Katılımcılar bu gün okullarında var olan ve yetmiş yıl sonrasında da yine var olmasını istedikleri özellikler arasında "tüm öğrencileri önemseyen öğretmenlerin varlığı", "öğretmen sevgisi", "öğretmenlerin heyecanı, ve öğretme

tutkusu", "başarı", "güvenli ve düzenli bir ortam", yeniliklere açıklık", "veli ilgisi ve katkısı", "özgürlük", "öğrenirken eğlenme", "Atatürk ilkelerine bağlılık", "dayanışma", herkese adil davranma", "meslek sevgisi", "okul yöneticilerinin demokratik davranışları" gibi bir dizi öz değeri sıralamışlardır. Bugün iyi sonuçlar elde etmelerini de büyük ölçüde bu öz değerlerin varlığına bağlamışlardır. Öğrenme öğretme sürecinde öğretmen merkezli süreçlerin ağırlığı gözlenmiştir. Genel olarak sınıfların kalabalık oluşu ve merkezi sınavların temele alınması öğretmen merkezli oluşun gerekçeleri olarak sıralanmıştır. Okullar sınırlı olanaklarına rağmen mikro düzeyde ve makro düzeyde önemli sonuçlar elde ederken mega düzey sonuçlar elde etmeye yönelik vizyon ve uygulamalardan yoksun oldukları görülmüştür.

Sonuçlar ve Öneriler: Okulların makro düzeyde bir kaliteye odaklandıkları görülmektedir. Makro düzeyde oluşturulan paylaşılmış örtük bir vizyon ve öz değerler bu okulları diğerlerinden farklılaştıran en önemli etkenler olarak görülmüştür. Öğrenciler ve veliler eğitimin temel alıcısı olarak görülebilir. Dolayısıyla okulun vizyonunu makro düzeyde oluşturmak kabul edilebilir bir yaklaşım olarak değerlendirilebilir. Ancak, toplumun eğitimin en temel alıcısı olduğu düşünülmelidir. Bu nedenle okulun vizyonu toplumsal sonuçları ve yararı gözetecek şekilde mega düzeyde oluşturulması yönünde de çaba gösterilmelidir. Lise türlerindeki çeşitlilik azaltılarak OKS odaklı öğrenme öğretme süreci farklılaştırılmalıdır. Sınıf mevcutlarının azaltılması ve toplumsal yarar gözetilen bir eğitim programının hazırlanması mega düzeyde sonuçlar elde edilmesini sağlayabilir.

Anahtar Sözcükler: Okul kalitesi, uluslararası eğitim, eğitimsel gelişme, ilköğretim

The Impact of Different Types of Texts on Turkish Language Reading Comprehension at Primary School Grade Eight Students

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Abstract

An Analysis of the Problem: Texts have an outstanding role in mother tongue education. The majority of the mother tongue education in schools is achieved through reading activities and by means of texts. Research has proved that the text types make a difference in the students' level of reading comprehension. Again in many studies, it has been identified that the use of different text types influence students' writing skills. In literature review in Turkey, no studies have been encountered on whether the text types influence reading comprehension, and this creates a need for a study to identify the situation.

Objective of the Research: the purpose of this study is to identify whether text types have an influence on the reading comprehension levels of primary school Grade 8 students.

Research Method: The study group of the study was 140 Grade 8 students at three different primary schools in central Ankara, Turkey. In order to identify whether text types have an impact on reading comprehension of students, multiple choice questions have been produced relating to two different texts; one informative and one fictional. The academic success levels and sex of the students were identified through a questionnaire and it was determined whether these variables make a significant difference to the students' reading comprehension levels. In order to identify the distinction of the scale items, the technique of a 27% sub-top group was used. The KR-20 reliance coefficient of the fictional text was found to be 80; and the KR-20 reliance coefficient of the informative text was found to be 83. The data was collected at two separate meetings held in one week, was analysed by means of a t-Test and a one-way variance analysis.

Findings and Results: At the end of this study, it was found that text types do have an influence on reading comprehension levels. In accordance with this, the success of the students in reading comprehension in fictional text was significantly higher than the informative text. According to sex variable; female students achieved a higher level of success compared with the male students both with the fictional and informative text. As the level of academic success of the students increased, the reading comprehension level for both text types increased as well.

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Suggestions: The heavy load of concepts in the informative texts should be re-arranged taking the levels of students into consideration. The inexperience of the students with the informative texts should be overcome. The reading comprehension success level of students should be increased through further activities.

Keywords: Reading skill, text, text types, language education.

Texts have a significant role in mother tongue education. They are the most commonly used material used as an educational tool in schools. According to Erkul (2004) a text is a communicative tool through which a writer conveys a thought, an emotion or dream to the reader, audience or critic with a certain writing (composition) and language (or style). On the other hand, a text is a whole of language system that is produced by one or more individuals, verbally (orally) or in writing, within the context of a certain communication (Günay, 2003). In accordance with this, language products that bear a communication quality form the text.

According to Akyol (2003) texts are not only in the form of writing; while literal texts include stories, chapters of books, poems, articles, fairy tales etc; semiotic texts include signs and sketches such as pictures, photographs, films, songs, dramas, maps, graphics, body language. According to Özdemir (1969) a text is a verbal whole. All statements that have a narrative context and are subject to being read are concrete entities, and everything written is a text. Karatay (2007) expresses that all structures that are based on textual language are meaningful, logical and contextual structures and thus, the text is the subject of reading acquisition, all texts are written to address a certain reader group, regardless of type, form and structure.

In terms of language, a text is a series of sentences that follow each other in a sequence and in meaningful wholes. This sequence is not incidental but in fact designed consciously by the writer in a particular logical order, as regards grammatical structure and textual function. The text is an individual whole, different from the sentences that form it. In other words, it is not a structure which is formed by sentences but materializes through the sentences. The text has the significance of being both a process in terms of the reader's conceptualization and also a product produced by the writer (Taşgüzel, 2004).

Literary texts that are used as a means of education have many functions. Regarding the function of the literary texts, Göğüş (1978) states: "The written texts which consists of verbal indicators in an orderly and planned manner; are verbal units that are rich in meaning and are convenient to create or use emotions, excitement, enthusiasm, fear or other abstract values regarding human spirit. All texts have a structure which covers how the ideas have been organised to convey its message to the reader. Text structure helps the reader to relate the ideas in the text and to differentiate relevant and unimportant content within (Saenz & Fuchs, 2002). There are a variety of text types. Adalı (2003) mentions two types; pragmatic and fictional texts whereas Kıran and Kıran (2003) identifies four types of text: descriptive, narrative, explanatory and verifying.

Informative texts are written to pass information to the readers who would like to learn new things (Dodson, 2000; Saenz & Fuchs, 2002; Smith, 2003). Non fiction texts such as text books, commercial books, encyclopaedias, newspapers, magazine articles and handbooks can be considered to be informative texts. They contain the title, the

subtitle, subject statements and statements of the objective, also statements and words such as; firstly, secondly, on the contrary, similar to. Generally speaking, informative texts contain a great amount of conceptual concentration and less common concepts in comparison with fictional passages. Having little vocabulary knowledge constrains students' reading since informative texts contain complex terminology and multi-syllable words that make it difficult for the students to resolve (Saenz & Fuchs, 2002). Such texts hold an unusual content, heavy concept load, complex order of words and hierarchical sequence of the main idea (Dodson, 2000).

Informative texts are neglected in primary school education (Williams et al., 2004, Moss, 1993). In the early phases of primary school education fictional texts are stressed more, and in the following years informative texts are used. The inequality in experience in the sources, fictional and informative texts lead the educators to seek new methods to compensate this difference and the educators realized that informative texts can be taught even in early ages (Smith, 2003).

A story is a fictional kind of prose that relates an incident or incidents happening to someone or a group of people, focusing on these characters, describing it as if the reader is observing these events close up. In terms of its length, a story can be defined as "only as long as could be read in one time" (Gündüz, 2003). Fictional texts mainly contain the following elements; characters who have an aim and motivation, chain of results, lessons to be learned, and the main idea (Saenz et al., 2002; Williams et al., 2003). Fictional texts typically have a hierarchical structure. The grammar of the story helps identify the hierarchical structure (fiction, characters, the problem, the solution and the result), and constructs the scene setting through various elements and events (Hall et al., 2005).

Primary school students mainly read works of fiction such as short stories, verses and story books (Smith, 2003). As a result, from the early years of their education students have plenty of experience in terms of distinguishing the outline of a story and expanding it. When they reach the second phase of their primary school education, students acquire an adequate level of understanding of the narrative in fiction and they gain certain perceptions and knowledge of this type of text (Dodson, 2000).

In terms of spoken texts, it was found that students' level of comprehension of informative texts was lower than that of fictional texts. (Diakidoy et al., 2005). Similarly, it was observed that students who write both fiction and non-fiction are more successful in the former (Berman and Katzenberger, 2004; Sallabaş, 2007). This indicates that primary school students are successful in fictional texts, but it also indicates that informative texts are not adequately taught.

A significant amount of learning at school is facilitated through reading activities and texts. Reading skills are acquired from the first year at primary school and forms the basis of learning. According to Göğüş (1978) "reading is to recognize the letters, words, signs of a text and to comprehend the meaning within it. This action is physiological in terms of visualisation and sound, and a spiritual process in terms of comprehension". The main objective of the reading activity is to understand what is being read. According to Tazebay (2005) reading comprehension is an action to receive what is being conveyed in a text. The individual needs to expend a conceptual effort in order to receive the information or message that is being conveyed and to prevent the loss of information. The individual should make particular effort

to analyse the structure of the text, to comprehend the content of it and to interpret in order to understand what he or she is reading.

Taking the research and statements, given above, into consideration, thus, the importance of texts as an element of teaching is evident. No studies have been encountered in the literature survey regarding the influence of text types on reading comprehension of students in Turkey. The objective of this research is to determine whether the types of texts have an influence on the reading comprehension levels of primary school Grade 8 students.

Method

Research Model

The method of this descriptive research is field research and a research model which aims to describe an existing situation as it is is utilised (Karasar, 2003).

The Objective

The objective of the research is to ascertain whether the text types have an influence on the reading comprehension levels of primary school Grade 8 students.

The Subject of the Research and Sampling

The subject of the research is a group of Grade 8 primary school students in central Ankara. The sample consists of 140 students attending Atatürk Primary School in Yenimahalle, Nasreddin Hoca Primary School in Etimesgut, and Anittepe Primary School in Çankaya.

Data Collection Tools

In order to ascertain whether the text types have an influence on reading comprehension of students, multiple choice questions have been produced on two different informative and fictional story based texts. The texts were selected from Grade 8 Turkish Language course books which were currently used and experts were consulted about the texts, and following their opinions, a total of 36 multiple choice questions were prepared for both types of texts, taking the texts type into consideration. Then the prepared texts and multiple choice questions examined by the experts and the validity of their structure was approved. A pre-application was conducted on a group of 80 students, as a result of the analysis the KR-20 reliance coefficient of the story based fictional text was found to be .80; and the KR-20 reliance coefficient of the informative text was found to be .83. Through a questionnaire, the sex, and the academic success levels of the students were identified. Then these variables were analysed to determine if they make any meaningful difference to the students' levels of reading comprehension.

Collection of the Data

The data which is subject of this research was derived from the reading comprehension tests on the informative and fictional texts that were prepared. The texts and questions were administered in two sessions over a period of one week. At each session, one fictional and one informative text and the questions prepared for these texts were given.

The Analysis and Interpretation of the Data

The data collected in relation to the objectives of this research was interpreted with relevant analysis techniques regarding the nature of the data and using the SPSS - 11.5 program, and the findings are presented and interpreted in tables. A t-Test was applied in order to check the relationship between the two variables of the collected data. One-way variance analysis (Anova) was applied in order to check the relationship between more than two variables.

Findings and Comments

This section presents the results of the collected data derived from the tests that the Grade 8 students took on the fictional and informative text types.

Table I

t-test Results of Primary School Grade 8 Students on Reading Comprehension According to Text Types

Text Type	N	X	S	SD	t	P
Fictional text	140	13.50	1.90	1.90	3.738	.000*
Informative text		12.79	2.17			

*p<0.05

In Table I, average scores of t-test results of the primary school Grade 8 students' reading comprehension for informative and fictional texts are given. When the table is examined, the Grade 8 students' average score of reading comprehension skills for the fictional text (13.50) is higher than the average score of the informative text (12.79). In accordance with this result, the Grade 8 students' reading comprehension skills according to the text types reveal a significant difference ($t(139) = 3.738, p < .05$) in favour of the fictional text.

Table II

t-test Results of Primary School Grade 8 Students on Reading Comprehension on the Fictional text According to Gender

Gender	N	X	S	SD	t	P
Female	78	13.97	1.61	1.61	3.286	.001*
Male	62	12.91	2.07			

*p<0.05

In Table 2, average scores of t-test result of the primary school Grade 8 Students' reading comprehension skills for fictional text according to sex are given. Examining the Table it is evident that average scores of female students on the fictional text (13.97) is higher than that of male students (12.91). The reading comprehension skill in the fictional text for the sex variable presents a significant difference ($t(138) = 3.286, p < .05$) in favour of the female students.

Table III

t-test Results of Primary School Grade 8 Students on Reading Comprehension on the Informative Text According to Gender

Gender	N	X	S	SD	t	P
Female	78	13.93	1.93	1.93	3.007	.003*
Male	62	12.17	2.32			

*p<0.05

The results of average scores of t-test of the primary school Grade 8 students' reading comprehension skills for the informative text according to sex are given in Table 3. The table shows that the average score of female students on the informative text (13.28) is higher than that of the males (12.17). The level of the reading comprehension skill for the informative text for sex variable presents a significant difference ($t(138) = 3.007, p < .05$) in favour of the female students.

Table IV

Anova Test Results of Primary School Grade 8 Students According to Academic Success in the Fictional Text

Academic Success	N	X	S	SD	F	P	Significant Difference (Tukey)
2 (Passing grade)	32	12.12	2.33	139	10,711	.000*	2-3
3 (Fair)	26	13.38	1.89				2-4
4 (Good)	47	13.82	1.46				2-5
5 (Excellent)	35	14.42	1.19				

* $p < 0.05$

The Anova test (one-way variance analysis) results of primary school Grade 8 students reading comprehension skills average scores in the fictional text according to academic success are given in Table 4. The average score of the primary school Grade 8 students in reading comprehension the fictional text is 12,12 for the students who have (2) Passing grades, 13,38 for those with (3) Fair grades, 13,82 for the students who have (4) Good and 14,42 for the (5) Excellent grades. Reading comprehension success of primary school Grade 8 students in the fictional text is significantly different ($F(139) = 10.711, p < 0.5$) according to their academic success level. In order to determine the source of the difference between these groups, a Tukey multi-comparison test was conducted. Analysis results indicated that; reading comprehension skills of the students who scored 5 (Excellent grades) were significantly higher than the ones who scored 2 (Passing grades); reading comprehension skills of the students who scored 4 (Good) were significantly higher than the ones who scored 2 (Passing grade); reading comprehension of the students who scored 3 (Fair) were significantly higher than the ones who scored 2 (Passing grade).

Table V

Anova Test Results of Primary School Grade 8 Students According to Academic Success in the Informative Text

Academic Success	N	X	S	SD	F	P	Significant Difference (Tukey)
2 (Passing grade)	32	11.12	2.45	139	21,719	.000*	2-4
3 (Fair)	26	11.80	1.62				2-5
4 (Good)	47	13.29	1.74				3-4
5 (Excellent)	35	14.37	1.23				3-5
							4-5

* $p < 0.05$

The Anova test (one-way variance analysis) results of primary school Grade 8 students reading comprehension skills average scores in the informative text according to academic success are given in Table 5. The average score of the primary school Grade 8 students in reading comprehension the informative text is 11.12 for the students who have (2) Passing grades, 11.80 for those with (3) Fair grades, 13.29 for the students who have (4) Good and 14.37 for the (5) Excellent grades. Reading comprehension success of primary school Grade 8 students in the informative text is significantly different ($F_{(139)} = 21.719$, $p < .05$) according to their academic success level. In order to determine the source of the difference between these groups, a Tukey multi-comparison test was conducted. Analysis results indicated that; reading comprehension skills of the students who scored 5 (Excellent grades) were significantly higher than the ones who scored 4 (Good); reading comprehension skills of the students who scored 5 (Excellent) were significantly higher than the ones who scored 3 (Fair); reading comprehension of the students who scored 5 (Excellent) were significantly higher than the ones who scored 2 (Passing grades); reading comprehension skills of the students who scored 4 (Good) were significantly higher than the ones who scored 3 (Fair); reading comprehension skills of the students who scored 4 (Good) were significantly higher than the ones who scored 2 (Passing grades). When the results of the table are analyzed it is understood that as the academic success level increases, reading comprehension level of the students increases as well.

Discussion and the Result

Turkish language classes are the main subject at school where primary school students gain the language education in a systematic way. In Turkish language classes, texts are used to facilitate students' access to information. According to the Turkish Language Teaching Program (MEB, 2005) the aim is to construct the knowledge in the mind during the process of learning through texts, and to develop students' basic and advanced mental processes and thinking abilities.

In the study, the impact of text types on students' reading comprehension skills was examined. According to the results of the research, students' levels of comprehension of informative texts are lower than their levels of comprehension of fictional texts. Consequently, it can be stated that text types do have a significant impact in reading comprehension levels. The reasons why students find it difficult to comprehend informative texts may be because of the unusual structure of such texts, their abstract organisation, their usually unfamiliar content, and also because these texts are quite difficult text types since they are based on a logical structure (Duke, 2003, Singer and the others 1997). Moreover, the structure of the informative texts varies (Englert & Hiebert, 1984). This is why readers cannot make use of the same scheme they use when reading and comprehending fictional texts (Diakidoy et. al., 2005).

However, it was observed that students are more successful in comprehending the fictional texts. In printed examples of the fictional texts, there are elements such as; detailed conversations and a sequence of events related to the time and the situation. Furthermore, at home children occasionally engage with interactive texts such as story reading which make comprehension easier (Neuman, 1996). As a result, the information in the fictional text becomes more familiar and the organisation of the information becomes more predictable (Graesser and the others 1996). Such qualities could lead to fictional texts being more easily understood by the students.

In the research it was assessed whether students' sex has an effect on their reading comprehension. According to the results, it was observed that students' sex does make a significant difference on reading comprehension both for the informative and the fictional texts, with female students being more successful in comprehending both types of texts than the male students.

Another variable was the academic success level of the primary school Grade 8 students. The academic success grades used in the research were the Turkish Language grades taken from the students' report cards from the previous educational term. According to the results of the research, the academic success grades of students at Turkish Language classes are related to their reading comprehension. The current study indicates that the reading comprehension level of the students increase as their academic success goes up.

The first text types that children encounter in pre-school are fictional texts. The books which are designed for pre-school children are those which have a simple chain of events in which sketches and pictures are combined in the text. The text types that children encounter varies when they start primary school. The Turkish Language Teaching Program (MEB, 2005; 2006) states that, authors must include minimum one informative and a fictional text must be included in course books.

For an informative text the main idea is the most important element followed by the sub-ideas and small and significant details. Each paragraph contains a sub idea. In the informative texts, no matter how much complicated the ideas are, the comprehension becomes easier as long as the ideas are conveyed clearly and in a well organised manner (Akyol, 2006). The heavy load of concepts that an informative text contains should be considered carefully by taking the students' levels into account. The informative texts that the students will encounter should be organised in a way to take the inexperience of children in these texts into account. Teachers should train students with practises informative text types.

Reading comprehension succes of the students in fictional texts should be supported through further activities. In activities for improving language skills, stories can be used. Students should be made aware of exploring details in the stories they write or read, and activities should be made in order to make them understand the qualities of the genre.

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Farklı Türlerdeki Metinlerin İlköğretim 8. Sınıflarda Okuduğunu Anlamaya Etkisi

(Özet)

Problem Durumu: Ana dili eğitimi içerisinde metinler önemli bir yer tutar. Okullarda öğretim aracı olarak en sık kullanılan materyal metindir. Eğitimde araç olarak kullanılan edebî metinler, bu yönüyle birçok görev üstlenir. Okullarda öğrenmelerin çoğu okuma etkinlikleriyle metinler aracılığıyla yapılmaktadır. Metin türlerinin, dil becerilerinin kazanılmasında etkili olup olmadığı çeşitli araştırmalarla sınıanmıştır. Yapılan araştırmalarda, öğrencilerin dinlediğini anlama düzeylerinde metin türlerinin etkili olduğu görülmüştür. Öğrencilerin dinledikleri metin türlerinde, bilgilendirici metin türündeki anlama basamaklarının öyküleyici metne göre daha düşük olduğu görülmüştür. Yine pek çok araştırmada öğrencilerin yazılı anlatımlarında da metin türlerinin etkili olduğu ve öğrencilerin öyküleyici metin yazmada, bilgilendirici metin yazmaya nazaran daha başarılı oldukları tespit edilmiştir. Türkiye'deki alanyazın tarandığında, okuduğunu anlamada metin türlerinin etkili olup olmadığını tespit etmeye yönelik bir çalışmaya rastlanmamaktadır. Bu durum, öğrencilerin okuduklarını anlamada metin türlerinin etkili olup olmadığını tespit edilmesine yönelik bir çalışma yapılması gerekliliği ortaya çıkarmaktadır.

Araştırmanın Amacı: Bu çalışmanın amacı ilköğretim 8. sınıf öğrencilerinin okuduklarını anlamada metin türlerinin etkisinin olup olmadığını tespit etmektir.

Araştırmanın Yöntemi: Betimsel nitelikteki bu araştırmanın yöntemi alan araştırmasıdır. Araştırmada tarama modeli kullanılmıştır. Araştırmanın çalışma grubu, Ankara merkez ilçede bulunan üç ayrı ilköğretim okulunda öğrenim gören 140 ilköğretim 8. sınıf öğrencisidir. Metinler, önceki yıllarda okutulan ilköğretim 8. sınıf Türkçe ders kitaplarından seçilmiş ve uzman görüşüne sunulmuştur. Uzman görüşü alındıktan sonra metin türlerinin özelliklerine göre metin türleriyle ilgili toplam 36 çoktan seçmeli soru hazırlanmıştır. Hazırlanan metinler ve sorular tekrar uzman görüşüne sunulularak yapı geçerliliği sağlanmıştır. 80 kişilik öğrenci grubu üzerinde ön uygulama yapılmış, yapılan analizler sonucunda, öyküleyici metne ilişkin okuduğunu anlama testinin KR-20 güvenilirlik kat sayısı .80; bilgilendirici metne ilişkin okuduğunu anlama testinin KR-20 güvenilirlik kat sayısı .83 olarak bulunmuştur. Bilgi toplama formu aracılığıyla öğrencilerin cinsiyetleri ve akademik başarıları tespit edilmiştir. Öğrencilerin metin türlerine göre okuduğunu anlama başarıları belirlendikten sonra cinsiyet ve akademik başarı değişkenlerine göre okuduklarını anlama düzeylerinde anlamlı fark olup olmadığına bakılmıştır. Araştırmaya temel teşkil eden veriler, öğrencilerin bilgilendirici ve öyküleyici metin türlerine göre hazırlanmış okuduğunu anlama testlerinden elde edilmiştir. Uygulama bir hafta içerisinde iki oturumda yapılmıştır. Her oturumda bir öyküleyici ve bilgilendirici metin ve bu metinlere yönelik hazırlanan sorular verilmiştir. Araştırmanın amaçları doğrultusunda toplanan veriler, verilerin özelliklerine uygun analiz teknikleri ve SPSS - 11.5 programı kullanılarak çözümlenmiş, bulgular tablolar halinde sunulmuş ve yorumlanmıştır. Elde edilen verilerin iki değişken arasındaki anlamlılığını test etmek için verilere t testi (iki ortalama arasındaki farkın anlamlılık testi ve iki eş arasındaki farkın anlamlılık testi) uygulanmıştır. İki den fazla değişken arasındaki anlamlılığını test etmek için tek yönlü varyans analizi (Anova) kullanılmıştır.

Bulgular ve Sonuçlar: Bu çalışmanın sonucunda, okuduğunu anlamada metin türlerinin etkili olduğu saptanmıştır. İlköğretim 8. sınıf öğrencilerinin öyküleyici metinde okuduğunu anlama becerileri puan ortalaması, bilgilendirici metin puan ortalamasından daha yüksektir. Bu sonuca göre ilköğretim 8. sınıf öğrencilerinin metin türlerine göre okuduğunu anlama becerisi, öyküleyici metin lehine anlamlı bir fark göstermektedir. Öğrencilerin okuduğunu anlama becerilerinde cinsiyet ve akademik başarı düzeylerinin etkili olup olmadığı da sınıanmıştır. Araştırma sonuçlarına göre; kız öğrencilerin öyküleyici metinde okuduğunu anlama becerileri puan ortalaması, erkek öğrencilerin puan ortalamasından daha yüksektir. Öyküleyici metinde okuduğunu anlama becerisi, cinsiyet değişkenine göre, kız öğrencilerin lehine anlamlı bir fark göstermektedir. Kız öğrencilerin bilgilendirici metinde okuduğunu anlama becerileri puan ortalaması, erkek öğrencilerin puan ortalamasından daha yüksektir. Bilgilendirici metinde okuduğunu anlama becerisi, cinsiyet değişkenine göre, kız öğrencilerin lehine anlamlı bir fark göstermektedir. Araştırma için kullanılan bir diğer değişken, ilköğretim 8. sınıf öğrencilerinin bir önceki eğitim-öğretim yılı sonunda Türkçe derslerinden aldıkları karne notundan oluşan akademik başarılarıdır. Araştırma sonucuna göre, ilköğretim 8. sınıf öğrencilerinin Türkçe dersinden aldıkları akademik başarı puanları, okuduklarını anlamada etkilidir. Yapılan çalışma, öğrencilerin akademik başarıları arttıkça okuduklarını anlama düzeylerinin de arttığını göstermektedir.

Öneriler: Ana fikir, bilgilendirici metin için en önemli ögedir. Daha sonra yardımcı fikirler ve küçük ve özel detaylar gelmektedir. Her paragraf bir yardımcı fikri oluşturur. Okullardaki öğretim süreci öğrencilerin ana fikir ve yardımcı fikirlere ulaşmalarına yardım edecek şekilde düzenlenmelidir. Bilgilendirici metinlerde konular ne kadar karmaşık olsa da açık ve iyi organize edildikleri takdirde anlaşılması kolaylaşmaktadır. Bilgilendirici metnin içerdiği ağır kavram yükü, öğrencilerin düzeyleri dikkate alınarak belirlenmelidir. Öğretimde kullanılan bilgilendirici metinler, öğrencilerin bu metin türündeki deneyimsizliklerini giderecek şekilde düzenlenmelidir. Öğretimde kuramsal bilginin yanında uygulamalara da yer verilmeli, öğretmenler bilgilendirici metin türünün özelliklerini öğrencilere uygulamalı olarak kazandırmalıdır. Öğrencilerin öyküleyici metinde okuduğunu anlama başarısı, yapılacak diğer uygulamalarla pekiştirilmelidir. Diğer dil becerilerinin geliştirilmesine yönelik çalışmalarda da öykülerden yararlanılabilir. Öğrencilerin gerek okudukları gerekse yazdıkları öykülerde ayrıntıları keşfetmeleri sağlanmalı, türün özelliklerini kazanmalarına yönelik çalışmalar yapılmalıdır. Öğrencilerin bilgilendirici metindeki deneyimsizlikleri göz önünde bulundurulmalı, bilgilendirici metinlere yönelik yapılan çalışmaların sayısı ve sıklığı artırılarak onların bu konudaki deneyimsizlikleri giderilmelidir. Yapılacak çalışmalarla öğrencilerin öyküleyici metindeki okuduğunu anlama başarıları pekiştirilmelidir.

Anahtar Sözcükler: Okuma becerisi, metin, metin türleri, dil eğitimi.

The Relative Effects of Family Socio-Economic Characteristics on Participation in Education in Turkey

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Abstract

Problem Statement: In the last half of the century, the discrepancy in primary school graduation between the developed and developing countries has continually narrowed, while the discrepancy in the rates of secondary completion have widened. Debates on policies and analyses are on the worldwide increase in order to determine and prevent the impediments to increasing school participation rates at the post-compulsory education stages. According to the results of related research, there is a strong relationship between children's participation in education and their family's socio-economic variables. Parents' level of education and family income are stated to be significant variables in participation in education and to correlate strongly with other socio-economic variables.

Purpose of Study: This study aims to determine the effect of family variables, which play a role in school attendance among the population between the ages of 15-18 by gender and place of residence.

Methods: This study is of an analytical nature. The dependent variable for the analytical data analysis is binary and cross-sectional. For the nature of the data, the Binary Logistic regression was employed to analyze the nature of the effect of independent variables on the dependent variable. The dependent variable in this research is the student. The independent variables are the father's level of education, mother's level of education, size of the household, and level of income.

Findings and Results: Parents' level of education, household size, and level of income are variables, which affect children's participation in education. However, there are differences in the effects of the family variables in the child attending school. For example, the father's level of education shows the highest effect and the level of income shows the lowest effect. The family variables have a particularly high effect on girls' participation in education. It can be said that the positive developments in the family variables play an important role in girls going to school. The parents being elementary school graduates show the maximum effect in the child's attendance to school. The size of the household being 4 or fewer members has a marginal effect on the child going to school. Similarly, middle income has a marginal effect on the child's participation in education.

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Conclusions and Recommendations: It can be said that negative conditions have a negative effect on girls' education particularly. Improvements in these conditions play an important role in girls going to school.

Keywords: educational participation, access to post-compulsory, household income, educational inequality, socio-economic background.

Education gained the key role in progress with the tendency towards development based on human rights and knowledge-based economy. With the realization of the central role of education in social and economic development, improvements in the quality and quantity of education and provision of equality in opportunity and access to education have become primary issues on countries' political agendas. This points to the indication that schooling levels of today will be the determiner of the future of individuals and peoples. The schooling rates, which reflect the level of access to education, are one of the areas where the existing inequalities in education become apparent (Keyder & Üstündağ, 2006). Debates on policies and analyses are on the worldwide increase in order to determine and prevent the impediments to increasing school participation rates at the post-compulsory education stages (European Commission, 2005; World Bank, 2005; United Nations Children's Fund (UNICEF), 2005; The Organisation for Economic Co-operation and Development (OECD), 2006). Access to post-compulsory education is an important policy issue for two principal reasons. First, at the individual level, advanced schooling is a critical determinant of the individual's career and economic success, and second, at the societal level, it is fundamental to the nation's economic performance (Finnie, Lascelles & Sweetman, 2005).

In these debates and analyses, it is emphasized that secondary education is a bridge between higher education and basic education and that it links education and the labour market. In the last half of the century, the discrepancy in primary school graduation between the developed and developing countries has continually narrowed, while the discrepancy in the rates of secondary completion have widened. For this reason, secondary education has become an indispensable part of efforts towards Education For All (World Bank 2005).

Family background has a significant impact on access to preschool, less of an impact in basic education, more impact in upper secondary (with the disadvantaged over-represented in vocational schools), and the most impact in higher education. Children from poor and otherwise disadvantaged families have less access to education at every level (UNICEF, 2007). A number of studies show that young persons from families with a higher socioeconomic level are more likely than their counterparts to participate in education. According to the results of related research, there is a strong relationship between a child's participation in education and their family (area of settlement, parents' level of education, family size, family occupation, family income, and birth order among siblings). Parents' level of education and family income are stated to be significant variables in participation in education and to correlate strongly with other socio-economic variables (Blanden, Gregg & Machin, 2004; Smits & Hoşgör, 2006; Le & Miller, 2002; Crosnoe, Mistry & Elder, 2002; Behrman & Knowles, 1999; UNICEF, 2007). Knighton and Mirza (2002) show, using the Survey of Labour and Income Dynamics in Canada, that both parental education and family

income are significant determinants of post-secondary participation, but that parental education has a larger effect.

Families make a considerable investment in activities that can directly or indirectly influence the development of human capital in their children. This investment is not only financial. Parental investment of time and the fostering of learning attitudes and habits are important inputs to the creation of human capital. Outlays for cost of tuition, educational materials, and other costs associated with formal education can have a direct impact. Other spending that influences the quality of children's lives can have an indirect effect, which cannot readily be quantified (OECD, 1998).

In spite of the large numbers of contributions in the area, there is no broad consensus on the economic effects of participation in education. Acemoglu and Pischke (2000), for the US, find that family income has a strong effect on the child's participation in post-compulsory education. Maitra (2003) worked to explain the effects of personal and family characteristics on the educational demand in Bangladesh. He stated that as the family income increases, the school participation of the child rises. Corak, Lipps, and Zhao (2004) suggest that individuals from higher income families are much more likely to attend university, but that the participation gap between high- and low-income families has been narrowing. Blanden, Gregg and Machin (2003) state that there exist inequalities in participation in education based on income groups. Gylfason and Zoega (2003), in their cross-country comparative study, state that there is a strong relationship between distribution of income and the rates of registration to secondary education. The study conducted by Le and Miller (2002) reports a positive and significant relationship between family income and the school participation rate. Tansel (2002) indicates, in the study on the factors that affect participation in education in Turkey, that family income has an impact on the participation in primary, middle level, and higher education. Another significant finding in this study is that income has a stronger effect on girls' participation in education compared to boys' participation.

Nevertheless, there are studies whose findings indicate that the relationship between family income and participation in education is not direct, but rather indirect. These studies point out that the income is related to the parents' level of education and status of profession. Chevalier and Lanot (2002) state that the effect of income on the child's participation in education is uncertain, and that it is family characteristics that have a relationship to participation in education. Harmon and Walker (2000), for the UK, rely on schooling contingent income to identify income effect (child support), but find it has no effect on the probability of staying in post-compulsory education. Carneiro and Heckman (2003) suggest that current parental income does not explain children's educational choices, but that family fixed effects that contribute to permanent income, such as parental education levels, have a much more positive role.

Parents' level of education is an important variable in participation in education. Vella (1994) shows that the parents' schooling is an important determinant of their children's education. The impact of the mother's educational background on the individual's investment in education is much stronger for females than for males. Le and Miller (2002) show that an educated mother provides guidance and direction primarily to their daughters; that is the mother may act as a role model for her

daughters. Fathers' educational attainment on the individual's education is slightly stronger for males than for females; that is the father appears to provide a more prominent role model for sons than for daughters (Le & Miller 2002)

The risk of dropping out of the formal educational system early is higher among children from families with a low education level (European Commission, 2005; Traag & van der Velden, 2006). The mother's period of education is more influential in the children's participation in education than the father's period of education. The child's likelihood of attending school increases as the years of education that the head of the household received increases (Şahabettinoğlu et al., 2002). It is reported that mothers' level of education tends to influence girls, while fathers' level of education affects the boys' level of education. The coefficient estimates on the father's and mother's years of schooling were all positive and highly significant at the three levels of schooling considered in Turkey. Further, the effects of both parents' schooling on the probability of their daughters' achievement was larger than on their sons' achievement except for the mother's schooling at the primary level (Tansel, 2002).

The argument for the influence of siblings on a person's educational level centers on the availability of finances. Hence, it is assumed that having siblings puts extra financial strains on the family and reduces the parents' capacity to finance their children's education. Vella (1994) reports that having siblings significantly reduces the educational attainment of females. In Western societies and some developing countries, family size tends to be negatively correlated to educational participation, probably because the available resources have to be divided among more children. However, this is not the case in all situations. For example, in rural Botswana, the number of 7-14 year old children in the household was found to be positively related to participation. The reason for this may be that with more children, there are also more helping hands at home, which may raise the chance that at least some children can go to school (Smits & Hoşgör, 2006).

Access to educational facilities is partly related to the place of residence. Urban-rural disparities in access to secondary education are virtually always to the detriment of rural students (UNICEF, 2007). Facility for access to education is higher in cities, while it is limited in rural areas. In developing countries, 30% of the children, who do not go to school, live in rural areas, while 18% live in cities in the same countries. The highest numbers of people, who do not attend school in rural areas, are girls (UNICEF, 2005). Compared to cities, the risk of children in rural areas to leave formal education system early is higher (Traag & van der Velden, 2006). Qian and Smyth (2005) state that economic welfare is more influential in the rural areas than in urban areas in reducing educational inequalities.

The OECD (2005) report indicates that there are inequalities and insufficiencies in Turkey due to gender, area of settlement, and school quality. Numerous studies support OECD's evaluation on Turkey. These studies clearly establish that there are educational insufficiencies and inequalities related to gender in Turkey, which cause a significant problem (OECD, 2006; UNICEF, 2005; Tansel 2002). It is stated that girls' participation in education in Turkey is still a rather important problem especially in the rural areas and in the eastern regions (Smits & Hoşgör, 2006). Besides the differences between regions, the emphasis is made on the existence of important imbalances widespread in the educational indicators within the same region and/or city (OECD, 2006; Keyder & Üstündağ, 2006; Hoşgör & Smits, 2006; TUSIAD, 2006).

The significant level of educational inequalities at the level of region, gender, and settlement in Turkey, which has a young population, necessitates comprehensive policies to be developed in order to increase schooling in the post-compulsory education level. It is considered that studying the role of the socio-economic characteristics of the family on children's participation in education and analyzing these based on gender and region will be significant in taking the economic power of the family into consideration in the educational policy making process. This study aims to determine the effect of family variables (parents' level of education, size of the household, level of income) which play a role in attendance to school among the population between the ages of 15-18 by gender (male/female) and place of residence (urban or rural location).

Methods

Data and Variables

This study was conducted based on the data compiled from the 2005 Household Budget Questionnaire Results of the State Statistics Institute (Devlet İstatistik Enstitüsü (DİE), 2005). The 2005 Household Budget Questionnaire was administered between 1 January and 31 December 2005, over a period of one year, on 720 sample households, which were altered monthly in rural and urban areas, for a total of 8,640 households. The Household Budget Questionnaire is one of the most important sources, which is used with the aim of collecting information on the socio-economic structure of households, quality of life, and patterns of consumption, as well as determining the needs of the public, finding out about the manner in which the usable income is distributed among houses or individuals, and testing the validity of the implemented socio-economic policies (DİE, 2005).

The dependent variable in this research is the student. This study covers the population group between the ages of 15-17. The educational stage of this group in the population was not considered in this study. The data was compiled by taking the population between the ages of 15-17 as student (1)/not student (0) as the basis. Within the scope of the 2005 Household Budget Questionnaire, 1,434 people are male and 1,405 are female, which total 2,839 people between the ages of 15-17. Of the mentioned 2,839 people, 948 live in rural areas, while 1,891 live in urban areas.

The independent variables are the father's level of education, mother's level of education, size of the household, and level of income. Parents' level of education was categorized as the following: parents who are non-graduates of any stage of education (1), primary school graduate (2), elementary school graduate (elementary school + elementary equivalent vocational schools) (3), high school graduate (high school + high school equivalent vocational schools) (4), higher education graduate (pre-graduate/certificate + undergraduate + postgraduate + doctorate) (5). The categories were formed on the basis of the latest educational stage from which the parents graduated. The size of the household was categorized as follows: 3 or fewer members (1), 4 members (2), 5 members (3), 6 members (4), 7 members (5), and 8 or more members (6). For the income level variable, the annual disposable income per person was taken as the basis per household. The level of income was determined according to the population in this study by quintiles. The income range per person

based on quintiles of the population and definitions of groups has been provided in Table 1.

Table I

The Income Range Per Capita and the Definition of Groups Based on the Population by Quintiles

Population Groups	Income range per capita (TL)	Described group
I. %20	– 1394	Low income
II. %20	1395 – 3011	Lower middle income
III. %20	3012 – 10661	Middle income
IV. %20	10662 – 2099831	Upper middle
V. %20	2099832 +	High income

Data Analysis

This study is of an analytical nature. The dependent variable for the analytical data analysis is binary and cross-sectional (student (1)/not student (0)). The independent variables were transformed into multiple and categorical states. The variables do not have a normal distribution. For this nature of the data, the Binary Logistic regression was employed to analyze the nature of the effect of independent variables on the dependent variable (Özdamar, 2004). Logistic regression enables work with a cross sectional data set related to a specific period and requires the use of each observation value. The Binary logistic regression exponent (Exp (B)) allows the ability to decide whether the variables are effective on the dependent variable (Seçer, 1997).

In this study, a two stage Binary logistic regression model was tried. In the first stage of the model, the effects of each of the independent variables, that is, the father's level of education, the mother's level of education, the size of the household and the level of income, on the dependent variable were determined. In the second stage of the model, the "exponents" (Exp (B)) that signify the relative effect of the subcategories of each affecting independent variable on the dependent variable were determined. Then, the states of effects of (Exp (B)) subcategories of independent variables on the dependent variable were examined and the "threshold" effects were interpreted. For the interpretations of the states of effect of subcategories on the dependent variable, the following were assumed as reference values: "non-graduate" for parents' level of education, "8 or more members" for the size of the household, and "low income" for level of income. The significance level was set to $P < .05$ in the evaluation of the existence of the effect of independent variables on the dependent variable.

Findings and Results

The analysis results of the first stage of the model related to the effect of each independent variable - level of father's education, level of mother's education, size of the household, and level of income - on the dependent variable according to gender and area of settlement are presented in Table 2. According to Table 2, the effects of each of the independent variables on the dependent variable were significant. When

the partial correlation values (R) are ranked, it can be said that the variable with the highest level of effect is the father's level of education and the one with the lowest level of effect is the level of income.

Table II

The Effect of Each Independent Variable on the Dependent Variable.

	B	R	S.E.	Wald	Sig.	Exp(B)
Father's level of education	.658	0.258	.051	169.797	.000	1.931
Mother's level of education	.775	.243	.063	153.593	.000	2.171
Size of household	-.318	.236	.026	151.989	.000	1.376
Level of income	.119	.077	.029	16.614	.000	1.126

In the second stage of the model, the level of effects of the subcategories of variables, which had an independent variable effect on the dependent variable according to gender and settlement, was examined. The exponents (Exp (B)) that indicate the relative effect of the father's level of education subcategory on the dependent variable are presented in Table 3. According to Table 3, the higher the father's level of education, the higher the likelihood of the child to participate in education. In general, the possibility for a child with a father, who is a higher education graduate, to be a student is 12 times higher than that of a child with a father, who is not a graduate.

Table III

The Effect of Fathers' Education on Probability of the Children's Participation in Education

Father's Level of Education		Non-graduate	Primary School Graduate	Elementary School Graduate	High School Graduate	Higher Education Graduate
General	B	Reference	0.74	1.27	2.08	2.54
	Sig.	0.00	0.00	0.00	0.00	0.00
	Exp(B)	-	2.09	3.55	8.01	12.69
Boys	B	Reference	0.56	1.14	1.87	2.47
	Sig.	0.00	0.00	0.00	0.00	0.00
	Exp(B)	-	1.75	3.12	6.48	11.81
Girls	B	Reference	0.95	1.40	2.33	2.74
	Sig.	0.00	0.00	0.00	0.00	0.00
	Exp(B)	-	2.58	4.07	10.23	15.55
Rural	B	Reference	0.35	1.15	2.16	3.23
	Sig.	0.00	0.04	0.00	0.00	0.00
	Exp(B)	-	1.42	3.14	8.64	25.30
Urban	B	Reference	1.01	1.26	1.97	2.35
	Sig.	0.00	0.00	0.00	0.00	0.00
	Exp(B)	-	2.73	3.54	7.18	10.50

The effect of the father's education on the child attending school shows differences based on gender and rural-urban distinction. The effect of the increase in the level of the father's education is more on boys (Exp (B)= 11.81) in school participation compared to that of girls (Exp(B)= 15.55). The possibility of those girls, whose fathers are graduates of higher education, to attend school is 15.55 times higher than those girls, whose fathers are not graduates, while this rate for boys is 11.81 times higher than those boys, whose fathers are not graduates. It can be said that the education of

a high school graduate father shows an increasing effect on the children (male and female) becoming students, and that this effect tends to decrease after this level. Compared to other stages of education, the father being a high school graduate has a marginal effect on the children's school participation.

The father's level of education has a strong effect on children to attend schools both in rural and urban areas. However, compared to urban areas, in rural areas, the father's high level of education has a stronger effect on the child's school attendance. In rural areas, the possibility of a child with a father, who is a higher education graduate, is 25 times higher than that of a child with a father, who is not a graduate. Meanwhile, in the city, this effect is 10 times higher than that of a child with a father, who is not a graduate. In rural areas, the father's low level of education has a lower effect, while, as the level of education is higher, the effect grows by a few times. However, in the cities, the effects of the differences in fathers' level of education on the child's participation in education is lower compared to each other, but more consistent. It can be said that the father has a gradually increasing effect on the child to become a student up to the high school level according to the reference value, and that this effect decreases after this stage.

The indicator exponents (Exp (B)) that signify the relative effects of the subcategories of the mother's level of education on the dependent variable are shown in Table 4. According to Table 4, as the level of education of the mother increases, the likelihood of the child's participation in education becomes higher. Overall, compared to a child with a mother, who is a non-graduate, a child with a mother, who is a higher education graduate, has a value of 13.15, which means that they are 13.15 times more likely to become a student. This effect increases between the mothers' levels of elementary and high school graduates.

Table IV

The Effect of Mother's Education on Probability of the Children's Participation in Education.

Mother's Level of Education		Non-graduate	Primary School Graduate	Elementary School Graduate	High School Graduate	Higher Education Graduate
General	B	Reference	1.00	1.15	2.08	2.58
	Sig.	0.00	0.00	0.00	0.00	0.00
	Exp(B)	-	2.73	3.17	7.98	13.15
Boys	B	Reference	0.84	0.72	1.57	20.61
	Sig.	0.00	0.00	0.01	0.00	1.00
	Exp(B)	-	2.32	2.05	4.79	0.58
Girls	B	Reference	1.18	1.60	2.58	2.53
	Sig.	0.00	0.00	0.00	0.00	0.00
	Exp(B)	-	3.24	4.95	13.15	12.49
Rural	B	Reference	0.14	0.57	0.55	0.71
	Sig.	0.00	0.00	0.02	0.00	1.00
	Exp(B)	-	2.09	4.00	7.14	0.53
Urban	B	Reference	0.12	0.24	0.30	0.60
	Sig.	0.00	0.00	0.00	0.00	0.00
	Exp(B)	-	2.86	2.46	6.75	8.78

The effect of the mother's level of education on the child's participation in education varies based on differences in gender and settlement in rural or urban areas. The effect of the mother's level of education is higher on females (high school Exp (B)= 13.15, higher education Exp (B)= 12.49) compared to that of boys (elementary school Exp(B)= 4.79). While there is a significant effect of the mother's level of education on boys' participation in education until the level of high school graduation (Exp (B)= 4.79), this effect is up to the level of higher education graduates on females (Exp(B)= 12.49). Compared to females, whose mothers are non-graduates, females, whose mothers are higher education graduates, have a possibility of 12 times more likely to participate in education. Compared to males, whose mothers are non-graduates, males, whose mothers are high school graduates, have a possibility of 4 times more likely to participate in education. The education of mothers, who are high school graduates, has a marginal effect on the child's participation in education.

The increase in mothers' level of education is effective both in rural and urban areas on children's participation in education. However, compared to rural areas, in urban areas, the effect of the increase in the level of education of the mother on children's participation in education is higher. In the rural areas, mothers, who are higher education graduates, do not have an effect on their child going to school. In the cities, the education of a high school graduate mother has a marginal effect on the child going to school.

The results of the analysis of the effects of the size of the household on the child's schooling are provided in Table 5. According to Table 5, as the size of household grows larger, the likelihood of the child in the family to go to school decreases. As the size of the household becomes smaller, the probability of inclusion into education is higher. Compared to a child in a household of eight or more members, a child in a household with 3 or fewer members has a possibility of 3 times more likely to participate in schooling. Small size of household has a higher effect on girls' participation in education (4 members Exp (B)= 5.90) compared to that of boys (4 members Exp (B)= 3.01).

Table V
The Effects of Household Size on Probability of the Children's Participation in Education.

Size of household		8 or more members	3 or fewer members	4 mem- bers	5 mem- bers	6 mem- bers	7 mem- bers	mem- bers
Genral	B	Reference	1.26	1.46	0.89	0.41	0.29	
	Sig.	0.00	0.00	0.00	0.00	0.00	0.07	
	Exp(B)	-	3.54	4.29	2.44	1.51	1.34	
Boys	B	Reference	0.88	1.10	0.73	0.13	0.37	
	Sig.	0.00	0.00	0.00	0.00	0.52	0.13	
	Exp(B)	-	2.41	3.01	2.08	1.13	1.45	
Girls	B	Reference	1.62	1.77	1.06	0.70	0.27	
	Sig.	0.00	0.00	0.00	0.00	0.00	0.23	
	Exp(B)	-	5.05	5.90	2.88	2.02	1.30	
Rural	B	Reference	0.66	1.44	0.73	0.50	0.56	
	Sig.	0.00	0.02	0.00	0.00	0.01	0.02	
	Exp(B)	-	1.93	4.23	2.08	1.65	1.74	
Urban	B	Reference	1.33	1.23	0.81	0.30	0.04	
	Sig.	0.00	0.00	0.00	0.00	0.10	0.87	
	Exp(B)	-	3.79	3.42	2.25	1.34	1.04	

The effect of household size in children's participation in education shows differences based on rural and urban areas. In the rural parts, the likelihood for participation in education increases by (Exp (B)= 4.23) when the size of the household is up to 4 members in rural areas, while the likelihood for participation in education increases by (Exp (B)= 3.79) in the households with three or fewer members in cities. The size of the household being 4 members in rural and 3 or fewer members in urban areas has a marginal effect on the child's schooling.

The results of the analysis related to the effect of the level of income on children's participation in education are provided in Table 6. According to Table 6, rise in income has an effect on children's schooling. However, upper-middle income level does not have an effect on the child's schooling. The effect of the rise in income on the child's participation in education increases up to the "middle income" level; this effect has the tendency to fall in the rest of the levels.

The effect of income on children's participation in education based on gender differences has variety. The increase in income affects girls' participation in education (High Exp (B)= 2.78) more compared to that of boys' participation (High Exp(B)= 2.02). The strongest effect is made by the middle income level on boys' (Exp(B)= 2.35) and girls' (Exp(B)= 4.61) participation in education.

The effect of increase in income on the schooling of children shows differences in rural and urban areas. The effect of increase in income on children's participation in education rises up to the middle income level, and after this point, the increase in income is not influential. In cities, it can be stated that, compared to the lower income group, the other income levels are influential on children's schooling. This effect increases up to the middle income level, and after this level, the effect decreases. This situation shows similarities in rural areas.

Table VI

The Effect of Family Income on Probability of the Children's Participation In Education.

Income groups		Low	Lower-middle	Middle	Upper-middle	Higher
General	B	Reference	0.60	1.22	0.02	0.89
	Sig.	0.00	0.00	0.00	0.90	0.00
	Exp(B)	-	1.83	3.40	1.02	2.44
Boys	B	Reference	0.45	0.85	-0.13	0.70
	Sig.	0.00	0.02	0.00	0.49	0.00
	Exp(B)	-	1.56	2.35	0.88	2.02
Girls	B	Reference	0.72	1.53	0.12	1.02
	Sig.	0.00	0.00	0.00	0.46	0.00
	Exp(B)	-	2.06	4.61	1.13	2.78
Rural	B	Reference	0.61	1.41	-0.07	0.40
	Sig.	0.00	0.00	0.00	0.70	0.06
	Exp(B)	-	1.84	4.08	0.94	1.50
Urban	B	Reference	0.50	1.02	0.33	1.06
	Sig.	0.00	0.00	0.00	0.06	0.00
	Exp(B)	-	1.65	2.76	1.39	2.89

Compared to rural areas, in urban areas, the effect of income on the dependent variable is higher. It can be stated that the effect on the dependent variable shows a gradually increasing trend up to the "upper middle income" group in cities, and that

the effect decreases in the upper income group. It can be stated that “middle income” has a marginal effect on children’s schooling.

Conclusions and Recommendations

A number of studies have revealed conventional results stronger effects of maternal education than paternal and stronger effects on sons than daughters. And also suggest that the education effects remained significant even when household income was included (Chevalier & Lanot, 2002; Tansel, 2002; Knighton & Mirza, 2002; Maitra, 2003; Chevalier et al, 2005; Finnie, Lascelles & Sweetman, 2005; Smits & Hoşgör, 2006). The results of this study supports findings mentioned above.

Parents’ level of education, household size, and level of income are variables, which have effects on children’s participation in education. However, there are differences in the effects of the family variables in the child attending school. The father’s level of education shows the highest effect, while the level of income shows the lowest effect. Moreover, the state of the effect of these family variables show differences based on gender and area of settlement. The family variables have a particularly high effect on girls’ participation in education. It can be said that the positive developments in the family variables play an important role in girls going to school. The parents, who are elementary school graduates, show the maximum effect in the child’s attendance to school. The size of the household being 4 or fewer members has a marginal effect on the child going to school. Similarly, middle income has a marginal effect on the child’s participation in education. It can be said that negative conditions have a negative effect on girls’ education particularly. Improvements in these conditions play an important role in children, in particular girls, going to school. From a policy view, the results suggest that increasing the participation of children, especially in household with low income and low educated parents in rural and urban location in education. Government may supply direct economic aid for those families and Non-government organizations attention should be taken to discuss the issue in every level of society which may help for finding alternative solutions.

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Türkiye’de Ailenin Sosyo-Ekonomik Özelliklerinin Eğitime Katılım Üzerinde Görelî Etkisi

(Özet)

Problem Durumu: Bilgiye dayalı ekonomi ve insan haklarına dayalı gelişme eğilimleri eğitimi kalkınmanın anahtar rolü haline getirmiştir. Son yarım yüzyılda gelişmiş ve gelişmekte olan ülkeler arasındaki ilköğretim tamamlama farkı giderek azalırken, ortaöğretimi tamamlama farkı ise giderek artmıştır. Bunun içindir ki ortaöğretim Herkesi İçin Eğitim çabalarının ayrılmaz bir parçası haline gelmiştir. Zorunlu öğretim sonrası eğitim kademelerinde okullaşma düzeyinin artırılması için engelleyici faktörlerin belirlenmesi ve önleyici politikaların geliştirilmesi için dünya çapında artan bir biçimde politika tartışmaları ve analizler yapılmaktadır. Yapılan çalışmalarda okulu terk etmeyi etkileyen faktörlerin birçoğunun uluslararası düzeyde benzerlik gösterdiği belirtilmekle birlikte birçok faktörün ise ülkelere özgü olduğu hatta ülke içinde cinsiyet, bölge ve yerleşim yerine göre farklılık gösterdiği belirtilmektedir. Yapılan ilgili çalışmalarda anne-baba eğitim düzeyi ve gelirin eğitime katılımda önemli değişkenler olduğu ve diğer sosyo ekonomik değişkenlerle yüksek düzeyde bir korelasyon gösterdiği belirtilmektedir. Genç nüfus yapısına sahip Türkiye’de bölge, cinsiyet, yerleşim yeri düzeyinde önemli eğitim eşitsizliklerinin olması zorunlu öğretim sonrası eğitim kademelerinde okullaşmayı artırmak için kapsamlı politikalara geliştirilmesini gerektirmektedir. Eğitime katılımda etkili ailesel değişkenlerin belirlenmesinin uygulanan eğitim politikalarının sonuçlarını görebilme, geliştirilecek eğitim politikalarında ailesel dinamikleri dikkate almada ölçülebilir ve karşılaştırılabilir ham ve işlenmiş veri sağlama açısından önemli olacağı düşünülmektedir.

Araştırmanın Amacı: Bu çalışma; cinsiyet ve yerleşim yerine (kır-kent) göre 15-18 yaş arası nüfusun öğrenci olmasında rol oynayan ailesel değişkenlerinin (anne/babanın eğitim düzeyi, hanehalkı büyüklüğü, gelir düzeyi) görelî etkisini belirlemeyi amaçlamaktadır.

Araştırmanın Yöntemi: Bu çalışma, Devlet İstatistik Enstitüsü 2005 Hanehalkı Bütçe Anketi Sonuçları ile elde edilen ham verilere dayanarak yapılmıştır. Araştırmada bağımlı değişken olarak “öğrenci olma (öğrenci)” alınmıştır. Bağımlı değişken ikili ve kesiklidir (öğrenci (1)/öğrenci değil (0)). Bu çalışma; 15-18 yaş arası nüfusu kapsamaktadır. Bu çağ nüfusun belli bir eğitim kademesine göre öğrenci olma durumu dikkate alınmamıştır. Bağımsız değişkenler ise, babanın eğitim düzeyi, annenin eğitim düzeyi, hanehalkı büyüklüğü ve gelir düzeyi alınmıştır. Bağımlı değişken üzerinde bağımsız değişkenlerin etki durumlarını belirlemek için iki aşamalı Binary Logistic Regresyon modeli denenmiştir. Modelin ilk aşamasında babanın eğitim düzeyi, annenin eğitim düzeyi, hane halkı büyüklüğü ve gelir düzeyi değişkenlerinin her birinin bağımlı değişken üzerindeki tek başına etkisi belirlenmiştir. Modelin ikinci aşamasında ise etkili her bir bağımsız değişkenin alt kategorilerinin bağımlı değişken üzerindeki görelî etkisini belirten katsayılar (Exp(B)) belirlenmiştir. Bağımlı değişken üzerinde bağımsız değişkenlerin alt kategorilerinin etki durumları (Exp(B)) incelenerek “eşik” etkileri yorumlanmıştır. Bağımlı değişken üzerinde alt kategorilerin etki durumlarının yorumlanmasında; Anne/babanın eğitim düzeyinde “mezun değil”, hanehalkı büyüklüğünde “8 ve daha fazla kişi” ve gelir düzeyinde ise “alt gelir” referans değer olarak alınmıştır. Bağımlı değişken üz-

erinde bağımsız değişkenlerin etkili olup olmadığı $P < 0,05$ anlamlılık düzeyine göre değerlendirilmiştir.

Araştırmanın Bulguları: Babanın eğitim düzeyi, annenin eğitim düzeyi, hanehalkı büyüklüğü ve gelir düzeyi çocuğun öğrenci olmasında etkili değişkenlerdir. Gelir ve anne/babanın eğitim düzeyindeki artış çocuğun öğrenci olmasını olumlu, hanedeki fert sayısının artması ise olumsuz etkilemektedir. Kısmi korelasyon değerleri (R) sıralandığında, etki düzeyi en yüksek olan değişkenin babanın eğitim düzeyi, en düşük değişkenin ise gelir düzeyi olduğu söylenebilir. Ancak Exp(B) değerlerine göre ise çocuğun öğrenci olmasında en fazla annenin eğitim düzeyindeki bir birimlik artışın etkili olduğu söylenebilir. Çocuğun öğrenci olmasında bu ailesel değişkenlerin etki durumu cinsiyet ve yerleşim yerine göre farklılık göstermektedir. Babanın eğitim düzeyi arttıkça çocuğun öğrenci olma olasılığı artmaktadır. Genel olarak babası mezun olmayan çocuğa göre babası yükseköğretim mezunu çocuğun öğrenci olma olasılığı 12 kat daha fazladır. Babanın eğitim düzeyindeki artışın etkisi erkekler için kızların eğitime katılımı üzerinde daha fazladır. Kentlere göre kırsal kesimde çocuğun öğrenci olmasında babanın eğitim düzeyindeki artış daha fazla etkili olmaktadır. Annenin eğitim düzeyi arttıkça çocuğun öğrenci olma olasılığı artmaktadır. Genel olarak annesi mezun olmayan çocuğa göre annesi yükseköğretim mezunu çocuğun öğrenci olma olasılığı 13 kat daha fazladır. Bu etki annenin ortaokul ve lise mezunu olması düzeyleri arasında giderek artmaktadır. Erkek çocuklarına göre kız çocuklarının eğitime katılımı üzerinde annenin eğitim düzeyinin etkisi daha fazladır. Lise mezunu annenin eğitimi çocuğun öğrenci olmasında marjinal etki yapmaktadır. Kırsal kesimde annenin yükseköğretim mezunu olması çocuğun öğrenci olmasında etkili değildir. Kentlerde lise mezunu annenin eğitimi çocuğun öğrenci olmasında marjinal etki yapmaktadır. Hanehalkı büyüklüğü arttıkça ailedeki çocuğun öğrenci olma olasılığı azalmaktadır. Hanehalkı büyüklüğü küçüldükçe eğitime katılma olasılığı artmaktadır. Sekiz ve daha fazla kişili hanedeki çocuğa göre, üç ve daha az kişili hanede olan çocuğun okula gitme olasılığı 3 kat fazladır. Hane büyüklüğünün kırsalda dört kişi, kentte ise üç ve daha az kişi olması çocuğun öğrenci olmasında marjinal etki göstermektedir. Çocuğun öğrenci olmasında hanedeki gelir artışı etkilidir. Çocuğun öğrenci olmasında gelir artışının etkisi "orta gelir" düzeyine kadar artmakta ve daha sonraki düzeylerde bu etki azalma eğilimine girmektedir. Hanedeki gelir artışının etkisi erkekler için kızların eğitime katılımı üzerinde daha fazla etkilidir. Erkeklerin ve kızların öğrenci olmasında en güçlü etkiyi orta gelir düzeyi yapmaktadır. Çocuğun öğrenci olmasında orta gelir düzeyine kadar gelir artışının etkisinin arttığı ve bu noktadan sonraki artışların etkili olmadığı söylenebilir. Kentlerde ise orta gelir düzeyine kadar bu etki giderek artmakta ve bu düzeyden sonra ise etkisi azalmaktadır. Kırsal kesimdeki durum kentteki ile benzerlik göstermektedir. Kırsal kesime göre kentlerde gelirin bağımlı değişken üzerindeki etkisi daha fazladır. Kentlerde bağımlı değişken üzerinde etkisi "orta üst gelir" grubuna kadar giderek artan bir etki gösterdiği ve üst gelir grubunda ise azaldığı söylenebilir. Çocuğun öğrenci olmasında "orta gelir" in marjinal etki gösterdiği söylenebilir.

Araştırmanın Sonuçları ve Önerileri: Çocuğun öğrenci olmasında anne/babanın eğitim düzeyinin, hanehalkı büyüklüğünün ve gelir düzeyinin etkili değişkenlerdir. Ancak çocuğun öğrenci olmasında bu ailesel değişkenlerin etkileri ise farklılık göstermektedir. Babanın eğitim düzeyi en yüksek etki, gelir düzeyi ise en düşük etkiyi göstermektedir. Yine bu ailesel değişkenlerin etki durumu cinsiyet ve yerleşim

yerine göre farklılık göstermektedir. Ailesel deęişkenlerin özellikle kızların öğrenci olmasında etkisi daha fazladır. Bu ailesel deęişkenlerdeki olumlu gelişmelerin kızların öğrenci olmasında önemli rol oynadığı söylenebilir. Anne /babanın ortaöğretim mezunu olması çocuğun öğrenci olmasında maksimum etki göstermektedir. Yine hanehalkı büyüklüğünün dört ve daha az olması çocuğun öğrenci olmasında marjinal etkiyi göstermektedir. Orta düzeyde gelirin de çocuğun öğrenci olmasında marjinal etkiyi göstermektedir. Olumsuz koşulların öncelikle kızların eğitimini olumsuz etkilediği söylenebilir. Olumsuz koşulların iyileştirilmesi öncelikle kız çocukların öğrenci olmasında önemli rol oynamaktadır. Sosyo ekonomik açıdan güçsüz aile çocukların eğitime katılımını artırmak için ekonomik olarak desteklenmelidir.

Anahtar Sözcükler: Eğitime katılım, zorunlu eğitim sonrası, eğitim eşitsizliği, hanehalkı geliri.