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The Perception of Engineers by Middle School Students through Drawings*

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ABSTRACT

Purpose: In 2017 and 2018, engineering applications and design process were given weight to with the updates carried out in the Physical Sciences Lesson Curriculum in Turkey. For the STEM education which is at the center of this update to reach its target, it is highly important that students accurately learn what engineers do, what their work field is, the characteristics they should carry and understand the nature of engineering. The present study aims to identify the perception of engineers of 5th, 6th and 7th grade middle school students through drawings.

Research Methods: The study group of this research which is a descriptive survey model consisted of 119 students from a city located in the East Anatolian region of Turkey who were 5th, 6th and 7th grade students. The "Draw an Engineer" form was used as the data collection tool and the drawings were evaluated with a checklist.

Findings: As a result of this study, it was determined that a majority of the students adopted the stereotyped idea that engineers are male. The findings showed that as the age increased, the rate of male engineers in the drawings increased as well and engineers creating designs were given more place to. In this study, it was concluded that in general the students mixed up what engineers do with the work construction workers or repairmen do and that they perceived engineers as individuals who work alone.

Implications for Research and Practice: To be able to develop students' perception of engineers in a positive manner, it is considered important for students' to experience STEM education applications. In this context, it is suggested to give place to 'Science, Engineering and Entrepreneurship Applications' in all grade levels both in school and outside school learning environments.

* This study was submitted as an oral presentation in the International Congress on Science and Education organized in Afyonkarahisar on 23-25 March, 2018.

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Introduction

The advanced technologies and scientific developments brought by the 21st century have brought along international competition in many countries as well. The success of countries in this competition depends on producing creative individuals who can critically and analytically think, solve problems pertaining to daily life, make efficient decisions, conduct research and question. To be able to be successful in the global competition, countries' making some reforms in the educational policies has come into question. When we take a look at the achievements of the 'Science and Engineering Applications' unit, which is a part of the Physical Sciences Lesson Curriculum updated in 2017 in Turkey, it is possible to see that engineering applications and design process were given weight to (Ministry of National Education [MoNE], 2017). STEM education which is at the center of this reform is made up of the first letters of Science, Technology, Engineering and Mathematics areas and embodies knowledge, skills and beliefs which are formed with the intersection of more than one of these areas (Çorlu, Capraro, & Capraro, 2014).

The program, which was renewed by the MoNE in the middle of 2017 in line with the STEM approach, is a draft program which was prepared to receive the views, suggestions and criticism of the public. The program was applied as a pilot program to the 5th grade students in the 2017-2018 academic year. Regarding the implementation of the program, the Head Council of Education and Morality evaluated the opinions received from different institutions and people. In the workshop report of Aydın University titled "Integration of STEM education to the Academic Program," it was stated that it will not be possible to implement the STEM approach by merely adding an engineering unit to the program and that the STEM education needs to be integrated into the whole Science Academic Program (Akgündüz, 2018, pp. 16-17). As a result of the evaluation of the views received from Aydın University and other institutions, the program was revised and updated once again at the end of 2017 and the MoNE published the 2018 Science Lessons Academic program. In the 2017 program, the 'Science and Engineering Applications' unit appears as the eighth unit from the 4th grade to 8th grade and as nine hours for 4th grade students and 12 hours for the other grade levels. In the 2018 program, the 'Science and Engineering Applications' unit was removed and replaced with 'Science, Engineering and Entrepreneurship Applications' to cover all of the units. Within the scope of these implementations, the students are expected to create products to meet a need in daily life or as a solution to a problem by taking the subjects learned in the units as a reference and present these at the science festival to be organized at the end of the academic year. In this respect, nine hours for 4th grade students and 12 hours for the other grade levels were suggested for this science festival (MoNE, 2018).

The purpose of STEM education is to make it possible for students to form a relationship between engineering and the other three disciplines, understand interdisciplinary interaction and use the knowledge they acquire during the learning process in the lives. In order for STEM education to reach its target, it is considered that it is important for students to accurately understand what engineers do, what their study field is, the characteristics they should carry and the nature of engineering.

Although our daily lives are surrounded by the products of engineering, students mostly do not understand what engineers do (Gibbin & Davis, 2002; Frehill, 1997). According to the Turkish Language Society, an engineer is an individual who is specialized in public works, such as roads, bridges and buildings; nutrition, such as agriculture and diets; sciences, such as physics, chemistry, biology, electric and electronics and technical and social areas, such as planes, cars, motors and work machines which serve the purpose of meeting every needs of human beings, who received a specialized education (TLS, 2010). Engineering is defined as the accumulation of knowledge in the design and production of both human made products and the problem solving process (Katehi, Pearson, & Feder, 2009, p. 17).

Understanding what students' perception of engineers is and what they think about the work carried out by engineers seems important because these perceptions can influence the understanding of students about this profession, their beliefs and thoughts about doing this profession as a career (Knight & Cunningham, 2004). In the literature, the most commonly used method to identify the perception of students of engineers and engineering is the 'Draw an Engineer Test' (DAET). This test was created by taking the 'Draw a Scientist Test' (Chambers, 1983) developed with the purpose of identifying the perception of students on scientists as the basis. DAET, which was developed by the Boston Science Museum researchers, contains open-ended questions in addition to drawings (Knight & Cunningham, 2004). The researchers asked 384 3rd-12th grade students to draw an engineer and answer the question "What does an engineer do?" in written form. At the end of the research, what engineers do was identified as construction, repair works, creation and design.

The researchers, who developed a measurement took named "What is Engineering?" using the results they obtained from DAET, asked the students to choose the visuals which represent what engineers do. In this study, it was concluded that students think of engineers as car repairmen and construction workers (Cunningham, Lachapelle, & Lindgren-Streicher, 2005). In another study, primary school students perceived engineering as repairing and constructing things and doing these work, and that they depicted engineers as construction workers. In addition, students thought that engineers use plans, computers and objects, such as safety helmets as well (Oware, Capobianco, & Diefes-Dux, 2007). In another study in which DAET and interview method were used, the perception of students about engineers was separated into four categories, as follows: repairmen, construction workers, technicians and individuals who do designs. Only 17% of the students who participated in this study expressed that engineers do designs (Capobianco, Diefes-Dux, Mena, & Weller, 2011).

In another study in which DAET was used, the findings showed that second, 3rd and 4th grade students associated engineers with concepts, such as constructing buildings, repairing things and driving vehicles (Carr, Diefes-Dux, & Horstman, 2012). In another study in which students perceptions about engineering were identified, the researchers evaluated the drawings with a check-list they developed. In this study in which 744 students' drawings were evaluated, engineers were mostly depicted as human and male. The skin color of engineers was not indicated, and they were

depicted as individuals with construction worker clothes who wear glasses/protective glasses and laboratory coats. Some of the students gave place to other people as well in their drawings, and the most commonly seen objects were passenger vehicles, civilian buildings, architecture/construction tools, trains/railroads, furniture and computers. The engineers drawn by the students did construction/repair/manual work, operated/used machines/tools and did design work, and some of them did not do anything at all. It was observed that the work environments of engineers were mostly not indicated and open spaces were given more places to in comparison to closed areas. As a result, students depicted engineers as workers who used their hands rather than their minds and did heavy work in open areas (Fralick, Kearn, Thompson, & Lyons, 2009).

In the study of Gibbons et al., the researchers stated that a majority of secondary school students like finding out how things work and thinking about innovative and better ways of doing things. Despite this, a very small number of students were able to accurately identify five types of engineers. None of the students were able to correctly give examples of the work that the engineer type they wrote about did (Gibbons, Hirsch, Kimmel, Rockland, & Bloom, 2004).

In another study in which views of 6th grade students on the nature of engineering, DAET was used and the students were interviewed. As a result of the study, a majority of the students perceived engineers as individuals who produced products. Despite this finding, some students understood the role engineers play in the design and planning of products. A majority of the students regarded the process of engineering as building or assembling vehicles and constructing buildings and thought that engineering is a professions performed by a handful of skilled workmen both in their drawings and the interviews. Although there were no women depicted as engineers in the drawings, the students expressed in the interviews that engineering is not a profession which is focused on males (Karatas, Micklos, & Bodner, 2011).

In a study carried out in Turkey, the perception of 72 students of high-intelligence was determined with DAET. As a result of the study, it was determined that a majority of the students drew construction engineers, mentioned the design dimension of engineering and perceived engineering as a male profession (Koyunlu Ünlü & Dökme, 2017). In another study in which the perceptions of 82 5th grade students of engineers were identified with DAET, a majority of the students perceived the gender of engineers as male. In addition, the students regarded engineering as a profession which is carried out with machines and drew mechanical engineers who performed the repair, design and development of machines. It was concluded with the students' drawings that the students associated construction engineers with the concepts of construction and repair. The most commonly seen objects in the students' drawing were safety helmets, tools, work machines, vests and gloves. It was stated in the study that there were very few drawings of engineers who did laboratory work and that the tools used by engineers were experiment materials and microscopes. It was seen in the drawings that engineers who worked in laboratories invented things with chemicals and performed work which is research-oriented. It was seen that very few students regarded engineering as design and development and that there were engineers who

used computers, drawing-measurement tools, models and calculators, mostly wearing glasses in their drawings. In the engineer drawings which depicted them as doing mechanical production, car, robot, plane and rocket productions were given place to and that the concept of mechanics was associated mostly with cars (Çetin & Asiltürk, 2017). In a study in which the engineer perceptions of 5th and 7th grade students were identified, the students mostly drew engineers who constructed buildings and did work on computers and that as the grade level increased, engineering areas, such as agriculture, genetics, machinery and environment were drawn. It was seen that the students, in general, drew workmen who did work, such as painting, plaster, in constructions and that they depicted engineers as designers. The students gave very little place to female engineers in their drawings and as the grade level increased, the number of female engineers drawn decreased (Gülhan & Şahin, 2018). In another study in which the engineer perceptions of 220 middle-school students were identified, the findings showed that the students mostly drew construction engineers and computer engineers and perceived engineers as a person who repaired a broken electronic device. In addition, the female students mostly drew food and environment engineers, whereas male students mostly drew aircraft engineers and ship engineers (Bilen, Irkıçatal, & Ergin, 2014).

The results of all mentioned studies showed that many students perceive engineering as repairing and buildings things or driving vehicles, think that engineers perform work which requires too much physical labor and that very few students are aware of the design dimension of engineering (Bilen et al., 2014; Capobianco et al., 2011; Carr et al., 2012; Cunningham et al., 2005; Fralick et al., 2009; Gülhan & Şahin, 2018; Knight & Cunningham, 2004; Oware et al., 2007). Another finding acquired in the literature review is that, students adopted the stereotypical view that engineers are mostly male (Çetin & Asiltürk, 2017; Fralick et al., 2009; Gülhan & Şahin, 2018; Karatas et al., 2011; Koyunlu Ünlü & Dökme, 2017).

Individuals acquire knowledge, attitude and behaviors about occupations in the middle-school period; therefore, middle-school years are a critical period regarding career choice (Gottfredson, 2002). It is stated that the perceptions of students of different occupations in this period are important regarding career development and that they need to be analyzed (Super, 1990). Engineering, which is one of the disciplines of STEM education which came to the agenda with the draft Science Education program in 2017 and started to be implemented with the program in 2018, is a very new area for our country in the primary education level. When the studies published in Turkey were analyzed, it was observed that the number of studies in which the engineer perception of middle-school students is quite low compared to international literature. Therefore, it can be stated that the results to be obtained from this study will contribute considerably to the national literature as well. In addition, it is considered that the results of this study will provide valuable insights into the integration of engineering into the science program to teachers who have an important role in creating an accurate engineer perception in the students, the academicians who educate them, textbook writers and program development experts.

The purpose of the study

The present study aimed to determine the perceptions of 5th, 6th and 7th grade middle school students (aged 11-13) of engineers through drawings. In the light of this purpose, it was attempted to determine the students' views on the physical characteristics of engineers, their work environments, and the work that they do and the objects found in their work environments through their drawings.

Study problem

The problem sentence of this study was determined as, "What is the perception of 5th, 6th and 7th grade secondary school students of engineers?" The sub-problems of this study are presented below:

What is the perception of the students of the physical characteristic of engineers?

What is the perception of the students of the work environment of engineers?

What is the perception of the students of the work performed by engineers?

What is the perception of the students of the objects found in the work environments of engineers?

Method

Research Design

This study was carried out the purpose of determining the perception of secondary school students of engineers using the pictures they envision in their minds. Therefore, in this study, the descriptive survey model was used. The studies in the descriptive survey model which is the most widely used model in social sciences are aimed at presenting the attitudes, views or behaviors of individuals towards the subject of the study (Creswell, 2008).

Research Sample

The study group of this research consists of 119 students from the 5th, 6th and 7th grade students of a state middle school located in a district in a medium level socioeconomic rural region in the East Anatolian region of Turkey. Since the first years of middle-school are a critical period regarding the identification of the perception of occupation (Gottfredson, 2002), 8th grade students were not included in this study. The study group was formed with the number of students who could be reached from the 5th, 6th and 7th grade students. In the formation of the study group, convenience sampling which is a type of purposeful sampling was used. According to Yıldırım and Şimşek (2013), in line with the purpose of this type of sampling method, the researcher chose a close and easily accessible situation, which sped up this study and made practical. The distribution of the students in accordance with their grade and gender is presented in Table 1.

Table 1.

Distribution of the Study Group according to Grade and Gender

Grade	Female	Male	Total	%
5	17	15	32	26.89
6	27	32	59	49.58
7	13	15	28	23.53
Total	57	62	119	100.0

Data Collection Tool

The "Draw an Engineer" form was used as the data collection tool. On the front page of the form, there is a large and framed area for the students to draw a working engineer and a separate space underneath this area in which the students write the name of the engineer they draw. On the back page of the form, there are the questions, "What are the personal characteristics of an engineer?", "How is the work environment of an engineer?", "What kinds of work does an engineer do?" and "What is the engineer you drew is doing?" with the purpose of allowing the students describe their drawings (Fralick et al., 2009). The construct validity of the open- ended questions was determined with the views of two experts in the science education area and one language experts. The students were given 45 minutes to draw on the front page of the form and to answer the open-ended questions at the back of the form. In addition, the students were advised to use colored pencils in their drawings.

Data Analysis

In the evaluation of the students' drawing on the characteristics of students, the drawing checklist used by Fralick et al. (2009) was used. The drawing checklist consists of 61 small boxes on the drawings of the participants. These are: skin color (brown, light pink, yellow, green, none, other), outer appearance characteristics (wild hair, protective glasses/glasses, laboratory coat, construction worker clothes, others), gender (male, female, not known), location (interior spaces, open areas, space, underground, underwater, not known), works performed (production/repair/ manual work, operating/using machines, vehicles and tools, design/innovation/production/creation, experiment/test/knowledge production, explanation/teaching, observation, no work of activity, other) and objects (30 common objects including robots, computers, tools and others) (Fralick et al., 2009, p. 72).

For instance, let's have a look at how the analysis was carried out through the drawing in Figure 3-c: In this drawing, the type of engineer was integrated into the *human* code, the gender to *female* code, skin color to *none* code and other physical appearance to *safety helmet/crash helmet code*. When the drawing is analyzed concerning place, it can be seen that the engineer was integrated into the *interior/closed spaces* code since he/she works in a room and when the drawing was analyzed concerning the theme of the work produced, it can be seen that this was integrated into the

design/invention/production/creation code since a design was produced through drawing. The paper and pencil found in the work-space of the engineer were integrated into the *writing materials* code; the table, closet and bookcase to the *furniture* code and the books in the bookcase to the *books'* code. The drawings produced by the engineer were integrated into the *plans, drawings and graphics* code. While the obtained data were recorded on the control list, these were given place to underneath the grade level of the student who drew the picture. In this manner, the data were evaluated both separately and, in general concerning the grade levels.

In the evaluation of data obtained from the checklist, descriptive analysis was used. Data obtained from the descriptive analysis were evaluated in accordance with the pre-determined categories, interpreted systematically in an open manner and the results are presented following the analysis of a cause and effect relationship (Yıldırım & Şimşek, 2013). For the reliability of the descriptive analysis, the data coded by the first researcher were coded by the second researcher as well and the concordance between the two researchers was calculated as 98% with Miles and Huberman's (2015) reliability control coding formula. According to Yıldırım and Şimşek (2013), when the concordance percentage in the reliability calculation is 70%, it is regarded as having reached the reliability percentage. Therefore, the obtained values showed that the coding reliability of the researchers was sufficient.

Results

Findings of the first Sub-Problem

The perceptions of the students of the physical characteristics of engineers were evaluated in accordance with the categories and codes in the drawing checklist. The descriptive analysis results of the evaluations are presented in Table 2.

Table 2.

The Descriptive Analysis Results of the Students' Perceptions of the Physical Characteristics of Engineers

Category	**Code**	**5th grade n=32**		**6th grade n=59**		**7th grade n=28**		**All participants N=119**	
		f	%	f	%	f	%	f	%
Type	Human	31	96.88	57	96.60	27	96.43	115	96.64
	Nonhuman/not human	1	3.12	1	1.70	-	-	2	1.68
	Not a person (no one)	-	-	1	1.70	1	3.57	2	1.68
Gender	Male	26	81.25	52	88.14	25	89.29	103	86.56
	Female	6	18.75	6	10.17	2	7.14	14	11.77
	Not known	-	-	1	1.69	1	3.57	2	1.68

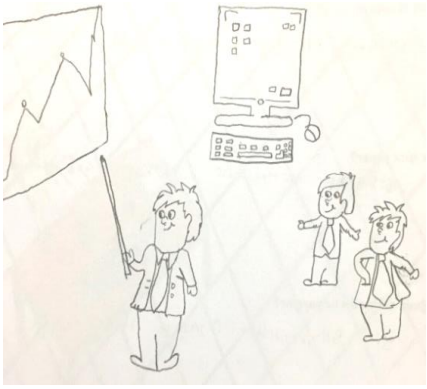
Table 2 Continue

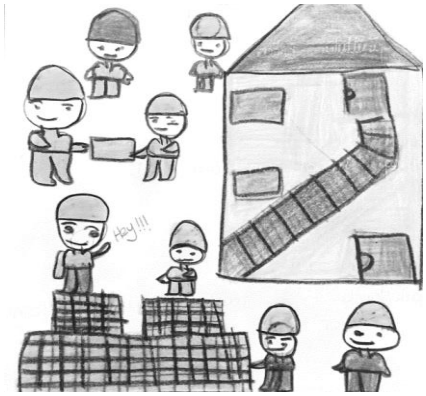
Category	Code	5th grade n=32		6th grade n=59		7th grade n=28		All participants N=119	
		f	%	f	%	f	%	f	%
Skin color	Brown	-	-	2	3.39	-	-	2	1.68
	Light pink	1	3.13	5	8.48	1	3.57	7	5.88
	Yellow	3	9.38	5	8.48	2	7.14	10	8.40
	Green	-	-	1	1.70	-	-	1	0.84
	None	28	87.50	35	59.32	23	82.14	86	72.27
	Other	-	-	11	18.64	2	7.14	13	10.92
Other physical characteristics	Crazy hair style	-	-	2	3.39	-	-	2	1.68
	Protective glasses/glasses	1	3.13	-	-	4	14.29	5	4.20
	Laboratory clothes	-	-	-	-	-	-	-	-
	Construction worker clothes	3	9.38	14	23.73	4	14.29	21	17.65
	Safety/crash helmet	9	28.13	22	37.29	7	25.00	38	31.93
	Moustache/beard	-	-	1	1.70	3	10.71	4	3.36
	Suit	2	6.25	2	3.39	3	10.71	7	5.88
	Bald	1	3.13	10	16.95	1	3.57	12	10.08
	Other	16	50.00	8	13.56	6	21.43	30	25.21

According to the findings in Table 2, it can be seen that 96.64% of the engineers drawn were human, 1.68% was non-human/not human, 1.68% was not in the form of a person. 96.88% of the 5th grade students, 96.60% of the 6th grade students and 96.43% of the 7th grade students drew engineers as humans. While one student each from the 5th and 6th grades drew an engineer who is non-human, one student each from the 6th and 7th grades drew an engineer, not in the form of a person. It can be seen that the gender of the engineer drawn by the students was 86.56% male, 11.77% female and 1.68% unknown. It was observed that the gender of the engineers drawn by 81.25% of the 5th grade students, 88.14% of the 6th grade and 89.29% of the 7th grades was perceived as male. It was also observed that there were more female engineers in the drawings of the 5th and 6th grade students in comparison to the 7th grade students.

According to Table 2, the skin color of the engineers drawn by the students was mostly not indicated (72.27%). 87.50% of the 5th grade students, 59.32% of the 6th

grade students and 82.14% of the 7th grade students did not indicate skin color. 8.40% of the students colored the skin of the engineer yellow and 10.92% colored it as brown, light pink, yellow, green and did not use any color. It was seen that the engineers drawn had crazy hair styles (1.68%), wore protective glasses/glasses (4.20%), wore construction worker clothes (17.65%), wore safety/crash helmets (31.93%), had a moustache/beard (3.36%), wore suits (5.88%), were bald (10.08%) and other physical characteristics (25.21%). There were no engineers in the drawings with laboratory coats. While there were engineers with crazy hair style in the drawings of the 6th grade students (3.39%), whereas the 5th and 7th grade students did not portray engineers in this manner. While there were engineers who wore protective glasses/glasses in the 5th and 7th grade students' drawings, the 6th grade students did not portray engineers in this manner. There were more engineers with construction worker clothes and safety/crash helmets in the drawings of the 6th grade students, whereas engineers with suits were more in the drawings of the 7th grade students. There were no engineers with moustaches/beards in the drawings of the 5th grade students and there were more bald engineers in the drawings of the 6th grade students compared to the students in other grades. The drawings of some students' about their perceptions of the physical characteristics of engineers are presented in Figure 1. In these drawings, a) female engineers, b) male engineers with suits and whose skin color was not apparent, c) engineers wearing safety/crash helmets and construction worker clothes d) engineers wearing safety/crash helmets, with moustaches and no apparent skin color were depicted.

<table>
<tr><td>  </td><td>  </td></tr>
<tr><td>a) 7th grade
"The engineer I drew is communicating with her friends on the computer."</td><td>b) 7th grade
"He is presenting the computers he built."</td></tr>
</table>



c) 6th grade

"Trying to make people happy with his friends."

d) 7th grade

"The engineer is visiting the work sites, reporting these and doing arrangements."

Figure 1. *Engineer Drawing Samples and Students' Views on the Work Engineers Do*

Findings of the second Sub-Problem

The perceptions of the students of the work environments of engineers were evaluated in accordance with the categories and codes in the drawing checklist. Since some of the students depicted more than one working environment in their drawings, the total frequency was found to be higher than the study group's size. The descriptive analysis results related to the evaluation are presented in Table 3 below.

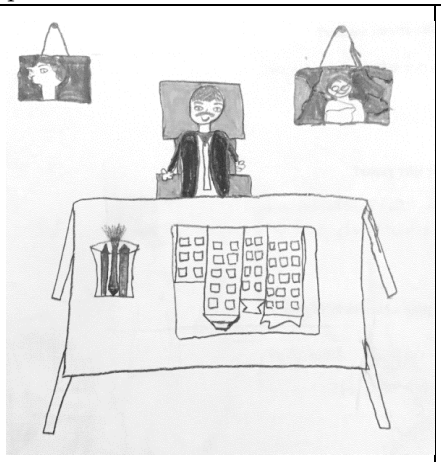
Table 3.

The Descriptive Analysis Results of the Students' Perceptions of the Work Environments of Engineers

Category	**Code**	**5th grade n=32**		**6th grade n=59**		**7th grade n=28**		**All participants N=119**	
		f	%	f	%	f	%	f	%
Location	Internal closed spaces	14	38.89	16	27.12	14	45.16	44	34.92
	External/open Spaces	14	38.89	40	67.80	16	51.61	70	55.56
	Space	-	-	-	-	-	-	-	-
	Underground	-	-	-	-	-	-	-	-
	Underwater	-	-	-	-	-	-	-	-
	Not indicated	8	22.22	3	5.08	1	3.23	12	9.52
Total		36	100	59	100	31	100	126	100

According to Table 3, the work environments of the engineers drawn by the students and the frequency of their mention were determined as internal/closed spaces (34.92%), external/open spaces (55.56%) and not indicated (9.52%). In the drawings of the 5th grade students, it was seen that internal/closed and external/open spaces were mentioned in the same frequency (38.89%) and that the location was not mentioned in the frequency of 22.22%. A majority of the 6th grade students (67.80%) drew engineers in external/open spaces. 51.61% of the 7th grade students drew the location of the engineers as external/open spaces, 45.16% as internal/closed spaces and 3.23% (f=1) of them did not indicate the work environments of the engineer.

The drawings of some students about their perception of the work environment of engineers are presented in Figure 2. In these drawings, a) an engineer working in an internal/closed space and b) an engineer working in an external/open space were depicted.



a) 7th grade

"He is checking all the drawings himself."

b) 6th grade

"She is checking and observing the endurance of the construction one last time."

Figure 2. *The Students' Drawings of Engineers and Their Views on What Kind of Work They Do*

Findings of the third Sub-Problem

The perceptions of the students of what engineers do were evaluated in accordance with the categories and codes in the drawing checklist. Since some of the students depicted the engineer they drew as doing more than one work, the total frequency was found to be higher than the study group's size. The descriptive analysis results of the perceptions of students of the work that engineers do are given in Table 4.

Table 4.

The Descriptive Analysis Results of the Students' Perceptions of the Work Engineers Do

Category	Code	5th grade n=32		6th grade n=59		7th grade n=28		All participants N=119	
		f	%	f	%	f	%	f	%
Inferences about the work engineers do	Production/Repair/ Manual work	10	27.78	17	24.29	6	18.75	33	23.91
	Operating/Using Machines and Tools	1	2.78	13	18.57	3	9.38	17	12.32
	Design/Invention/ Forming products/ Creating products	6	16.67	18	25.71	11	34.38	35	25.36
	Experiment/Testing /Producing knowledge	4	11.11	1	1.43	3	9.38	8	5.80
	Teaching /Explaining	-	-	2	2.86	-	-	2	1.45
	Observing	7	19.44	8	11.43	1	3.13	16	11.59
	No work or activity	8	22.22	10	14.29	8	25.0	26	18.84
	Other	-	-	1	1.43	-	-	1	0.73
Total		36	100	70	100	32	100	138	100

According to Table 4, the work engineers do and their frequency in the drawings were determined as production/repair/manual work (23.91%), operating/using machines and tools (12.32%), design/invention/forming products/creating products (25.36%), experiments/testing/producing knowledge (5.80%), teaching/explaining (1.45%), observing (11.59%). The engineers in the drawings were portrayed as doing nothing in the frequency of 18.84% and doing other work in the frequency of 0.73%. Engineers were generally doing things like production/repair/manual work in the drawings of the 5th grade students, doing things like production/repair/manual work and design/invention/forming products/creating products in the drawings of the 6th grade students and design/invention/forming products/creating products in the drawings of the 7th grade students. While engineers teaching/explain things were portrayed in the drawings of the 6th grade students, these types of engineers were not seen in the drawings of the 5th and 7th grade students. The drawings of some students about their perception of the work engineers do are presented in Figure 3. In these drawings, a) an engineer carrying out an observation, b) an engineer conducting an experiment/testing/producing knowledge and c) an engineer doing design/invention/forming a product/creating a product were depicted.

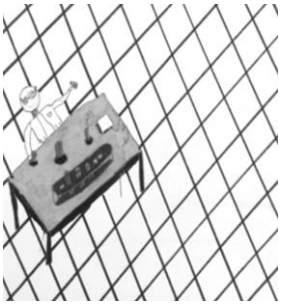
		
a) 5th grade *"He is controlling the building he has drawn the project of."*	**b)** 7th grade *"Producing soap."*	**c)** 6th grade *"She is designing a project. She has drawn lots of pictures but has not liked them and thrown them away."*

Figure 3. *The Engineer Drawings of the Students and Their Views on the Work Engineers Do*

Findings of the fourth Sub-Problem

The perceptions of the students of the objects found in the work environments of engineers were evaluated in accordance with the categories and codes in the drawing checklist. Since the majority of the students gave more than one object in their drawings, the total frequency was found to be higher than the study group's size. The descriptive analysis results are given in Table 5.

Table 5.

The Descriptive Analysis Results of the Students' Perceptions of the Objects Found in the Work Environments of Engineers

Category	Code	5th grade n=32		6th grade n=59		7th grade n=28		All participants N=119	
		f	%	f	%	f	%	f	%
Objects	Other people	9	12.68	25	14.12	6	8.57	40	12.58
	Non-human creatures - such as monsters	-	-	-	-	-	-	-	-
	Parts of the body – such as arms, the brain	-	-	-	-	-	-	-	-
	Robots	-	-	-	-	-	-	-	-
	Computers	8	11.27	10	5.65	5	7.14	23	7.23
	Architecture/Construction tools such as wrench, hammer	-	-	13	7.35	1	1.43	14	4.40
	Measurement tools - such as ruler	-	-	-	-	1	1.43	1	0.32
	Writing tools - such as paper, pens	5	7.04	14	7.91	7	10.0	26	8.18

Table 5 Continue

Category	Code	5th grade n=32		6th grade n=59		7th grade n=28		All participants N=119	
		f	%	f	%	f	%	f	%
Objects	Animals being studied	-	-	1	0.57	-	-	1	0.32
	Other animals	-	-	1	0.57	-	-	1	0.32
	Plants being studied	-	-	2	1.13	-	-	2	0.63
	Other plants	1	1.41	3	1.70	2	2.86	6	1.89
	Rocks	-	-	1	0.57	1	1.43	2	0.63
	Passenger vehicles	1	1.41	1	0.57	3	4.29	5	1.57
	Construction tools	3	4.23	11	6.22	1	1.43	15	4.72
	Flying vehicles	-	-	-	-	-	-	-	-
	Rockets/ space vehicles	-	-	-	-	-	-	-	-
	Trains/Rail Roads	-	-	1	0.57	-	-	1	0.32
	Imaginary machines	-	-	-	-	-	-	-	-
	Other machines	1	1.41	2	1.13	-	-	3	0.94
	Books	1	1.41	3	1.70	1	1.43	5	1.57
	Furniture - such as tables, chairs	15	21.13	14	7.91	13	18.57	42	13.21
	Mathematics symbols	-	-	-	-	-	-	-	-
	Chemistry symbols	-	-	-	-	-	-	-	-
	Plans, drawings and graphics	7	9.86	16	9.04	10	14.29	33	10.38
	Diplomas / Awards	-	-	-	-	-	-	-	-
	Weapons - such as guns, bombs	-	-	1	0.57	-	-	1	0.32
	No Entry / Caution signs	-	-	-	-	-	-	-	-
	Danger - such as fire, explosives	-	-	-	-	-	-	-	-
	Civilian buildings - such as bridges, buildings	12	16.90	27	15.25	11	15.71	50	15.72
	Chemistry - such as volumetric flask, experiment tubes	1	1.41	1	0.57	3	4.29	5	1.57
	Technology - such as TV, radio, telephone	1	1.41	2	1.13	1	1.43	4	1.26
	Medicine - such as bacteria, injectors, needles	-	-	-	-	-	-	-	-
	Meteorology	-	-	-	-	-	-	-	-
	Sports types	-	-	-	-	-	-	-	-
	Thinking signs	1	1.41	8	4.52	2	2.86	11	3.46
	Construction materials – such as cement, sand	3	4.23	9	5.09	2	2.86	14	4.40
	Other	2	2.82	11	6.22	-	-	13	4.09
		71	100	177	100	70	100	318	100

When we analyze Table 5, there were no non-human creatures, body parts, robots, flying vehicles, rockets/space vehicles, imaginary machines, mathematics and

chemistry symbols, diplomas/awards, no entry/caution sings, fire/explosives, etc., bacteria, injectors, needles, animate and inanimate objects about medicine, meteorology and sports types. In 12.58% of the drawings, there were engineers doing group work. The 5th and 6th graders gave more place to engineers doing group work compared to the 7th graders. Some students from each grade drew computers and technological devices, such as television, radio and telephone, were rarely depicted. It was also seen that other types of machines were displayed in the rate of 0.94% along with these types of technological devices.

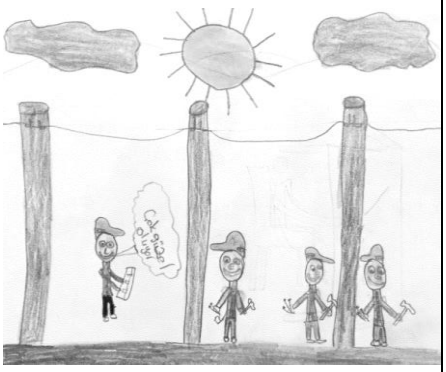
Objects related to construction and their frequencies in the drawings of the students were determined as architecture/construction tools (4.40%), construction vehicles (4.72%), civilian buildings, bridges and other buildings (15.72%), construction materials (4.40%). Objects related to construction were seen the most in the drawings of the 6th grade students. It was seen in the drawings that the students gave place to measurement tools (0.32%), writing tools (8.18%) and furniture (13.21%) and depicted engineers doing design work and drawings. It was observed that only one student from the 7th grade gave place to measurement devices and the other students in the 5th and 6th grades did not give place to these measurement tools. While 7th graders gave more place to writing tools in comparison to the students from the other grades, 5th and 6th grade students gave place to writing tools about the same amount in their drawings. The 5th and 7th graders gave more place to furniture compared to the 6th graders.

According to the findings in Table 5, while there were no vehicles in the drawings, such as flying vehicles, rockets/space vehicles, some other types of vehicles, were depicted by the students. The frequency of depicting vehicles was 1.57% for passenger vehicles, 4.72% for construction vehicles and 0.32% for trains. There was an individual doing experiments in the perception of the students of engineers. While the students gave place to objects related to chemistry in the rate of 1.57% in the drawings, they did not give place to danger signs and chemistry symbols frequently seen in the area of chemistry. The objects depicted in the drawings are mostly inanimate objects in the rate of 84.26%. The inanimate objects which were seen more in the drawings and their frequency were determined as: civilian buildings (15.72%), furniture (13.21%), plans, drawings and graphics (10.38%), writing tools (8.18%), computers (7.23%), construction vehicles (4.72%) and construction materials (4.40%). It was observed that the objects seen in the drawings were animate objects in the rate of 15.74% and that a majority of these consisted of other people (12.58%).

The drawings of some students about their perception of the objects found in the work environment of engineers are presented in Figure 4. In these drawings, a) construction materials, construction vehicles, civilian buildings and other people, b) measurement tool, furniture, drawing tool c) architecture/construction tools and other people, d) architecture/construction tools, other people, construction materials and civilian buildings, e) furniture and computer and f) furniture, drawing tool, construction materials were seen.

a) 7th grade
"He is doing a construction project."

b) 7th grade
"He is drawing a construction project."



c) 6th grade
"He is doing the city's electricity."

d) 6th grade
"He assigns tasks to the workers and guides them."

e) 7th grade
"He is going to sit in front of the computer and try something new."

f) 7th grade
"He is talking about his plan."

Figure 4. *Examples from the Engineer Drawings of the Students and Their Views on What Kind of Work Engineers Do*

Discussion, Conclusion, and Recommendation

In this study in which the purpose was to identify secondary education students' perception of engineers, the physical characteristics, work environments, type of work and the objects found in the work environments of engineers were evaluated. The findings showed that the engineers in the drawings were depicted as humans in the rate of 96.64% and that their gender was male in the rate of 86.56% and female in the rate of 11.77%. Similarly, it was observed that the engineers were depicted as humans in the rate of 69.80%, as males in the rate of 48.90%, as females in the rate of 13.30% (Fralick et al., 2009) and that there are more male engineers in the drawings (Çetin & Asiltürk, 2017; Fralick et al., 2009; Gülhan & Şahin, 2018; Karatas et al., 2011; Koyunlu Ünlü & Dökme, 2017) as the results of this study. It is considered that the underlying reason why mostly male engineers were given place to in the drawings might be that engineering is seen as a male dominant career in Turkey (Korkut-Owen, Kelecioglu, & Owen, 2014) and female students usually do not have role models in the area of engineering.

In this study, it was seen that the 5th and 6th graders gave more place to female engineers in their drawings in comparison to the 7th graders. Similarly, as a result of the research carried out by Gülhan and Şahin (2018), the findings showed that as age increased, the students drew less female engineers. This finding of the study is an unexpected result, because it is expected for the stereotypical perception of gender to decrease as the grade level increases (Gülhan & Şahin, 2018). It is stated that the students' perception of engineers is fragile and can change (Karatas et al., 2011); therefore, it is considered that engineering applications carried out during middle-school years might be effective in developing the engineer perceptions of the students.

In the drawings of the students, it was seen that the students mostly did not color the skin of the engineers they depicted (72.27%). Similarly, it was seen in another study as well that the students did not color the skin of engineers they depicted in the rate of 58.20% (Fralick et al., 2009). In the study, it was seen that the engineers are mostly wearing safety or crash helmets (31.93%), construction worker clothes (17.65) and are bald (10.08%) and that engineers with laboratory coats were not given place to. Fralick et al. (2009) in their study stated that engineers were depicted as wearing construction worker clothes in the rate of 12.30%, wearing protective glasses/glasses in the rate of 6.30% and wearing laboratory coats in the rate of 2.90%. Similarly, it was seen in literature that the engineers in drawings were depicted as wearing safety or crash helmets (Oware et al., 2007) and that the most drawn object was helmets (Çetin & Asiltürk, 2017). In this study, it was observed that engineers with construction worker clothes and safety/crash helmets appear more in the drawings of the 6th graders and that engineers wearing suits appear more in the drawings of the 7th graders. This result shows that, the 6th graders have a perception of construction engineers who work in construction yards, whereas the 7th graders have a perception of construction engineers who work desk jobs in an office environment and mostly draw projects. In Gülhan and Şahin's (2018) study, it was determined that as the grade level increased, the perception of engineers got diversified and the students gave place to engineers who did different works in their drawings.

In this study, the findings showed that the work environments of engineers were depicted as exterior/open spaces (55.56%), interior/closed spaces (34.92%) and that the work environments were not indicated in the rate of 9.52% and space, underground or underwater environments were not given place to in the drawings. Similarly, it was seen in another study that the work environment of engineers was not indicated in the drawings in the rate of 50.90%, were depicted as exterior spaces in the rate of 32.10% and as interior/closed spaces in the rate of 14.70% and mostly depicted as open-air spaces (Fralick et al., 2009). In this study, the findings showed that the 7th grade students gave place to closed areas and the 5th grade students gave place to open areas more compared to other grades. This finding overlaps with the finding that the 5th grade students gave more place to construction/repair/manual work and the 7th grade students gave more place to design/invention/creation of goods in their drawings, because the 5th grade students drew engineers who mostly did construction and repair work in exterior settings and the 7th grade students mostly drew engineers who did design work in closed areas.

The work performed by engineers in the drawings and their frequency were depicted as design/invention/forming products/creating products (25.36%), construction/repair/manual work (23.91%), operating and using machines/tools (12.32%), making observations (11.59%) and it was seen that the engineers not performing any task or action were drawn in the rate of 18.84%. Fralick et al. (2009) concluded that the engineers depicted in the drawings do not perform any task/action in the rate of 26.80%, do construction /repair/manual work in the rate of 31.10%, operate and use machines/tools in the rate of 11.30% and do design work in the rate of 10.10% (Fralick et al., 2009). Similarly, the work performed by engineers were depicted as construction (30%), repair (28%), creating (17%) and design (12%) (Knight & Cunningham, 2004); constructing buildings, repairing things and using vehicles (Carr et al., 2012; Gülhan & Şahin, 2018); building cars or assembling them and constructing buildings (Karatas, et al., 2011); repair and design of machines and constructing buildings (Bilen et al., 2014; Çetin & Asiltürk, 2017; Gülhan & Şahin, 2018) in other studies. In this study, while the rate of engineers who do design work is 25.36%, it was stated in the other study that drawings depicting engineers doing design work are less in number (Capobianco et al., 2011; Çetin & Asiltürk, 2017; Fralick et al., 2009; Knight & Cunningham, 2004). It was seen in this study that construction/repair/manual work was depicted the most by the 5th graders and that as the grade level gets higher, these kinds of work were depicted less in the drawings. It was observed that design/invention/forming and creating products were depicted more as the grade level gets higher and seen more in the drawings of the 7th graders. This result indicates that as the grade level gets higher, some students' perception of engineers changes from hand workmanship to design. However, the work performed by engineers in the drawings in which design was depicted being only related to construction engineering showed that the students did not have knowledge about many engineering areas. In parallel to these results, Gülhan and Şahin (2018) in their study determined that the 5th and 7th grade students mostly drew engineers who constructed buildings and worked on computers and that as the grade level increased, the students gave more place to the activity of design in their drawings.

In this study, the objects and their frequency were determined as civilian buildings, bridges and buildings (15.72%), furniture, tables and chairs (13.21%), other people (12.58%), plans, drawings and graphics (10.38%), writing tools, paper and pencils (8.18%), computers (7.23%) and construction vehicles (4.72%). It was seen that the students did not give place to non-human creatures, body parts, robots, flying vehicles, space vehicles, imaginary machines, mathematics and chemistry symbols, diplomas and awards, caution signs, explosives, bacteria, injectors, animate and inanimate objects related to medicine, objects related to meteorology and sports types. Fralick et al. (2009) stated that the students gave place to other people in their drawings in the rate of 20.80% and that the objects seen in the drawings were mostly passenger vehicles (19.80%), civilian constructions/buildings (16.40%), architecture/construction tools (16.30%), trains/railroads (12.90%), furniture (11.80%) and computers (11.40%). In Çetin and Asiltürk's study (2017), it was concluded that experiment materials were given very little place in the drawings (1.57%). As different from this study, the researchers stated that there were cars, robots, planes and rockets in the drawings and that objects such as computers and objects related to design, such as drawing-measurement tools and models were depicted less in number (Çetin & Asiltürk, 2017). In this study, the findings showed that the rate of giving place to other people was 12.56% in the 5th grades and 8.57% in the 7th grades. This finding can be interpreted as the students adopt the perception that engineers work alone more as the grade level increases. Similar to the result of this study, Gülhan and Şahin (2018) determined in their study that the number of 7th grade students who drew engineers who work alone were more in number compared to the 5th grade students. It is considered that having given more place to cooperative teamwork in lower grades at schools compared to upper grades might have been effective in for this finding.

Conclusion

In this study, it was concluded that in general the students mixed up what engineers do with the work construction workers or repairmen do and that they perceived engineers as individuals who work alone. In addition, it was determined that the students adopted the stereotypical view that the gender of engineers is mostly male. This result was reflected in the objects and the work performed by engineers in the students' drawings. It was seen that the students who think that engineering is a male profession mostly depicted engineers who work in open spaces, wearing construction worker clothes and safety or crash helmets. However, works such as construction, repair, manual activities or operating and using machines and tools indicate that they perceived construction engineers as qualified workers. The depiction of engineers without laboratory coats, space, underground or underwater environments, rockets/space vehicles, mathematics and chemistry symbols, do not enter/caution signs by the students showed that they did not know many work fields such as chemistry, aviation and space, nutrition and genetics which are a part of engineering. Therefore, it can be concluded that the students' perception of what engineers do is quite insufficient. The drawing of students which depicted design activities are only related to construction engineering and the civilian buildings, bridges, other buildings and furniture found high in number in the drawings support

this. Engineers not performing any kind of work or activity in the rate of 18.84% indicated that the students have very little knowledge about the work performed by engineers and their work areas. The appearance of other people in the drawings in the rate of 12.58% suggests that the students think that engineers work alone. In this study, the findings showed that as the grade level increased, the number of female engineers decreased and the number of engineers working alone increased when the drawings of the 5th, 6th and 7th grade students were compared. In addition, it was concluded that as the grade level increased, construction/repair/manual works decreased and design/invention/production works increased.

Recommendation

In the light of the results obtained from this study, the suggestions made to the teachers are as follows: To be able to develop students' perceptions of engineers in a positive manner, it is considered important for students' to experience STEM education applications. In this context, it is suggested to give place to 'Science, Engineering and Entrepreneurship Applications' in all grade levels both in school and outside school learning environments. 'Science, Engineering and Entrepreneurship Applications' can be given place to not only in science lessons but in mathematics, technology and design lessons as well. During the applications, the cooperation of teachers in STEM branches can facilitate the integration of the disciplines. In this study, it is suggested to carry out the applications in question in cooperating groups using the engineering design process and choose applications which are about different engineering areas. In this manner, students can comprehend that engineering is a career which depends on team work and involves many different work areas and can experience the design dimension of engineering through their own projects. The student projects created at the end of the applications can be exhibited in science festivals to be held at the end of the semester or school year. The perception of engineering as a male career can cause female students to view engineering as a career which is not suitable for them. In applications in which the engineering design process is dealt with, bringing students together with female role models who have careers in different engineering areas can be effective in changing the stereotypical perception of engineers in terms of gender.

In the light of the results obtained from this study, the suggestions made to the researchers are as follows: This study which is of descriptive survey model was carried out with 119 students who were receiving education in the 5th, 6th and 7th grades of a middle-school located in a middle-level socioeconomic area of a district in Turkey's East Anatolian region. Studies can be conducted in cities in different regions, in areas which have different socioeconomic levels with different grade levels and wider research groups and students' perception of engineers can be determined and compared. Researches can be supported with data collection methods, such as drawings about engineers, observation and interviews and more detailed results can be obtained. Researches can be conducted to determine and compare different variables which are considered to affect the perception of engineers. Long-term

longitudinal studies can be carried out about the students' wish to become engineers in the future and their perception of engineers.

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Özet

Problem Durumu: Türkiye'de 2017 ve 2018 yıllarında, Fen Bilimleri Dersi Öğretim Programında yapılan güncelleme ile mühendislik uygulamalarına ve tasarım sürecine ağırlık verilmiştir. Bu reformun merkezinde yer alan STEM eğitimi; Science, Technology, Engineering ve Mathematics alanlarının baş harflerinden oluşmakta ve bu alanların birden fazlasının kesişmesiyle oluşan bilgi, beceri ve inançları içermektedir. STEM eğitiminin amacı, öğrencilerin mühendislik ile diğer üç disiplin arasında ilişki kurmalarını, disiplinler arası etkileşimi anlamalarını ve öğrenme sürecindeki bilgilerini yaşantılarında kullanmalarını sağlamaktır. STEM eğitiminin amacına ulaşabilmesi için öğrencilerin mühendislerin ne iş yaptığını, çalışma alanlarını ve mühendisliğin doğasını doğru olarak anlamaları önem taşımaktadır. Öğrencilerin mühendislerle ilgili algılarını ve mühendislerin yaptığı işlerle ilgili ne düşündüklerini anlamak önemli görülmektedir; çünkü bu algılamalar öğrencilerin mesleğe ilişkin anlayışlarını, inançlarını ve mesleği kariyer olarak sürdürme düşüncelerini etkileyebilir. "Bir Mühendis Çiz Testi" kullanılarak yapılan araştırmaların sonuçları, pek çok öğrencinin mühendisliği bir şeyleri tamir etme, inşa etme ya da araç kullanma olarak algıladığını ve mühendislerin büyük oranda fiziksel emek gerektiren işler yaptığını düşündüklerini, çok az öğrencinin mühendisliğin tasarım boyutunu bildiğini göstermiştir. Araştırmalarda ulaşılan diğer bir sonuç, öğrencilerin mühendislerin cinsiyetinin çoğunlukla erkek olduğunu düşünmeleridir.

2017 yılında taslak Fen Bilimleri Öğretim Programı ile gündeme gelen ve 2018 yılındaki programla birlikte uygulanmaya başlanan STEM eğitiminin disiplinlerinden biri olan mühendislik, ilköğretim düzeyinde ülkemiz için çok yeni bir alandır. Yurt

içinde yapılan çalışmalar incelendiğinde, ortaokul öğrencilerinin mühendis algılarının belirlendiği araştırma sayısının yurt dışında yapılan çalışmalara göre oldukça az olduğu görülmüştür. Bu araştırmadan elde edilecek sonuçların öğrencilerde yeterli ve doğru bir mühendis algısı oluşturmada önemli rolleri olan öğretmenlere, onları yetiştiren akademisyenlere, ders kitabı yazarlarına ve program geliştirme uzmanlarına, mühendisliğin fen bilimleri programına entegrasyonu konusunda fikir vereceği düşünülmektedir.

Araştırmanın Amacı: Bu araştırmanın amacı ortaokul 5., 6. ve 7. sınıf öğrencilerinin (11-13 yaş) mühendis algılarını çizimler aracılığı ile belirlemektir. Bu amaç doğrultusunda öğrencilerin, mühendislerin fiziksel özellikleri, çalıştıkları ortamlar, yaptıkları işler ve çalışma ortamlarında bulunan nesnelere yönelik düşünceleri çizimler aracılığıyla belirlenmiştir.

Araştırmanın Yöntemi: Araştırmada betimsel tarama modeli kullanılmıştır. Araştırmanın çalışma grubunu, Türkiye'nin Doğu Anadolu bölgesinin kırsal kesiminde yer alan bir ilçede, orta düzey sosyoekonomik bölgede bulunan bir devlet ortaokulunun 5., 6. ve 7. sınıflarında öğrenim görmekte olan 119 öğrenci oluşturmaktadır. Çalışma grubunun oluşturulmasında, amaçlı örnekleme çeşitlerinden biri olan kolay ulaşılabilir durum örneklemesi kullanılmıştır. Veri toplama aracı olarak, "Bir Mühendis Çiz" formu kullanılmış ve çizimler kontrol listesi kullanılarak değerlendirilmiştir.

Araştırmanın Bulguları: Araştırmada çizilen mühendislerin %96.64 oranında insan, %1.68 oranında insan dışı/insan olmayan, %1.68 oranında ise kişi niteliğinde olmadığı görülmüştür. Öğrencilerin çizdikleri mühendisin cinsiyetinin %86.56 oranında erkek, %11.77 oranında kadın olduğu, %1.68 oranında ise cinsiyetinin bilinmediği belirlenmiştir. 5. ve 6. sınıf öğrencilerinin çizimlerinde, 7. sınıf öğrencilerine göre daha fazla kadın mühendise yer verdikleri görülmüştür. Çizilen mühendisin ten renginin büyük oranda (%72.27) belirtilmediği belirlenmiştir. Öğrencilerin çizimlerinde mühendisleri, çılgın saç şekli olan (%1.68), koruyucu gözlük/gözlüklü (%4.20), işçi giysili (%17.65), baret/kasklı (%31.93), bıyık/sakallı (%3.36), takım elbiseli (%5.88), kel (%10.08) ve diğer dış görünüş özelliklerine sahip (%25.21) olarak betimledikleri belirlenmiştir. Çizimlerde laboratuvar giysili mühendislerin bulunmadığı görülmüştür. Öğrencilerin çizdikleri mühendislerin bulundukları ortamlar ve belirtilme sıklıkları, iç/kapalı mekânlar (%34.92), dış/açık mekânlar (%55.56) ve belirtilmeyen (%9.52) olarak belirlenmiştir. Çizimlerde 7. sınıf öğrencilerinin kapalı alanlara, 5. sınıf öğrencilerinin ise açık alanlara diğer sınıflara kıyasla daha fazla yer verdikleri tespit edilmiştir. Çizilen mühendislerin yaptıkları işler ve sıklıkları, yapım/onarım/ellerle çalışma (%23.91), çalıştırma/makine ve aletleri kullanma (%12.32), tasarım/buluş/ürün oluşturma/yaratma (%25.36), deney/test yapma/bilgi üretme (%5.80), öğretme/açıklama (%1.45), gözlem yapma (%11.59) olarak belirlenmiştir. Çizimlerdeki mühendislerin %18.84 sıklıkla herhangi bir iş yapmadıkları tespit edilmiştir. Yapım/onarım/ellerle çalışma işlerinin en fazla 5. sınıf öğrencileri tarafından betimlendiği ve sınıf düzeyi arttıkça bu işlerin çizimlerde daha az yer aldığı belirlenmiştir. Tasarım/buluş/ürün oluşturma işlerinin ise sınıf düzeyi arttıkça daha fazla betimlendiği ve 7. sınıf öğrencilerinin

çizimlerinde en fazla oranda bulunduğu tespit edilmiştir. Öğrencilerin çizimlerinde yer alan inşaat ile ilgili nesneler ve sıklıkları, inşaat/yapı aletleri (%4.40), inşaat yapım araçları (%4.72), sivil yapı, köprü ve binalar (%15.72), inşaat yapı malzemeleri (%4.40) olarak belirlenmiştir. İnşaat ile ilgili nesnelere en fazla sıklıkta 6. sınıf öğrencilerinin çizimlerinde rastlanılmıştır. Çizimlerde öğrencilerin, ölçüm aletleri (%0.32), yazı nesneleri (%8.18) ve mobilyalara (%13.21) yer verdikleri, tasarım ve çizim yapan mühendisler betimledikleri görülmüştür. Çizimlerde uçan araçlar, roketler/uzay araçları gibi araçlar bulunmazken, bazı tipteki araçlara yer verilmiştir. Araçlara yer verilme sıklığının, yolcu araçlarında %1.57, inşaat yapım araçlarında %4.72, trende %0.32 olduğu tespit edilmiştir. Öğrenciler çizimlerinde %1.57 sıklıkla kimya ile ilgili nesnelere yer verirken, kimya alanında sıklıkla karşılaşılan tehlike işaretlerine ve kimyasal sembollere yer vermedikleri görülmüştür. Araştırmada diğer insanlara yer verilme oranlarının 5. sınıflarda %12.68, 7. sınıflarda ise %8.57 olduğu belirlenmiştir. Bu bulgu, öğrencilerin sınıf düzeyi arttıkça, mühendisin yalnız çalıştığı algısını daha çok benimsedikleri şeklinde yorumlanmıştır.

Araştırmanın Sonuçları ve Önerileri: Araştırmada genel olarak öğrencilerin mühendislerin yaptıkları işleri inşaat işçileri ya da tamircilerin yaptıkları işlerle karıştırdıkları ve mühendisleri çoğunlukla erkek ve yalnız çalışan bireyler olarak algıladıkları sonucuna ulaşılmıştır. Bu sonuç öğrencilerin çizimlerinde bulunan nesnelere ve mühendislerin yaptıkları işlere de yansımıştır. Mühendisliğin erkek mesleği olduğunu düşünen öğrencilerin, çoğunlukla dış ortamda çalışan, işçi giysileri giymiş, kask ya da baretli mühendisler çizdikleri görülmüştür. Ancak çizimlerdeki mühendislerin yaptıkları yapım, onarım, ellerle çalışma ya da makine ve alet kullanma gibi işler, öğrencilerin inşaat mühendislerini nitelikli işçiler olarak algıladıklarını işaret etmektedir. Yaşın artması ile birlikte çizimlerde erkek mühendis oranının arttığı ve tasarım yapan mühendise daha sık yer verildiği görülmüştür. Çizimlerde 6. sınıf düzeyinde daha fazla oranda olmakla birlikte dış ortamda çalışan, işçi giysileri giymiş, kask ya da baretli mühendisler betimlenmiştir. Öğrencilerin çizimlerinde laboratuvar önlüklü mühendislere, uzay, yeraltı ya da su altı ortamlarına, robotlar, roket/uzay araçları, matematik ve kimya sembolleri, girilmez/dikkat işaretlerine yer vermemeleri; mühendisliğin kimya, havacılık ve uzay, gıda, genetik gibi pek çok çalışma alanını bilmediklerini göstermektedir. Tasarım faaliyetini ifade eden öğrencilerin çizimleri sadece inşaat mühendisliğine yönelik olup çizimlerde çoğunlukla bulunan sivil yapılar, köprüler, binalar ve mobilyalar da bunu destekler niteliktedir. %18.84 sıklıkla çizilen mühendisin herhangi bir iş ya da eylem yapmadığı sonucu da öğrencilerin mühendislerin yaptığı işler ve çalışma alanları hakkında çok az şey bildiklerini göstermektedir. Çizimlerde diğer insanların genel olarak %12.58 oranında yer aldığı, diğer insanlara yer verilme oranının 5. sınıflarda %12.68, 7. sınıflarda ise %8.57 olduğu, dolayısıyla sınıf düzeyi arttıkça, mühendisin yalnız çalıştığı algısının arttığı sonucuna ulaşılmıştır.

Araştırmadan elde edilen sonuçlar doğrultusunda öğretmenlere yapılan öneriler şunlardır: Öğrencilerin mühendis algılarının olumlu yönde geliştirilmesi için STEM eğitimi uygulamalarını deneyimlemeleri önemli görülmektedir. Bu bağlamda, gerek okul içi gerekse okul dışı öğrenme ortamlarında tüm sınıf düzeylerinde, 'Fen,

Mühendislik ve Girişimcilik Uygulamalarına' yer verilmesi önerilmektedir. Söz konusu uygulamaların, mühendislik tasarım süreci kullanılarak, işbirlikli gruplarda gerçekleştirilmesi ve farklı mühendislik alanlarına yönelik olması önerilmektedir. Bu sayede öğrenciler, mühendisliğin takım çalışmasına dayanan, birbirinden farklı birçok çalışma alanı olan bir kariyer olduğunu ve mühendisliğin tasarım boyutunu kendi projeleri vasıtasıyla deneyimleyerek kavrayabilirler. Mühendislik tasarım sürecinin ele alındığı uygulamalarda, öğrencilerin farklı mühendislik alanlarında kariyer sahibi kadın rol modellerle bir araya getirilmesi, mühendise ilişkin basmakalıp cinsiyet algısının değişmesinde etkili olabilir.

Araştırmadan elde edilen sonuçlar doğrultusunda araştırmacılara yapılan öneriler ise şunlardır: Farklı bölgelerdeki şehirler, farklı sosyoekonomik düzeye sahip bölgeler, farklı sınıf düzeyleri ve daha geniş çalışma grupları ile çalışılarak öğrencilerin mühendis algıları belirlenebilir ve karşılaştırılabilir. Mühendis çizimleri, gözlem, görüşme gibi veri toplama yöntemleriyle de desteklenerek daha ayrıntılı sonuçlar elde edilebilir. Mühendis algısını etkilediği düşünülen farklı değişkenlerin belirlenmesi ve karşılaştırılmasına yönelik araştırmalar yapılabilir.

Anahtar Kelimeler: Basmakalıp mühendislik cinsiyet algısı, ortaokul öğrencileri, STEM eğitimi, çizimler

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Cultural Heritage Studies Through Art Education: An Instructional Application in the Ancient City of Aizanoi*

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ABSTRACT

Purpose of the Study: Children express themselves freely with the help of art education and have the opportunity to learn thanks to richer content and experience. The purpose of this study was to help elementary school students recognize and learn about cultural heritage in their environment through various art activities.

ResearchMethods: The study, which was designed with the art-based research method, was carried out in the ancient city of Aizanoi in Çavdarhisar, a district of the city of Kütahya in Turkey. Art activities in each session of the study, which was conducted with 11 elementary school students living in the district, focused on different civilizations that lived in Çavdarhisar in the past. Data were collected through semi-structured interviews, document analysis and an open-ended information form, and were analyzed by descriptive analysis method.

Results: The results revealed that art education applications could be an effective method in order for students to learn the history of their own environment and to get to know the related cultural heritage.

Implications for Research and Practice: In this respect, it could be suggested that art education can be used not only in art-related courses but also in the teaching of all other disciplines; that elementary school teachers could be trained accordingly; and that educational applications could be carried out as out-of-class activities.

* This study was designed as a part of the Aizanoi Excavation Project (2011/1815) executed by the Department of Archeology at the Faculty of Science-Literature at Pamukkale University with the consent of the Turkish Republic Ministry of Culture and Tourism. In the study, only the introductory information for the application process was published as a chapter in the book titled 'Aizanoi I' published within the scope of the project by Bilgin Kültür-Sanat Publications in 2013. This study was also presented on IX[th] National Child Culture Congress held in Ankara on October 3-6, 2017.

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Introduction

Children can express themselves freely with the help of art and have the opportunity to learn at liberty through richer content and experience. In education, use of art and art education allows individuals to transfer their creative abilities to every phase of their lives from different perspectives, to beautify their environment with aesthetic consciousness and to take their place in society as conscious consumers of art. Art education is an important educational area in which children can express themselves as if they are discovering a new language (Danko-McGhee, 2004; Lowenfeld & Brittain, 1987; Olson, 2003; Sherman, 2006; Thompson, 1997), recognize other learning environments more easily (Aprill, 2001; Grytting, 2000), transfer their knowledge to other areas (Miron, 2003), develop especially their kinesthetic, intrinsic, and interpersonal intelligence and other intelligence domains (Efland, 1990; Eisner, 2002; Gardner, 1990), and develop critical-thinking skills as well as their creativity and problem-solving skills (Bresler, 1998; Eisner, 2002; Katz, 1993).

Art education is a field of education-related not only to schools but also directly to life outside of school and to culture. A cultural environment which trains its residents with the help of a common art education given in the preschool, during the school and post-school processes not only trains the individuals and society but also develops the culture (Erinc, 1995, p.96). In this respect, art education is important for the training of conscious art consumers who will develop and make appropriate use of culture and art. Individuals who become conscious art consumers can better follow and value their culture, past, and social productions and pass them on to the following generations. As mentioned by Sherman (2006, p.43), art addresses the senses and has a dynamic structure that combines with experiences and allows the transference of cultural heritage to future generations.

Art education is not simply limited to school or to art courses. The reason is that art education is an educational discipline that can also be used for the teaching of other courses. Teaching a number of courses or educational disciplines with the help of art education could lead to more permanent learning (Grytting, 2000). In the related literature, the number of studies on instructional applications in art education and in other disciplines is quite limited, and the results of these studies demonstrate that art education is used as a method of teaching in the field of history, mathematics, and language, and that it has a positive influence on students' learning. For instance, there are studies reporting that in history teaching, students' consciousness of traditional history could be increased with the help of art education (Altun, 2006); that permanent learning can be achieved through narration (Andreetti, 1993; Levstik, 1995); that democratic learning can be achieved with the help of viewing from different aspects in contradictory cases (Skophammer, 2004); that art education helps develop language and literacy skills (Carger, 2004; Danko-McGhee & Slutsky, 2007); that it can result in cultural awareness thanks to art criticism (Tuna, 2011); that it can be used to examine artistic objects in the environment (Tuzlak, 2004); and that it develops mathematical thinking skills (Bickley-Green, 1995; Bruter, 2002).

In the present study, for the purpose of helping students learn about their own past culture and history and to preserve their cultural heritage, an art education application was conducted. Cultural heritage is what enables a society to transfer their historical experiences and traditions to the following generations and which strengthens the unity and solidarity between the members of the society (ISMEP, 2014, p.11). Cultural heritage is like a mirror reflecting a society's cultural richness and related knowledge (Musso, 2014, p.85). In order to form, process, present, and survive the cultural heritage and memory, certain necessary organizations and regulations are required within the field of education (Ozdemir, 2005, p.82). As mentioned by Akurgal (1998, p.10), considering the fact that Anatolia and Thrace are located in a place of great variety in terms of conflicts and unity for many cultures and civilizations throughout history, and are among rare lands that convey a rich cultural heritage, applications carried out in Turkey for the transfer of cultural heritage and memory with the help of education are of vital importance.

The curriculum of the visual arts course, one of the application areas for art education in elementary schools (MEB, 2013), places special emphasis on the issue of cultural heritage. In this way, students will be able to transfer different cultural values learned as conscious art consumers to their following generations. The present study was designed in a way to include the use of art activities in order that students' awareness of the history and cultural backgrounds of their environment can be raised. For this purpose, it is suggested that museum activities be included in the curriculum of the Visual Arts Course, as museums can teach the outcomes that are quite difficult to achieve in class. While the school primarily helps increase intellectual understanding, museums can provide the atmosphere and emotion that increases insight. In a museum, students can see, touch, smell, and feel, as well as use several tools (Seidel & Hudson, 1999, p.21, as cited in Sahan, 2005). According to Hooper-Greenhill, learning is not always purposeful. Learning can be experiential or actual and may be in-depth or superficial. If culture is viewed as a process of giving meaning or as a process of creating meaning that shapes our world views, then learning in museums or in other cultural settings becomes potentially dynamic and provides deep learning that produces the self-identities (Onur, 2012, pp.189-190). In the educational understanding of the information society, there is no restriction to information and education in terms of time and place (Drucker, 1994, as cited in Ture, 2007). In this respect, museum activities can be carried out in different environments. For example, instead of pieces displayed in museums independently of time and place, it would be more interesting and impressive to examine and understand the works and products which are components of a living village or town (Ahunbay, 1999, as cited in Altun, 2006). Historical places as real remnants of the past not only establish connection with the past but also arouse curiosity, leads to excitement, opens new doors in our minds, encourages interrogation and helps understand the events and people in history (Boland, 2002, as cited in Yesilbursa, 2008, p.212). Visiting historical places and historical works is an important application that provides students with the opportunity to establish connection between the past and the present, and to learn by touching, seeing and concretizing abstract information (Anderson & Moore, 1994). The present study is thought to be important because it would allow children to recognize

and embrace their district with its rich historical and cultural heritage, moreover, it aimed at raising awareness of cultural values that otherwise tend to disappear. In addition, the present study is also considered to be important because it was designed in a way to make the education process permanent and entertaining for students as it involves art education during the school summer vacation.

The purpose of the current study was to help elementary school students recognize the cultural heritage of their own environment with the help of planned art activities. In line with this purpose, the following research questions were directed in the study:

1. How do art education activities shape the knowledge of students related to their local historical and cultural heritage?
2. How is knowledge learned through art activities reflected in students' artistic productions?
3. How do students perceive this educational process carried out through art education?

Method

Research Design

The present study was conducted according to art-based research method. Art-based research method, which depends on systematic analysis of the ways of expression in different branches of art (McNiff, 2008 p.29), is prominent with its function of revealing (Leavy, 2009, p.13). Artistic expressions and images allow thinking from a new perspective, and can be quite effective on the expression of emotions which may be difficult to put into words (Weber, 2008, p.44). The use of art in scientific studies is important for discovering and expanding information, for creating new ideas and thus for understanding emotions and views (Goodman, 1978, as cited in Dotson, 2007, p.11). Since visual description and images play a role as a visualized way of human creativity, they have become a reference to information (Burnett, 2007, p.19). As reported by Smith-Shank (1995, p.234), when all mental processes and inferences are taken into account, there is no thought without songs. The fact that art is one form of information it requires use of an art-based research design with respect to understanding the mental processes and interpreting of educational results (Eisner, 2002a; Sullivan, 2006; Weber, 2008). The reason is that this research method is influential in revealing the emotions, thoughts and perceptions expressed freely and honestly by students via artistic description, as well as for evaluating the educational accuracy of the results. As the applications in this study were based on art activities for students, it was necessary to determine their efforts in order to make the world comprehensible and to investigate the meaning layers of images in their artistic productions.

Research Sample

The study was carried out in Çavdarhisar, a district of the city of Kütahya. The participants in the study were elementary school students living in the district. As the number of students living in the district was quite high, the research sample was determined using the 'internal sampling' method. Internal sampling is based on determining individuals, time, and documents that will increase the amount of important information by defining the key data (McMillan, 2004, pp.272-273). In order to determine the internal sampling, the criterion sampling method was used. In the study, the basic criteria determined by the researcher was that participants would be elementary school students of villagers working on excavation studies in the ancient city of Aizanoi. Thus, it was formed that all participants were a group with basic knowledge about the excavations. A total of 11 elementary school students took part in the study, six of whom were females and five males. Table 1 presents the age and class levels of the participants.

Table 1.

Participant Age and Class Levels

Participant Name	Age	Class Grade
Ilhan	11	4th grade
Sema	9	3rd grade
Salih	10	4th grade
Imren	10	4th grade
Nadir	11	4th grade
Elif	8	2nd grade
Ismet	10	4th grade
Nida	10	3rd grade
Semih	7	1st grade
Feyza	7	1st grade
Derya	8	2nd grade

The class grades of the students were determined according to their end-of-year class grades. Because the study was conducted during the summer holiday and because it was not carried out in a formal class environment, a specific class grade was not taken into account while determining the research sample. Thus, the students who were attending an elementary school and who fit certain criteria constituted the participants of the study. A consent form describing the application process was signed by participants' families.

Setting

The study included an out-of-school educational process not carried out in a formal class environment. The study was conducted in Çavdarhisar, a district of the city of Kütahya that is 57 kilometers away from the city center. The District of Çavdarhisar is also important since it is famous for its ancient town of Aizanoi, which is located in the center of the district. The ancient town is regarded by the art world as the second Ephesus, due to its cultural structure. The origin of its name is believed to be from the mythological hero, Azan. With its historical richness, this town was first established by Phrygians and then ruled by Lydians, Romans, and Ottomans. Archeological excavations in this ancient town are undertaken by the Ministry of Culture and Tourism and by the Archeology Department of Denizli University's Science and Literature Faculty. This research study was carried out within the scope of the Aizanoi Cultural Heritage Education Program under the Aizanoi Excavation Project conducted by Denizli University. The district of Çavdarhisar is full of architectural works, especially from the Roman period. The district is like an outdoor museum with its theatre, bathhouse, bridge, stock market building – the first known construction in history – and with its Zeus Temple; the best-preserved temple in Anatolia. Children play the game of hide-and-seek in the temple, pass by the stock market building and cross the bridge every day as they go to school. The application of the study was carried out in these places.

Picture 1. Excavation House, Garden of Ex**c**avation House and Zeus Temple

The first session was conducted after meeting the students on the morning of the first day. The session was based on drama activities conducted in the garden of the excavation house. Following this, with the help of an open-ended information form, basic information was obtained regarding the students' background knowledge of the history and culture of the place where they lived (Picture 1). In the second session, which was organized in the afternoon of the first day, a mythology study regarding the origin of the name of Aizanoi was conducted around the big table on the upper floor of the excavation house (Picture 1). The third and fourth sessions, including activities regarding the Phrygians and Lydians, were organized in the Zeus Temple on the second day. The fifth and sixth sessions, including activities regarding the Romans and the Ottomans, were organized in the same place on the third day (Picture 1). Tables and chairs were placed in the temple in advance in order to create an

appropriate study environment, with the necessary materials provided for use by the students.

Research Instruments and Procedures

The research data were collected using three different methods; an open-ended information form, semi-structured interviews and document analysis. The open-ended information form was conducted on the first day of the study to determine students' knowledge about the history and culture of the place where they lived. This form, which included questions not only about the origins of the names of Aizanoi but also about the people who lived there, was distributed to the students and they were asked to complete the form. The same form was used again at the end of the application process to see how the application process had shaped their knowledge. In the art-based research design, children's drawings and visual expressions can be used as a data collection tool for children's ideas, interests, preferences because visual expression or drawings provide the researcher with the opportunity of a more detailed examination in the process of presenting children's views according to data collection tools such as interviews or questionnaires (Rennie & Jarvis, 1995; as cited in Bedir-Eristi, 2012). Semi-structured interviews were held with 11 students at the end of the application process. The interviews were held by the researcher in a room at the excavation house. Each interview session was audio recorded, and the interviews lasted from 5 to 15 minutes. Students' self-reports were subjected to document analysis in order to examine the art products put forward by the students during the activities. Throughout the application process, students produced two drawings, one clay work and one relief work with play dough.

The study was carried out in six morning and afternoon sessions over three days. Including the initial meeting and closing, each session was based on activities regarding a different civilization that existed in Çavdarhisar in the past. The activities conducted in the study were prepared by the researcher using the historical and cultural background of the ancient city of Aizanoi. The application process was executed by the researcher, one drama expert, and two students from the Department of Archeology.

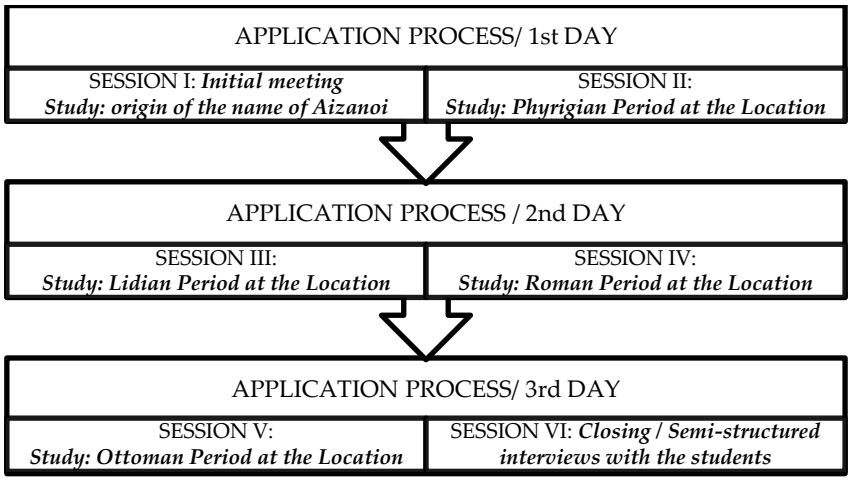


Figure 1. *Application Process of the Research*

The meeting activity in the application process presented in Figure 1 included drama activities in order that the students could introduce themselves to one another, as well to meet with the research team. Following the meeting activity, in the morning session of the first day, a mythology study was conducted regarding the origin of the name of Aizanoi. In this workshop, the students were told the story of the relationship between Zeus and Azan found in the mythology, which was thought to constitute the origin of the name of Aizanoi. At the end of the workshop, a masked study was conducted regarding these mythological heroes. In the afternoon session of the first day, a workshop was organized regarding the establishment of the ancient town in which the students were briefly informed about Frigs and how they established the town. Following this brief informational session, a drawing study was conducted using the magic painting technique.

In the morning session of the second day, a workshop regarding the development of the town was organized to introduce the Lydian civilization. A clay-based money design study was carried out in relation to the Lydians, who invented the first money. In the afternoon session of the second day, a workshop was carried out regarding the Romans and several related architectural works found in the village were introduced. At the end of the workshop, a relief study was carried out with play dough using wooden plates, and the students created their own designs based on the architectural works they had visited in groups.

In the morning session of the third day, a workshop was organized regarding the origin of the name of Çavdarhisar, from the period of the Ottomans, and a drawing study was carried out using pastel paints. In the afternoon session of the third day, participation certificates were presented to the students, and semi-structured interviews were held.

Data Analysis

The research data were analyzed using the descriptive analysis method (Yildirim & Simsek, 2013). The data collected via the open-ended information form were coded by the researcher and by another expert from the field and was subsequently compared and analyzed. The art products put forward by the students in the application process were analyzed based on the semi-structured interviews held with the students. The reason for conducting the semi-structured interviews was that students' verbal explanations regarding their drawings help to better understand what they have tried to express in their drawings (Richardson, 1982). For the analysis of these data, the steps of analysis suggested by Braun and Clarke (2006) were used. In this context, first of all, students' art products and interviews on them were read by making transcripts and then initial codes were obtained. Themes were investigated in line with the patterns obtained from the codes and the themes were reviewed and reported. In addition, the students' drawings and their other art products were examined through document analysis, and related coding was reapplied by the researcher and another field expert. Following this, the themes regarding the students' views were coded.

In the study, the research data collected with different data collection tools were compared to increase the validity and reliability of the study. For the validity of the study, first, the educational materials to be used by the students were prepared. Also, the basic information was presented to a field expert (archeologist), and the drama activities organized for the meeting activities were presented to a drama expert. The semi-structured interview questions to be directed regarding the art products were presented to a field expert, and the interview form was finalized in line with the suggestions received. The study's reliability calculation used the formula *Reliability=Disagreement/Consensus+Disagreement* (Miles & Huberman, 1994). The reliability for the open-ended information form applied at both the beginning and end of the study was calculated as 98%, and the reliability for the drawings and semi-structured interviews was calculated as 87%.

Results

The findings obtained in the study were classified under three themes; 'Pre-application', 'Application', and 'Post-application'.

Pre-application

In the study, the initial focus was on how to develop students' current knowledge about the history and culture of where they lived with the help of art activities. For this purpose, an open-ended information form was prepared to reveal students' background knowledge about their local cultural heritage. The forms were then distributed to the students. In this respect, the sub-theme of "Students' current knowledge about their local cultural heritage" was formed.

Students' current knowledge about their local cultural heritage

The forms distributed to the students included such questions as "Who used to live here?", "Why is this place called Aizanoi?", and "What is the origin of the name of Çavdarhisar?" Table 2 presents the students' responses to these questions prior to the application process.

Table 2.

Students' Background Knowledge about their Local History

Student's Name	Origin of the Name of Aizanoi	Civilizations that lived in the region in the past	Origin of the name of Çavdarhisar
Ilhan	Excavation, bathhouse, theatre, historical artifact	-	-
Sema	Excavation house, bathhouse	-	-
Salih	Bathhouse, excavation house	-	-
Imren	-	"Roma*n*lilar"	-
Nadir	Stock market, theatre, excavation, historical artifact	-	-
Elif	Historical stones, excavation house, theatre, bathhouse	-	-
Ismet	Theatre, excavation house, stones	"Roma*n*lilar"	-
Nida	Excavation house, historical artifact	"Roma*n*lilar"	-
Semih	Excavation house	-	-
Feyza	Stones, excavation house	-	-
Derya	Excavation house	-	-

As can be seen in Table 2, students' responses regarding the origin of the name of Aizanoi were associated with the historical artifacts found where they lived or with the archeological excavations performed there. The reason for this could be that, according to the students, the excavation studies, which became a part of the villagers'

daily life, had a connection with the ancient name of Aizanoi. In the study, only three students responded as 'Romans' to the question of which civilizations lived in this place in the past. However, those three students pronounced the word Romans as "Roma*n*lilar". The word "Roman" means gipsy in Turkish and their wrong pronunciation of this word couldn't be corrected during the research. Table 2 demonstrates that the students did not provide any answer in relation to the origin of the name of Çavdarhisar. However, this could be considered a normal result as most people do not know the story about the origin of the name of their residential place. However, it was an important finding that some of the students knew about the Roman civilization living there in the past, and that almost all students associated the name of Aizanoi with the historical artifacts found there. Depending on this finding, it could be stated that students were aware of the connection of the ancient Roman artifacts and the excavations with the name of Aizanoi. Students' background knowledge about the Roman civilization living there could be attributed to the excavations being open to the local public, including the participant students who live in the area.

Application

Within the scope of the study, titles for each sub-theme were formed based on the application that started with a mythology study regarding the origin of the name Aizanoi, the ancient name of the village of Çavdarhisar, the general introductory information about the Phrygians, Lydians, Romans, and Ottomans who all lived in this place in chronological order in the past and the artifacts they left behind which have since been excavated. This theme, as well as the sub-themes, included not only the art products put forward through the related applications, but also the students' views about these art products.

Mythology study regarding the origin of the name of Aizanoi

A mythology study was carried out as part of the study, regarding the origin of the name of Aizanoi, the ancient name of Çavdarhisar. This application was conducted in the study area on the second floor of the excavation house. According to the mythological story, the word 'Aizanoi' refers to 'Worshippers of Zeus', and the ancient town of Aizanoi was the main residential place of the Aizanitis, who were dependent on Phrygia. The name Aizanoi came from the mythological hero called Azan, who was the child of the legendary King Arkas and Nixie Erato, the daughter of Zeus. To start, cards were prepared to introduce the heroes of the mythological story to the participants. When the students were asked to combine the cards – given to each group – in a way to make a meaningful statement, each group came up with the following statements; "Aizanoi comes from the hero called Azan", "Azan is the grandchild of Zeus", "Zeus is the most important mythological hero", and "Nixie Erato and King Arkas are the parents of Azan". Following this, students were given the cards including the pictures of these heroes, and with the help of these visuals, they individually made masks of the mythological heroes.

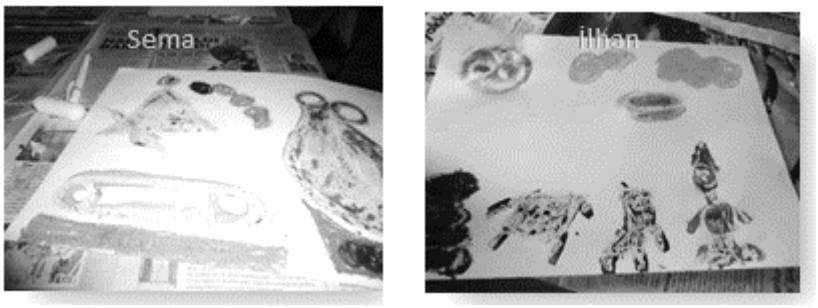


Picture 2. All masks **Picture 3.** Nadir's Zeus mask **Picture 4.** Nida's Erato mask

As can be seen in Picture 2, the masks were produced by the students with materials like cardboard and colored paper. The students mostly produced the mask of Zeus from the mythological story, with five of the students have made the mask of Zeus, whilst four made the mask of Azan. The mask in Picture 3 was made by Nadir, and belonged to Zeus. Nida made the mask of Erato, the only female character in the story (Picture 4). She said *"I don't know, but well, everyone made the mask of Zeus, I just wanted to do this. I wanted it to be the mask of a woman (pp. 13-14)"*. Nadir explained the reason for his making the mask of Zeus, saying *"I liked it, and I found it stronger (pp. 22-23)"*. The reason for the popularity of the mask of Zeus among the students could be the fact that Zeus was a dominant character as a king and father in the mythical story told.

Study on Phrygians who lived in the location

In the second session, an application was carried out regarding the Phrygians who lived in Aizanoi in the past and who established the city. This activity was conducted in the study area on the second floor of the excavation house. The students were informed that the Phrygians were the first people to establish the city. Following this, a brief introduction to this civilization was given. The students learned that the Phrygians produced the first furniture and invented tools such as a bathing bowl, hooked needle, ceramic plate, flute, and ring. Next, they were asked to select objects specific to Phrygians and to give information about them saying, for example, "I am a hooked needle; my lord attaches me to her dress". The students were then asked to imagine themselves as living in Phrygia and to draw a picture depicting who they were and where they were living. The drawings were colored with the technique of "magic painting", which involved the use of crayons and watercolor paints.

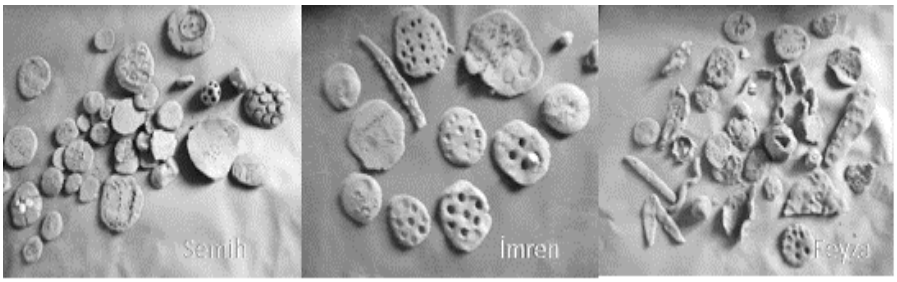


Picture 5. Sema's and Ilhan's Phrygians picture

Sema depicted herself as a Phrygian carpenter and stated that she herself made the furniture in her house (Picture 5). Regarding her product, Sema said *"I am a carpenter, and this table, for example, is really different. And this is a vase, and it stands on the coffee table I made (pp. 20-21)"*. In Picture 5, Ilhan depicted himself as a carpenter as well. While talking about his drawing, he said *"This is the door of my office in my workplace, and I am a carpenter. I produced this door, and it is made of wood (pp. 17-19)"*. More than half of the participants depicted themselves as carpenters, whilst one of the students made musical instruments and said s/he played the flute. All the students reported during the interviews that they had tried the magic painting technique for the first time and that they enjoyed it very much.

Study on the Lydian period in the location

In the third session, an application was carried out regarding the civilization of Lydians living in Aizanoi in the past. This application was conducted in a place where the tables and chairs belonging to the Roman Temple were put. First, the students were informed about the Lydians being the first civilization to invent money. This information was given in association with the world's first stock market building found in Aizanoi. The study started with a drama (warm-up) activity. Two students acted out the role of obtaining goods through the exchange method, which was used before the invention of money. The emphasis was on the disagreements experienced in the process of exchanging goods. In this way, the students learned why money was invented. Following this, as the Lydians were the first civilization to invent money, the students were informed about other related issues. Next, the students were given clay to individually work with, and each student was asked to create their own money design.

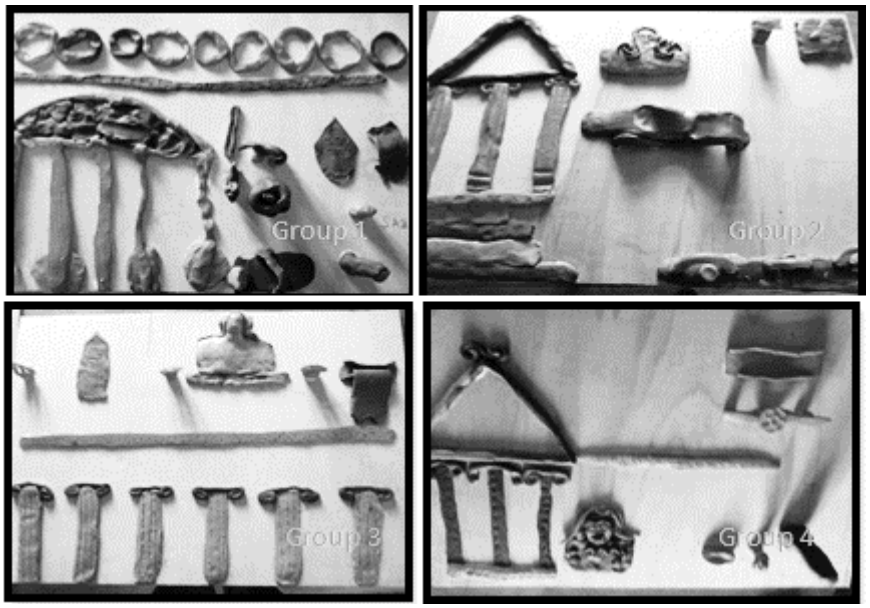


Picture 6. Semih, Imren and Feyza's clay work

As can be seen in Picture 6, the students, who wanted to go on doing the clay work, stated that they had not used clay before and continued as it was entertaining for them. Regarding his money designs, Semih said *"I was like a Lydian. I produced money… I wish it were real (p. 8)"* and mentioned the things he imagined he could have bought if the money he had produced was real. Another student, Feyza, perceived the money design as a game and reported her views saying *"Sir, all this money will be mine, right? We will go on playing with it later (pp. 16-17)"*. During the interviews, all the students mentioned the entertaining aspect of the study, and except for one student, all of them talked about the money design in association with the Lydians. Depending on this result, it could be stated that the students were able to associate the art activity with the brief information given at the beginning of the activity and that it contributed to the students' understanding of the subject.

Study on the Roman period in the location

The Roman Period was the one that the students were most knowledgeable about at the beginning of the application process. The reason is that the bridge that the students passed over to go to their school, the temple in which they played the game of hide-and-seek, and the bathhouse all belonged to the Roman period. In the application carried out regarding the Roman Period in the fourth session, the students were first given a Roman tree made from a big carton in advance. The students wrote what they knew about the Roman Period on the branches of the tree. It was seen that the students wrote 'bathhouse', 'excavation', 'temple', and 'bridge' on the branches of the tree. Following this activity, it was emphasized that these architectural artifacts found in the village of Çavdarhisar belonged to the Roman Period. Next, an art activity was conducted in which the students were divided into four groups of three, and each group was supplied with plywood, play dough in different colors and glue.



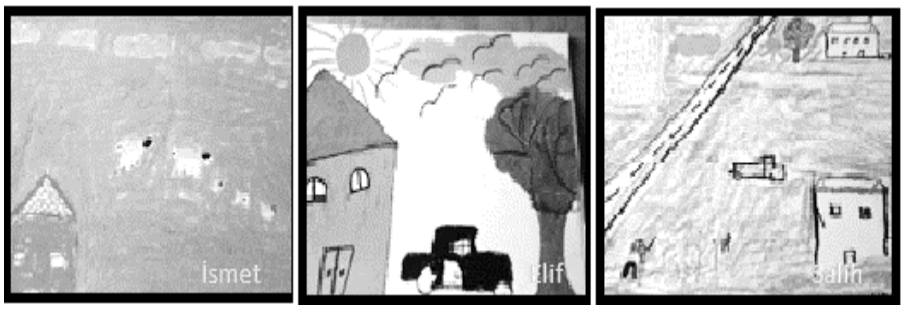
Picture 7. All Group's relief

As can be seen in all the relief works of the students (Picture 7), the groups all depicted the Roman temple, the Roman bridge and the bathhouse without exception; while three groups preferred to depict Medusa (Group 2,3,4), and three groups depicted the Roma tomb (Group 1,2,3). The reason for depicting the temple, bridge, and bathhouse in all the works could be the fact that the students saw these architectural artifacts every day. During the interviews, Nadir, a member of the third group, explained the reason why he depicted the ornaments of the temple saying "*Well, when I saw those ornaments, I told my friends let's do them (pp. 13-14)*". Semih, one of the students in the first group, said "*I couldn't do anything at first, and well, look! I drew these circles (pp. 9-10*)". When he was asked what the circles represented, he said they were the clouds.

Study on the Ottoman period in the location

In the fifth session of the process, an application was carried out regarding the Ottoman period to inform the students about the origin of the name of Çavdarhisar, the current name of the location. First, the fact that the Ottomans were the last civilization living in this place was explained to the students in a simplified manner using the storytelling method. They were informed that Çavdar Tatars lived there, that they helped the Ottomans combat the Byzantine army, and that Çavdar Tatars were famous for their horse rearing. In this phase, a drama activity was conducted based on the consciousness corridor technique. A volunteer student played the founder of the Ottoman Empire, with other students forming the corridor as Çavdar Lords. The Ottoman Lord said that he gave this residential area to Çavdar Tatars for their help and asked them what they needed to make this place a city in which to live. The students provided a number of answers, but none stated the expected answer. For this

reason, the researcher was involved in the process and pointed out that a name was needed. At that time, they acted the moment when the name of this place was determined as Çavdarhisar by the Çavdar Lords. The work ended by pointing out that the name of the place was determined as Çavdarhisar because the Çavdar Lords used the castle as a 'hisar' (meaning 'fortress' in Turkish) to protect against Byzantine attacks. Following this, the art activities were conducted, by asking the students to draw using pastel crayons in order to reflect how the place in which they now lived would have been in their imagination. It was seen in all the students' works that they preferred to draw the village in which they lived, rather than drawing the place they imagined.



Picture 8. Ismet, Elif and Salih's picture

As can be seen in Picture 8, Ismet depicted the place he imagined by drawing a house and some sheep. While talking about his drawing, Ismet said *"I dream of living in such a place that I depicted. Well, there is a house, and some sheep (pp. 8-9)"*. When it was pointed out that Çavdarhisar was already a place like the one in his imagination, Ismet said *"But, I have already … as you know, it is a nice place, I dream of this. Well, the Ottomans used to raise horses, and I raise sheep (pp. 16-17)"*. Elif talked about her drawing (Picture 8), in which she depicted the car in front of her house in the village. While talking about her drawing, Elif said *"I hope Çavdarhisar will not change. I want it to remain the same. I like it as it is (pp. 11-12)"*. When she was asked why she thought so, Elif said *"I have an uncle living in Eskişehir* (a neighboring city). *Sometimes we go there, but I don't like Eskişehir. I don't like the buildings. My house is much nicer. I just go out of my house and play with my friend (pp. 21-23)"*. Another student, Salih, preferred to depict the place where he lived rather than the place he imagined.

Post-application

The open-ended information form applied before the application process was reapplied at the end of the application process in order to determine any changes that might have occurred in their current knowledge due to the art activities conducted. Following this, semi-structured interviews were held with the students in order to reveal their views about the process. In this respect, the sub-themes of "Students' new knowledge about their local cultural heritage" and "How the students' perceived the educational process" were formed.

Students' new knowledge about their local cultural heritage

At the end of the art activities, questions directed to the students at the beginning of the study were reapplied in order to determine the extent to which they had developed their background knowledge. Table 3 presents students' responses to these questions.

Table 3.

Students' New Knowledge about their Local Cultural Heritage

Student Name	Origin of the name of Aizanoi	Civilizations that lived in the region in the past	Origin of the name of Çavdarhisar
Ilhan	Names of the ancient artifacts	Phrygians founded the village; Lydians invented money; Romans built the bathhouse.	Originally Çavdar, but later became Çavdarhisar.
Sema	It comes from Azan, the grandchild of Zeus.	Phrygians, Lydians, Romans, Ottomans	-
Salih	It comes from Azan.	Phrygians, Lydians, Romans, Ottomans	There used to be Çavdarians, but then became Çavdarhisar.
Imren	It comes from Azan, the grandchild of Zeus.	Phrygia, Lydia, Roman, Ottoman	Çavdar Lords helped the Ottomans in the war.
Nadir	It comes from Azan, the grandchild of Zeus.	Phrygia, Lydia, Roman, Ottoman	-
Elif	It comes from Azan, the grandchild of Zeus.	Phrygia, Lydia, Roman, Ottoman	Çavdar Tatars used the fortress-castle to protect against the Byzantine during the war.
Ismet	-	-	In the past, there was a war, and people hid in the fortress.
Nida	It comes from Azan.	Phrygia, Lydia, Roman, Ottoman	It is for Çavdar Tatars, who hid in the fortress during the war.
Semih	It comes from Azan	Phrygia, Lydia, Roman, Ottoman	-
Feyza	It comes from Azan, the grandchild of Zeus.	Phrygia, Lydia, Roman, Ottoman	It was given as a gift to Çavdar Tatars, and they used this name.
Derya	It comes from Azan	Phrygia, Lydia, Roman, Ottoman	Because Çavdar Tatars protected this place.

As can be seen in Table 3, at the end of the study's activities, it was seen that most students had responded to the questions. Although the students did not possess correct background knowledge about the origin of the name of Aizanoi, at the end of the application process nine of the students provided correct answers to questions on the mythological story. Except for one, no other students had sufficient background knowledge, yet they responded correctly to the question of which civilizations lived here in the past. What was striking was that all the students wrote down the civilizations in the correct chronological order. The reason for this could be that the correct chronological order was given with a melodic emphasis while teaching the related subject. Regarding the origin of the name of Çavdarhisar, nine of the students provided correct answers to the question, though they did not have the related background knowledge. In this respect, it could be stated that the students became knowledgeable although they did not have related knowledge before the application process and that, in this sense, the art activities worked; achieving their learning objective.

How the students perceived the educational process

At the end of the application process, semi-structured interviews were held with the students in order to determine their views about the application process. The students mostly emphasized the contributions of the application process, and Figure 2 demonstrates these contributions from the perspectives of the students.

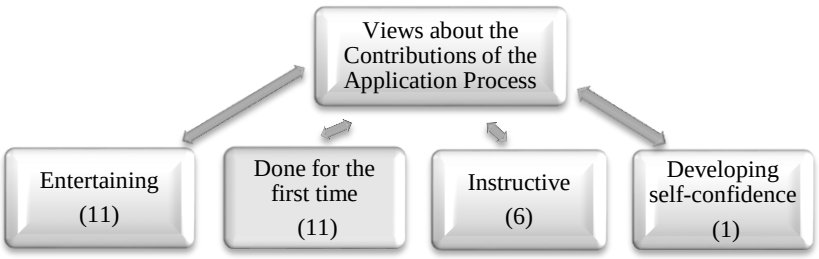


Figure 2. Students' Views about the Contributions of the Application Process

As can be seen in Figure 2, all the participant students reported that they found the application to be entertaining, stating that they had played entertaining games. The reason for this could be that students might have perceived some of the drama and warm-up activities as games carried out before and during the activities. Elif found the application process entertaining, stating that *"We were entertained a lot, and played a lot of games. Also, we played with play dough, and I liked it a lot, too (pp. 26-29)"*. Another student, Ilhan, said *"I enjoyed it a lot. We played games, and used the play dough. Also, that thing like mud, we played with it too (pp. 19-22)"*. Besides the drama and warm-up activities, it could be said that Ilhan might have considered the art activities carried out with *play dough* and clay to be a game. One reason for the students' perception of the application as a game could be that the application was carried out in an informal

environment during the school summer holidays. Six of the students mentioned the educational aspect of the application. For example, Sema stated *"I didn't know that Phrygians used to live here, and they founded the village. Well, you taught us that (pp. 11-12)"*, whilst Nida, said *"I didn't know about the Romans before. Our teacher brought us in Roman-styled, and we wore them. They were very beautiful white clothes…. I didn't know anything about the others. For example, we learned that the Ottomans lived here, too. Also, the Lydians invented money… (pp. 23-27)"*. With these words, it is seen that Nida had some related background knowledge because the children living in the village wore the Roman clothes during the ceremony organized for the opening activities for the excavation in the region. Of all the students participating in the study, only one student (Semih) focused on developing their self-confidence, thanks to the application process. Semih stated that *"I didn't use to do anything before, but now I can, I did many things. I wish we had played more games (pp. 13-14)"*. This thought reported by Semih, who perceived the application as a game, could be regarded as a childish expression of the feeling of confidence thanks to the pleasure of free self-expression and of putting forward a product. In addition, it increased their knowledge, thanks to the application process. The students also reported views emphasizing the art activities. For example, Imren said *"Well, I had never before played with play dough, but I liked it a lot (pp. 18-19)"*. Considering the views of all the students, it could be stated that the students had positive views about the application process and the art activities, and that these activities contributed in different respects.

Discussion, Conclusion and Recommendations

In the present study, three basic results were obtained in relation to the research questions. First of all, an open-ended information form was applied to the students before the application process in order to reveal their background knowledge about their local history and cultural heritage. At the end of the application, the same questions were redirected to the students so as to determine their 'new' knowledge. Accordingly, it was concluded that with the help of the art activities, students had increased their knowledge about their local history and cultural heritage. Considering Gardner's (1990) point that art-based instruction leads to permanent learning, it could be stated that instead of providing historical information about the place where the students lived, giving basic related information practiced through art activities helped them to learn more about their local history and cultural heritage. This finding of the present study is similar to that of another study carried out by Carger (2004) on language teaching with the use of visual art materials. In Carger's (2004) study, the researcher reported that students became more creative in analyzing deeper meanings. Also, the findings obtained in the present study are consistent with those reported by Hofman (1998), who claimed that students' literacy skills develop more thanks to activities involving art. In addition, the findings obtained in the present study also support the findings reported by Bowker (2004), who studied teaching science to elementary school students in a museum and found that students' levels of understanding and remembering increased in line with an increase in the number of sense organs employed by students during the museum activity. Also, Koya and Chowdhury's (2019) studies shows that cultural heritage is quite multi-disciplinary by

nature. Various strands of skills are required to successfully learn cultural heritage informatics.

In the present study, brief information was given to the participant students about past civilizations that had lived in the place where the students now lived using the storytelling method, seen as appropriate to the students' level of understanding. Following this information brief, drama activities were conducted as warm-up activities and the art activities were then conducted. In this respect, another finding obtained in the present study was that students explained their art products – they put forward in the application process – in association with the related civilizations. For instance, during the interviews held after the money design made of clay, which was conducted following the activity regarding the Lydian civilization, except for one student, all the others explained the money design in association with the Lydians. The reason for this could be that the activity was carried out in a historical place, which was like an outdoor museum rather than a formal class environment, and that the students learned by seeing and feeling. The results of the study carried out by Heras, Medir and Salazar (2019) which aimed to promote environmental awareness and to help children value the natural and cultural heritage of their surroundings support this situation. Also, as mentioned by Horton (2000, as cited in Yesilbursa, 2008, p.214), historical places provide concrete meanings to history and our lives in a way that no other verbal or written words can achieve alone. In addition, depending on this, it could be stated that art activity conducted could be associated with the brief historical information given at the beginning of the activity and that these art activities contributed to the students' understanding of the subject. This finding supports the finding obtained in a study carried out by Meydan and Akkus (2014), who reported that activities like visits to museums increase students' interest in lessons and contribute greatly to the development of historical and cultural values. Also, the findings obtained in the present study are also consistent with those obtained in another study conducted by Buyurgan (2004) with elementary school first and fourth grade students. In the study, Buyurgan reported that learning through activities carried out in a museum is more effective and permanent. Also, similar to the findings obtained in the present study, Onder, Abaci, and Kamaraj (2009), in their study conducted to teach elementary school fifth grade students the clothing styles of different civilizations that lived in Istanbul in the past, reported a significant difference in the knowledge levels of the experimental group students conducting an activity in a museum. In addition, parallel to the findings obtained in the present study, Yilmaz and Seker (2011) examined elementary school students' views about learning in a museum, and revealed that most of the students were quite beneficial in terms of increasing their level of knowledge, visuality and general culture.

In the present study, students were asked for their views about the application carried out through art activities. Accordingly, as the last finding obtained in the study, it was found that all students were greatly entertained during the applications, with most regarding the applications as a game. The reason for this could be that the students associated the activities with playing a game. This finding supports the one that was reported by Author (2008), who conducted visual culture applications in an

elementary school course of visual arts. In the study, Author (2008) claimed that students found the lessons more entertaining. However, the same report stated that students perceive such applications as a process of learning and obtaining information, which contradicts with the finding obtained in the present study that the students did not think the application process was planned. The reason could be that the study was carried out in an informal learning environment during the school summer holidays. This finding is consistent with Yilmaz, Filiz and Yilmaz (2013), who found that education given to elementary school students by focusing on various objects in a museum increases students' motivation and participation; that they find learning more entertaining; and that their historical thinking skills develop. Similar to the findings obtained in the present study, Piscitelli and Anderson (2001), in their study conducted with elementary school students to reveal their viewpoints regarding museums and their past experiences via their drawings, reported that students generally depicted museums as entertaining environments. Also, that students regarded the drama activities carried out as warm-up activities to be games which they enjoyed. Based on the interviews held with the students, it was seen that among the art activities, the money design made of clay and the relief work with *play dough* were considered to be games. This situation could be regarded as the reason for the students' increased levels of knowledge as a result of the application process. The reason is that games are activities that allow children to experience and learn subjects that nobody else can teach (Yavuzer, 1987). Studies conducted in different disciplines (Hanbaba&Bektas, 2007; Tural, 2005) revealed that teaching through games contributes to learning in that field. As a result of the students perceiving the activities as a game and having found these activities entertaining, it was seen in the present study that the students took increasingly more active roles in later activities than they had done earlier, and that they took more courage to express themselves. This finding is consistent with that was reported by Author (2008), who found that students increasingly took more courage to express themselves through art later on in the process, and that they kept on with their art studies through a feeling of increased confidence. In addition, similar to the findings obtained in the present study, Guler (2011) examined the effects of visits to museums on students' attitudes, and found that the most important benefit of a planned visit to a museum, some form of entertainment, playing of games, examining the artifacts with the help of related worksheets, observations and discussions, was to develop students' self-confidence and to increase their motivation. As mentioned by Herberholz and Hanson (1985), children dealing with art and putting forward an art product take more courage to express themselves and increase their self-confidence.

Consequently, the results obtained in the present study demonstrated that art education activities were influential in raising elementary school students' awareness of their local history and cultural heritage, and related suggestions were put forward accordingly. Based on the research results, it could be stated that art education can be used as a method of teaching in all disciplines, not just for the teaching of art-related courses. Art-based education could not only help students develop a different viewpoint regarding events, but also lead to more effective and permanent learning in the field. Such an application will also result in an important outcome for students, enabling them to transfer what they had learned to all their learning experiences,

thanks to the courage and self-confidence gained by the putting forward of a product. In addition, the use of applications related to art education could be suggested not just for in-class-applications, but also for out-of-class activities. In this way, different and rich stimuli in the environment will be put into practice for children's learning in the field, and students will have the chance to learn by doing and living. In this respect, elementary school teachers should be encouraged to carry out more activities at archeological sites, museums, and art galleries, and to be informed about such applications.

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Sanat Eğitimi Yoluyla Kültürel Miras Çalışmaları: Aizanoi Antik Kentinde Bir Öğretim Uygulaması

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Özet

Problem Durumu: Çocuk sanat yoluyla kendini ifade ederken özgür bir ortamda daha zengin bir içerik ve daha fazla deneyimlenmiş bir yaşantı yoluyla öğrenme olanağı bulur. Eğitimde sanatın ve sanat eğitiminin kullanılması ile bireyler, kazandıkları farklı bakış açıları ile yaratıcı yetilerini yaşamlarının her alanına transfer edebilecek, estetik bir bilinç kazanarak çevresini güzelleştirebilecek ve sanattan anlayan bilinçli sanat tüketicileri olarak toplumda yerlerini alacaklardır. Sanat eğitimi yalnız okulla değil, okul dışıyla ve kültürle doğrudan ilişkili olan bir öğretim alanıdır. Bu bağlamda, sanat eğitimi sanatın ve kültürün doğru bir biçimde tüketilmesini ve geliştirilmesini sağlayacak bilinçli sanat tüketicileri yetiştirilmesi bakımından da önemlidir. Bilinçli sanat tüketicisi olan bireyler kendi kültürlerini, geçmişlerini ve toplumsal üretimlerini izleyip değer veren ve onları bir sonraki kuşaklara aktarabilen niteliklere sahiptir.

Bu araştırmada, öğrencilerin kendi geçmiş kültürlerini ve tarihlerini öğrenerek kültürel miraslarına sahip çıkmalarını sağlamak amacıyla bir sanat eğitimi uygulaması gerçekleştirilmiştir. Kültürel miras, bir toplumun tarihsel sürecinde biriktirdiği tüm deneyim ve gelenekleri, yani kültürel zenginliğini gelecek kuşaklara aktarabilmesi ile ilgili bir kavramdır. Sanat eğitiminin ilkokullardaki uygulama alanlarından biri olan Görsel Sanatlar Dersi Öğretim Programında (2013) da kültürel miras konusuna ayrı bir vurgu yapılmaktadır. Araştırma, yaşadıkları yerin tarihi ve kültürel geçmişleri hakkında farkındalık yaratma amacıyla sanat etkinliklerinin kullanılması yönünde tasarlanmıştır. Bu yönüyle araştırma, zengin bir tarihsel birikim ve kültürel mirasa sahip bir ilçede yaşayan çocukların kendi kültürlerini tanıyarak ona sahip çıkmalarını ve böylece artık kaybolan kültürel değerlere farkındalık kazandırmayı amaçlaması bakımından önemlidir. Ayrıca araştırma, eğitim sürecinin çocuklara yaz tatili içinde sanat eğitimi yoluyla yapılması ve eğlenceli bir biçimde tasarlanması bakımından da önemli görülmektedir.

Araştırmanın Amacı: Bu araştırmanın amacı, ilkokul düzeyindeki öğrencilerin yaşadıkları yerin kültürel mirasını planlanmış sanat etkinlikleri aracılığı ile tanımalarını sağlamaktadır. Bu temel amaca dayalı olarak araştırmada aşağıdaki sorulara yanıt aranmıştır:

1. Gerçekleştirilen sanat eğitimi etkinliklerinin, öğrencilerin yaşadıkları yerin tarihi ve kültürel mirasına ilişkin bilgilerine nasıl bir etkisi olmuştur?
2. Öğrencilerin yaşadıkları yerin tarihi ve kültürel mirasına ilişkin bilgileri sanat eğitimi etkinlikleri ve ürünlerine nasıl yansımıştır?
3. Öğrencilerin uygulama sürecine ilişkin görüşleri nelerdir?

Araştırmanın Yöntemi: İlkokul öğrencilerinin sanat etkinlikleri yoluyla yaşadıkları yerin kültürel mirasını öğrenmelerini amaçlayan bu araştırma, çocukların sanatsal anlatım yoluyla kendilerini özgürce ve samimi biçimde dışa vurdukları duygu, düşünce ve algılarını açığa çıkarmada ve sonuçların eğitimsel doğurgularını değerlendirmede etkili bir yöntem olan sanat temelli araştırma yoluyla gerçekleştirilmiştir. Araştırma, Aizanoi antik kenti ile ayrı bir öneme sahip olan Kütahya'nın Çavdarhisar ilçesinde gerçekleştirilmiştir. Araştırma süreci, antik kentin Aizanoi isminden günümüzdeki Çavdarhisar ismini alışına dek geçirdiği tarihsel sürecin hazırlanan sanat etkinlikleri yoluyla öğretilmesi biçimde tasarlanmıştır. Araştırmanın katılımcıları, bu ilçede yaşayan farklı sınıf düzeyindeki 11 ilkokul öğrencisinden oluşmaktadır. Antik kentte Kültür ve Turizm Bakanlığı ve Denizli Üniversitesi Fen-Edebiyat Fakültesi Arkeoloji Bölümü tarafından arkeolojik kazı çalışmaları yapılmaktadır. Araştırma, söz konusu kazı evinde ve Zeus tapınağında gerçekleştirilmiştir. Araştırmanın verileri; açık uçlu bilgi formu, yarı-yapılandırılmış görüşme ve doküman incelemesi olmak üzere üç farklı yolla toplanmış ve betimsel analiz yoluyla analiz edilmiştir.

Araştırmanın Bulguları: Araştırmada elde edilen bulgular "uygulama öncesi", "uygulama" ve "uygulama sonrası" biçiminde 3 temada sınıflandırılmıştır. Uygulama öncesi süreçte, öğrencilere yaşadıkları yerin kültürel mirasına yönelik ön bilgilerinin ortaya konması için açık uçlu bilgi formu uygulanmış ve öğrencilerin Aizanoi ismini ilçedeki kazı çalışmaları ile ilişkilendirdikleri, diğer tarihsel sürece ilişkin herhangi bir bilgilerinin olmadığı görülmüştür. Araştırmanın uygulama sürecinde ilk olarak Aizanoi isminin nereden geldiğine ilişkin anlatılan mitolojik hikâyenin ardından öğrencilere hikâyedeki mitolojik kahramanları içeren bir maske çalışması yaptırılmıştır. Maske yapımında en çok tercih edilen kahramanların Zeus ve Aizanoi adının kaynağı olan Azan olduğu görülmüştür. İkinci uygulama olarak, şehrin kuruluşuna ilişkin yapılan çalışmada hem Frigler hem de Friglerin şehri nasıl kurduğuna ilişkin kısa bir bilgi verilmiş ve ardından sihirli boya tekniği ile resim çalışması yapılmıştır. Üçüncü uygulama oturumunda, Lidya uygarlığı ele alınmış ve parayı ilk bulan bu uygarlığa ilişkin kilden para tasarımı çalışması gerçekleştirilmiştir. Dördüncü uygulama oturumunda Romalılar ile ilgili bir çalışma yapılmış ve yaşanan bu köydeki birçok mimari eserin bu döneme ait tanıtımları yapılmıştır. Çalışmanın sonunda ahşap plakalar üzerine oyun hamuru ile rölyef çalışması yapılmış ve öğrenciler gruplar halinde gördükleri bu mimari eserlerden yola çıkarak kendi tasarımlarını gerçekleştirmişlerdir. Beşinci uygulama oturumunda Çavdarhisar isminin nereden geldiğine ilişkin yapılan Osmanlılar çalışmasında ise pastel boya ile resim çalışması yapılmıştır. Uygulamanın son oturumunda ise öğrencilere katılım

belgeleri dağıtılmıştır. Uygulama sonrasında ise, öğrencilere yaşadıkları yerin kültürel mirasına yönelik ön bilgilerinin ortaya konması için dağıtılan açık uçlu bilgi formu yeniden uygulanmış ve öğrencilerin buradaki bilgileri neredeyse eksiksiz doldurdukları görülmüştür. Ardından, uygulama sürecine yönelik öğrencilerle yarı-yapılandırılmış görüşmeler yapılmıştır. Görüşmeler sonucunda, öğrencilerin tamamının bu uygulamayı çok eğlenceli buldukları ve ilk kez böyle bir çalışma yaptıkları görülmüştür. Ayrıca öğrenciler, bu uygulamanın öğretici olması boyutuna da vurgu yapmışlardır.

Araştırmanın Sonuçları ve Önerileri: Çeşitli sanat etkinlikleri yoluyla öğrencilerin yaşadıkları yerin kültürel mirasına ilişkin farkındalık kazandırmayı amaçlayan bu araştırmada, araştırma sorularına bağlı olarak üç temel sonuç elde edilmiştir. İlk olarak araştırmada, öğrencilere yapılan etkinlikler aracılığı ile öğrencilerin yaşadıkları yerin tarihi ve kültürel mirasına ilişkin bir bilgi birikimi edinebildikleri sonucuna varılmıştır. Uygulama öncesi ve sonrasında dağıtılan bilgi formlarının öğrenciler tarafından uygulama sonunda doldurulmuş olması, yapılan sanat etkinliklerinin öğretici olduğu biçiminde yorumlanabilir. Araştırmanın bir diğer sonucu, öğrencilerin sanat etkinliği bitiminde ürünleri üzerine yapılan görüşmelerde, hangi uygarlığa ilişkin etkinlik yapıldıysa sanat ürünlerini o uygarlıkla bağdaştırarak açıklamalarda bulunmuş olmalarıdır. Örneğin Lidya uygarlığına ilişkin yapılan kilden para tasarımı sonrasında yapılan görüşmelerde bir öğrenci dışındaki tüm öğrenciler para tasarımını konunun çıkış noktası olan Lidyalılarla bağdaştırarak anlatmışlardır. Bu durumun nedeni, öğrencilerin görerek ve hissederek öğrenmelerinin sağlanması olarak görülebilir. Araştırmanın son sonucu ise, öğrencilerin tamamının yapılan uygulamada çok eğlendikleri görülmüş olmasıdır. Bu sonucun nedeni, öğrencilerin yapılan etkinlikleri oyun oynama ile özdeşleştirmeleri olabilir. Araştırma sonuçlarına dayalı olarak, sanat eğitiminin yalnızca sanatsal içerikli derslerde değil diğer tüm diğer disiplinlerin öğretiminde bir yöntem olarak kullanılması, sanat eğitimine ilişkin uygulamaların sınıf dışında da yapılması önerilebilir. Bu bağlamda, sınıf öğretmenlerinin çeşitli tarihi ören yerlerine, müze ve sanat galerileri gibi mekânlarda uygulamalara özendirilmeleri ve bu uygulamalar için bilgilendirilmeleri gerekmektedir.

Anahtar Kelimeler: İlkokul, sanat eğitimi, kültürel miras, sanat etkinlikleri, sanat temelli araştırma.

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Teachers' Perceptions on School Administrators' Spiteful Behaviours

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ABSTRACT

Purpose: Spitefulness is a strong instinctive behavior which is potentially serious and often has psychological, interpersonal and social negative consequences. Revealing the reasons, levels and prevention methods in institutional life will be beneficial in terms of productivity, performance and relationships. The aim of this study was to develop a valid and reliable scale to evaluate spitefulness behavior of managers, and to determine the perceptions of teachers related to administrational spitefulness.

Research Methods: This study which aimed to develop and implement Administrational Spitefulness Scale and to measure teachers' perceptions on school administrators' spiteful behaviours was held in descriptive survey model among quantitative research methods.

Findings: As a result of exploratory factor analysis, the total variance of the scale consisting of 26 items and one dimension was found to be 67.71. Confirmatory factor analysis results revealed that scale items formed a meaningful structure under single factor, and standard factor load values were .55 and above. The results revealed that the level of administrational spitefulness teachers perceive was low. As teacher perceptions related to administrational spitefulness did not differ according to gender, seniority and branch (major) variables, there were significant differences in terms of marital status and school types variables. Single teachers and secondary school teachers had higher administrational spitefulness perception.

Implications for Research and Practice: The scale in this study intended for the work life and focused on managers' spitefulness behaviors. Naturally, it is limited in terms of revealing spitefulness behaviors among workers. Although the scale could be used at a very large area, it could only be applied to workers, and it could reveal the administrational spitefulness they perceive. Moreover, various studies could be held by relating the scale with other behaviors, attitudes and tendencies which are predominantly in the field of interest of organizational behavior and which are in the field of organization and management.

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Introduction

The existence of organizations depends on the acquisition of their founding purposes. Acquisition of the aims and purposes for the organizations are mostly affected by the quality of the human labor they have. The cognitive, kinesthetic, ethical and affective qualities of managers and workers who form the human labor source of the organization are basic determining components. Current understanding of management considers the worker as a whole. It is not enough to tackle and evaluate workers only in their cognitive and kinesthetic sides. As Fineman (2003) claimed, workers are at the same time emotional creatures and this forms the emotional side of the organization. In this respect, understanding emotional structure of the work and emotional states of the workers are vitally important for the organization. Seeing people as emotional creatures in organizations is neither denying the mind, nor underestimating the importance of rationalization in human relations (Yiannis, 2005). When the literature related to management is investigated, it is seen that a limited number of studies focus on emotions in the relations between managers and workers (Hill, 2003; Watson & Harris, 1999). Furthermore, recently there has been a growing academic interest in the role, function and importance of emotions (Sieben & Wettergren, 2010). Although the studies related to emotions, emotional intelligence and emotion management in management held in recent years have been sufficient in closing the gap, it is difficult to claim that topics which are more complicated in the relations between managers and the managed like hate, aggression, revenge and spitefulness have been sufficiently discussed. Such phenomena have been in the interest of psychology, psychiatry and psychotherapy literature. This study focused on spitefulness, which is frequently encountered in organizational life, affects superior-subordinate relations negatively, and has not been sufficiently dealt with.

Spitefulness reflects a state of emotion. Behavioral and emotional reactions of human as a social and a psychological being are organized in a wide range from the most positive to the most negative ones. Spitefulness is one of these emotions and behaviors. In general, spitefulness is a very strong motivational behavior which is serious and frequently has negative psychological, interpersonal and social results (Marcus, Zeigler-Hill, Mercer & Norris, 2014). Spitefulness defines harming others' benefits other than indifference to the benefits of others (Pruitt & Rubin, 1986). According to Gurtman (1992), spitefulness contains distrust and suspicion to others, and disregarding others' needs and happiness. Spitefulness could also be defined as the intentional effort to prevent others to reach their aims so that they fail (Ewing, Zeigler-Hill & Vonk, 2016; Marcus & Ziegler-Hill, 2015; Vrabel, Zeigler-Hill & Shango, 2017; Zeigler-Hill, Noser, Roof, Vonk & Marcus, 2015; Zeigler-Hill & Noser, 2018). Spite, in the Turkish Language Association Dictionary (2018) is defined as secret hostility aiming revenge and grudge whereas spitefulness is defined in terms of a person who wants revenge, who is spiteful and vindictive. According to Baumeister, Exline and Sommer (1998), an individual might choose two different ways when encountered a negative situation. One of them includes negative feelings like anger, irritation and grudge. Other way, on the other hand, is showing a

forgiveness behavior by turning negative feelings into positive feelings, thoughts and behaviors. Similarly, Smith (2018) expresses that spitefulness defines a two-fold process as an immediate desire to correct a mistake (thought to be done against himself) and calculate the suitable punishment or reaction rationally.

Spitefulness is related with other concepts in daily use as well. One them is the hostility behavior. In general, hostility is considered as an attitude. According to Buss (1961), hostility is an attitude of not liking others and evaluating them negatively. Similarly, Berkowitz (1993) defines hostility as a reaction containing a definitely negative judgement and an attitude against an individual. Spielberger (1988) defines hostility as a complicated feeling and attitude set fostering aggression and generally motivating spiteful behaviors. Why revenge is held and embraced together with aggression is not because this feeling has violence in its base, but because the person who wants revenge prefers to use violence as a method (Adugit, 2008). Obviously, aggression and spitefulness are sometimes defined as a tangled attitude set. The basic difference between these two concepts is that aggression generally depends on explicitly apparent attitudes and behaviors. Secrecy and closeness are in the front in the essence of spitefulness. In the spiteful attitude and behavior against others, "waiting for and looking out the most suitable time" attitude is clearly obvious. The terms "bearing a grudge" or "holding a grudge" claims that spitefulness is planned, intentional, ongoing and in a logical frame. The term "having spite against" might reflect a behavior overlapping with hostility.

Another term related to spitefulness is revenge. Revenge is a universal concept defined as charging someone of something, putting them in a risky situation and hurting them (Elster, 1990). According to Stuckless and Goranson (1992), revenge is an attempt of applying a hurting punishment in case of a perceived injustice. Revenge, in general, is the reaction of individuals in case of an injustice they experience. Spitefulness, on the other hand, could be defined as a desire that directs someone to take revenge after being attacked and suffering from pain. The reason of revenge is not a harm that is initially and directly expected to be seen by others, instead it is the information or belief that they have injustice against the person, relatives or innocent people. Revenge is not a blind "drive", but a feeling born from the clearest conscious related to justice (Adugit, 2008). In Smith's (2018) terms, while revenge might be bloody and messy, spitefulness is a concept which is intended and cold served (hurting others in a plan).

One side of spitefulness is related to punishment. A spiteful person watches for the perfect time to put the others in a bad situation. Especially such actions are taken by individuals in the top management using their power and authority against people who they consider a threat, they do not like because of attitudes and behavior shown to them, and they consider negative. Darley and Pittman (2003) describe the aim of such punishment as punishing offenders for their past behaviors other than intending to change such future behaviors. This concept, as Smith (2018) puts it, is a personal revenge rule which also has the function of preventing quittance behavior of individuals, and which is a version of "lex talionis" or "an eye for an eye". This approach necessitates balancing the punishment with the crime.

Spitefulness should not only be considered as a phenomenon which forms the dark side of the personality, or a feature that only some specific people have. Marcus et al. (2014) claimed that spitefulness, which they define as the behavior to hurt or prevent people's benefits and gains even though they know that it will not do them any good and could cause negative results, is frequently encountered in daily life. It is a type of behavior and reaction seen between workers or managers and workers. According to Yiannis (2005), it is possible to encounter organizations which are successful even though they cause great unhappiness, and at the same time there are unsuccessful but relatively happy organizations. However, it should be noted that the attitudes and behaviors of managers in organizations which care about happiness, satisfaction and needs of its members could increase their workers' loyalty, commitment and profitability. Especially, it is highly important for managers whose behaviors and attitudes affect the organizational environment to show respect to their workers in terms of organizational effectiveness. As Solomon (1998) indicated, valuing someone does not only mean supporting and forming emotional bonds with him, but also functions to decrease such features and behaviors as being dominant, being spiteful and hurting. Undoubtedly, managers are people who have senses and feelings, and are comprised of flesh and bones. In management, there might be features, attitudes, manners and behaviors of prejudices, spitefulness, aggression, sensitivity, etc. having stability and continuity. Still, it should be noted that the attitudes and behaviors of managers function as a compass and lighthouse for workers.

Managers are people who take the organization to its aims and targets, and they do this together with the members of the organization. Experience and especially ability of the managers could be the determining factors. Most managers who are newly appointed, employed or elected to the administrational position are not prepared yet in understanding the emotions of workers. Most of the time, such managers start to apprehend in time that understanding and dealing with the emotions of the workers is a very important and vital part of being a manager (Hill, 2003; Watson & Harris, 1999). However, in this process managers might experience many problems, or they may cause problems to their workers. By developing grudge, a manager could cause problems related to communication, achievement, career, work and duty processes, promoting and punishing applications.

When the relevant literature is investigated, it is seen that there are limited number of studies related to spitefulness. Contrary to other "dark" personality features, spitefulness got very few experimental interest. As Marcus, Zeigler-Hill, Mercer and Norris (2014) claimed, the main reason for this lack of interest is the lack of data collection tools measuring spitefulness. However, a lot of data collection tools have been developed to measure other dark personality features. For example, Christie and Geis' (1970) Machiavellism (Mach-IV), Raskin and Hall's (1981) Narcissism (NPI), Hare's (1985) Psychopathy (SRP III) and Stuckless and Granson's (1992) revenge scales could be counted among these. Marcus et al. (2014) who measured features related to spitefulness developed a tool. Researchers stated that the spitefulness scale which is consisted of 17 items measuring a one-dimension

structure has validity and reliability to separate individuals with low and high levels of spitefulness. Aforementioned scale, however, measures general qualities and aims to determine self-reported individual spitefulness tendency. In this respect, developing a spitefulness scale related to work life has become a necessity.

One of the basic determinants of attitudes and behaviors of workers against work and the organization is attitudes and behaviors of the managers of the institution. There has been a lot of studies on topics which are important in organizational behavior like justice, work satisfaction, organizational environment, organizational culture and trust as well as topics like management styles, leadership styles, influence behaviors and intimidation behaviors of managers. Such studies revealed that managers should be evaluated by their subordinates. Most of the results of studies concerning aforementioned topics were descriptive studies which only described a phenomenon as it was. Managers' attitudes and behaviors could be more determining especially in educational organizations where human relations are in the front, informal organization structure is strong and effect other than authority is prioritized. Assessment tools are needed which could reveal that problems or negativities experienced related to management at schools are caused by the attitudes and behaviors of managers. In this respect, a scale that could make valid and reliable evaluations in investigating the spitefulness behavior scientifically is imperative.

Main aim of this study was to develop a valid and reliable scale to evaluate spitefulness behavior of managers, and to determine the perceptions of teachers related to administrational spitefulness. Following questions were asked in terms of this main aim:

1. What is the validity and reliability level of administrational spitefulness Scale?
2. What is the level of teachers' perceptions related to administrational spitefulness?
3. Do teachers' perceptions related to administrational spitefulness differ according to gender, marital status, seniority, branch and school types?

Method

Research Design

This study which aimed to develop and implement "Administrational Spitefulness Scale" was held in descriptive survey model, one of the quantitative research models. Descriptive survey studies aim to collect data related to people's perceptions, thoughts, attitudes and beliefs in relation to a specific subject in education, and to describe their behaviors (Lodico, Spaulding & Voegtle, 2006).

Research Sample

The universe of this study composed of teachers who worked in pre-schools, primary schools and secondary schools in Samsun province in 2018-2019 academic-

year. Three separate study groups were determined for the study. In order to evaluate structure validity of the study, first teachers working in İlkadım, Atakum, Canik and Tekkekoy distrcits of Samsun province were determined as the study group for exploratory factor analysis. 300 teachers among the study universe were chosen by unbiased sampling method. Item numbers and participant numbers are an important criterion in scale development studies (Tinsley & Tinsley, 1987). This study met the requirement which suggests that the rate of participant numbers-scale items should be between 5:1 and 10:1 (Nunnally, 1978).

In order to apply confirmatory factor analysis after exploratory factor analysis, pre-school, primary school and secondary school teachers working in Çarşamba, Bafra and Vezirkopru districts of Samsun province formed the second study group. 550 teachers formed the second study group determined by unbiased sampling method from all three districts.

Sampling group for the implementation of the study was composed of 345 teachers determined by simple random sampling method. 56.2% of this study group was consisted of females and 43.8% were males. The rate of the teachers whose seniority was between 1-10 years was 35.9%; 11-20 years was 40.6%; and 21 years and above was 23.5%. While 78.35 of the teacher group was married, 21.7% was single. According to school type variable, 37.4% of the study group worked at primary schools, 26.1% at secondary schools, 22.3% at high schools, and 14.2% at pre-school education institutions.

Research Instruments and Procedures

In this study which aimed to develop and implement "Administrational Spitefulness Scale", demographic knowledge information form (gender, marital status, seniority, school type, branch) and "Administrational Spitefulness Scale" were used as data collection tools.

Before the development of "Administrational Spitefulness Scale", relevant literature was scanned and items to determine spitefulness behaviors of managers were written. Opinions of teachers from different branches were also taken during writing the items. Teachers were asked to express behaviors of administrators that can be related with spitefulness. In order to evaluate the clarity, meaningfulness and structural relatedness, educational and management, Turkish and Assessment and evaluation experts were consulted. According to the opinions, the scale which firstly had 32 items was reduced to 26 items and finalized. The scale was a 5-point Likert Type with "Never (1)", "Rarely (2), "Sometimes (3)", "Mostly (4)" and "Always (5)" points. Because this scale was prepared in accordance with 5-point likert type, according to 4/5=0.8 result, the distribution of points was as follows; Never 1.00-1.79, Rarely 1.80-2.59, Sometimes 2.60-3.39, Mostly 3.40-4.19 and Always 4.20-5.00. Since the statements reflected administrational spitefulness, there were no items that were reverse coded. Higher points obtained from the scale reveals that spitefulness behavior of the manager is high.

Data Analysis

Data applied to the study groups were uploaded to a computer. After the completion of data upload, first a frequency analysis was applied, and mistaken cells were determined. After confirming that all the data were correctly entered, frequencies and percentages of the answers given to statements in the scale were calculated. Then, in the next phase, Exploratory Factor analysis was held through Varimax Rotation method. During this process, eigenvalue was taken as minimum "1". In determining whether the scale presented factorial structure, percentage of total variance explained, and Scree Plot graphics were based, and factor loads and item-total correlation coefficients were calculated. After exploratory factor analysis revealed positive results, Confirmatory Factor Analysis was held. At the second phase of the study, reliability analysis of the scale was held. All the results were evaluated in two-ways, and significance level was taken as .05. Moreover, results in .01 and .001 level were also evaluated. Because data collected through the implementation of the scale had normal distribution, parametric tests were applied. Skewness (.78, .13) and Curtosis (.46, .26) coefficients were checked for normal distribution, and because "z" values gained in Kolmogorov Smirnoff test revealed statistically non-significant results ($z=1.31$, $p=.06$, $p>.05$), distribution of the points were considered normal. In the analysis of the data, arithmetic means, standard deviation, t-test and ANOVA techniques were used. In the case of statistical differences in ANOVA, Scheffe multiple comparison test was applied to determine which pairing groups did the cumulative difference occurred. SPSS and LISREL statistical programs were used in the analysis of the data.

Results

In this study, first Exploratory Factor Analysis and then Confirmatory Factor Analysis were held. Before Exploratory factor analysis, Keiser-Meyer-Olkin (KMO) and Barlett Test were applied in order to test the sufficiency and suitability of sampling. KMO value presents a value between 0 (zero) and 1. In scientific studies it is only possible to apply factor analysis if KMO value is higher than .60 (Ntoumanis, 2001). If the KMO value is over .90 then sampling size could be interpreted as at a "perfect" level. The KMO value gained in this study was way over .60, so it was decided that sampling size was sufficient. The analysis revealed that Barlett's Test of Sphericity results ($X^2 = 8944.35$; $p< .001$) were significant. Having significant Chi-square results might be interpreted as data matrix is suitable, and points are normal (Buyukozturk, 2012). Barlett's test aims to determine whether the data comes from multivariate normal distribution. In this respect, data were accepted to come from a multivariate normal distribution. These results revealed that data could be extracted.

The Results of Exploratory Factor Analysis

Varimax method was applied as the extraction method in the analysis. For exploratory factor analysis, each item in the scale should have a minimum of .50 factor variances. In order to discover the factor design of the scale, principal components factor analysis was chosen as extraction method, and Varimax rotation from vertical rotation methods was chosen as rotation technique. After the maximum

variability analysis was applied for 26 items, it was concluded that the scale was formed by one dimension with an eigenvalue of over 1. The eigenvalue of the factor which was determined having single dimension was 17.60, and met 67.71 of total variance. In the determination of the factors belonging to 26 items in the scale, Scree Plot graphics were evaluated and presented below (Figure 1).

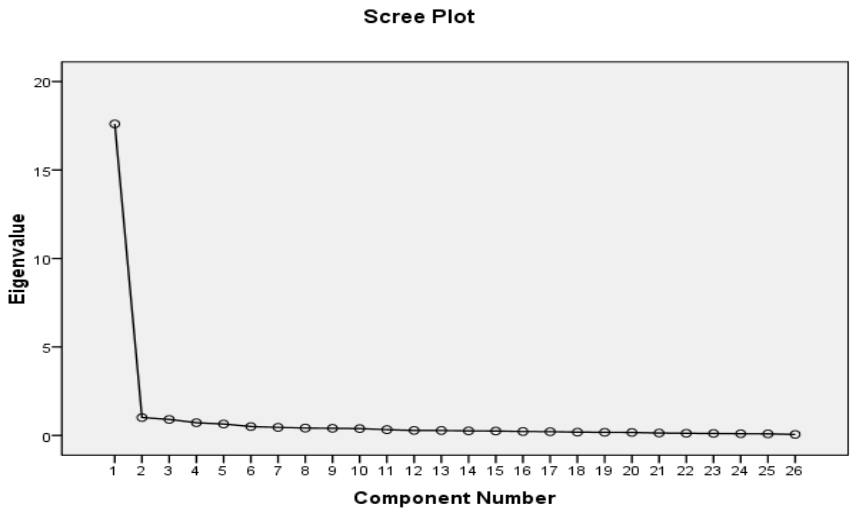

Figure 1: *Administrational Spitefulness Scale scree plot graphic*

When the Scree Plot in Figure 1 is examined, it is clearly seen that the scale was formed by single dimension. Factor loads for each item in the scale and the total contribution of factors to variance are presented in Table 1.

Table 1

Exploratory Factor Analysis Results of Administrational Spitefulness Scale

Item No	Factor Load Values	Item-Total Correlations
Distributes the most difficult duties to workers	.72	.72
Tries to find mistakes of workers who he thinks did wrong	.83	.82
Never forgets criticism against himself	.74	.73
Applies organizational procedures differently whether the person is close to him or not	.79	.78
Tends to exaggerate even the slightest criticisms	.82	.81
Looks for the opportunity to overawe the people who criticize him	.87	.86
He loads more duties to people he does not like	.79	.77
Does not promote workers he does not like even if they deserve	.84	.82

Table 1 Continue

Item No	Factor Load Values	Item-Total Correlations
Never forgives negative behaviors against him	.82	.81
When he has the opportunity, tries to put people he has problems with in a difficult situation	.82	.80
Excludes workers he does not like	.85	.84
He puts a distance to the people who criticize him even when positive	.84	.82
His anger against people he thinks did wrong goes on for a long time	.81	.79
Makes the duties harder for workers he has problems with	.86	.84
Tries to embarrass workers he does not like in public	.84	.82
Talks about the person he has problems to other workers	.78	.76
Puts the complaints about people he has problems with in process immediately	.81	.79
Puts pressure on workers he has problems with	.86	.85
Tends to punish workers he has problems with	.84	.82
Avoids expectations of workers he does not like even when they are rightful	.81	.79
Prevents workers he does not want to benefit from opportunities of the organization	.82	.80
Tries to suppress the worker he does not like by comparing to other workers	.88	.87
Keeps his distance with the worker he does not like	.79	.77
Brings the mistakes of people he does not like into agenda in every situation	.87	.85
His revenge feeling is strong against the workers who do not approve of his thoughts	.85	.83
Avoids personal rights of workers he does not like	.79	.77
Total variance explained: 67.71		

Having a factor load value 0.40 or above is considered as a good criterion. According to Buyukozturk (2012) if there is a set formed by items giving high level of relation with a factor, this finding suggest that those items together assess a concept-structure. As Table 1 presents factor loads of items under a factor were mostly over .50. in the first factor, factor loads changed between .87 and .72.

As for the reliability analysis of "Administrational Spitefulness Scale", internal consistency coefficient values of the scale total were examined. In the calculation of internal consistency coefficients, first Cronbach Alpha, calculated based on the variance of each item, and then Guttman and Spearman Brown method based on

splitting the scale into two halves were used. The mentioned values are presented in Table 2.

Table 2

Internal Consistency Coefficients Related to Reliability of Total and Subdimensions of Administrational Spitefulness Scale

Scales	Cronbach's Alpha	Guttman Split Half	Spearman Brown
Scale Total	,98	,95	,95

The results related to reliability of "Administrational Spitefulness Scale" ranged between .98 maximum and .95 minimum. As the results were over .70, it could be said that the scale had a high reliability. In order for the scale to be completely reliable and valid, it is not sufficient to check only scale totals. At the same time, each item in the scale should be valid and reliable. With this purpose, each item value should be in statistically significant relations with test total points. These values are accepted as validity and reliability coefficients for the items. The mentioned analyses were held as part of this study and the results were presented in Exploratory Factor Analysis Table. Items 6 and 22 presented the highest correlations in the test total (.86 $p<.001$; .87, $p<,001$). The correlation calculated between item 1 and the test total was the lowest with .70 however, this value was significant in .001 level. The obtained results revealed that perceived "Administrational Spitefulness Scale" had both item and total validity and reliability.

The Results of Confirmatory Factor Analysis

As a result of confirmatory factor analysis path diagram and goodness of fit criteria were gained, and these findings were interpreted. Findings related to confirmatory factor analysis (CFA) concerning the tested model for model fit of "Administrational Spitefulness Scale" are presented in Figure 2.

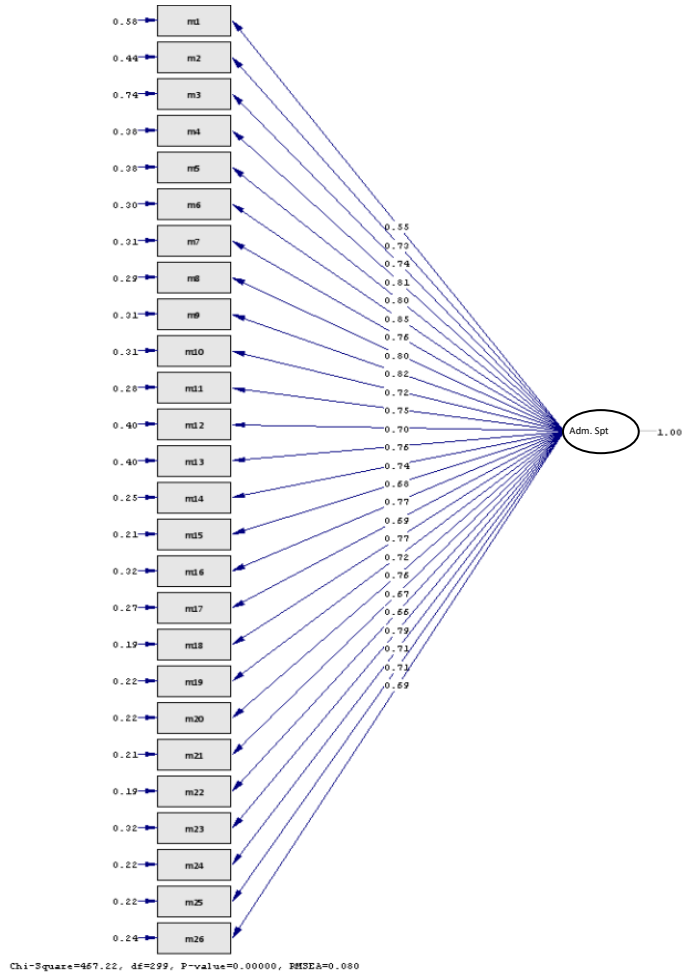

Figure 2. *Path diagram related to Administrational Spitefulness Scale*

For the models to be confirmed as a result of the data analysis χ2/df, RMSEA and CFI, GFI, AGFI, SRMR and NNFI were used as statistical fit criteria, and are presented in Table 2.

Table 3

Good Fit Values Gained as a Result of Confirmatory Factor Analysis

Scale	*ϰ2*	*df*	*ϰ2/df*	*p*	*AGFI*	*GFI*	*CFI*	*NNFI*	*SRMR*	*RMSEA*
	519.71	*299*	*1.78*	*.000*	*.89*	*.90*	*.98*	*.99*	*.04*	*.08*

As a result of confirmatory factor analysis, the rate of Chi-square value to degree of freedom was (ϰ2/df). The acceptable value for this rate should be ϰ2/df ≤ 5 (Kline,

2005). When the analyses are considered, this value was found to be below the determined breakpoint. When RMSEA, one of the fit criteria, 0.08 value was obtained. If RMSAE is below 0.05 it points to perfect fit and below 0.08 points to good fit (Jöreskob & Sörbom, 1993), and below 0.10 points to weak fit. In this case, the obtained fit index indicated an acceptable fit between data and the model. When other fit indexes (AGFI, GFI, NFI ve SRMR) were examined, obtained values found to be at acceptable level. Fit indexes presented in Figure 2 and Table 2 reveal that the observed data showed a good fit with dimensioned model.

The Results of Implementation Study

Administrational Spitefulness Scale was implemented to a sample group consisting of 345 teachers, and collected data were analyzed in terms of gender, marital status, seniority, school type and branch variables. Points the participants obtained from the scale total related to their perceptions of managers' spitefulness are presented in Table 4.

Table 4

Administrational Spitefulness Scale Total Results Related to Teachers' Opinions

Administrational Spitefulness Scale	N	Minimum	Maximum	$\bar{X}$	SD
Total	345	1.00	5.00	2.44	0.77

According to Table 4, the scale value of manager spitefulness levels ($\bar{X} = 2.44$) that participant teachers perceive was at "rarely" level. This result pinpoints that the spitefulness levels of managers are low according to teacher perceptions.

In order to examine the administrational spitefulness perceptions of teachers according to gender and marital status, independent samples t-test was applied, and results are presented in Table 5.

Table 5

T-Test Results Related to Administrational Spitefulness Perceptions of Teachers according to Gender and Marital Status

Variable	Group	N	$\bar{X}$	SD	df	t	p
Gender	Female	194	2.48	.80	34	1.08	.28
	Male	151	2.39	.74			
Marital Status	Married	270	2.39	.74	34	2.28	.02*
	Single	75	2.63	.88			

* p<,05

No significant difference was found for participant teachers' administrational spitefulness perceptions between genders [$t_{(343)}$=1.082, p> .05]. In the study where spitefulness behaviors of managers were examined, it was determined that male and female teachers had similar opinions and they presented spiteful behaviors of their managers rarely. When marital status variable was considered, a significant

difference was detected among administrational spitefulness perceptions of teachers [$t_{(343)}$=2.283, p< .05]. In the study, it was found that single teachers perceived managers showed spiteful behaviors more when compared to married teachers.

ANOVA results related to whether the administrational spitefulness perceptions of participant teachers differed significantly in terms of seniority variable are presented in Table 6.

Table 6

ANOVA results related to Administrational Spitefulness Perceptions of Teachers According to Seniority Variable

Variable	Grup	N	X̄	SD	Sum of Squares	df	Mean Square	F	p
Seniority	1-10	124	2.46	.78	692,58	2	346,29	.84	.42
	11-20	140	2.49	.74	139599,36	342	408,18		
	21-+	81	2.35	.81	140291,95	344			
	Total	345	2.44	.77					
School Type	Pre-school (1)	49	2.43	.79	3364,06	3	1121,35	2.79	.04*
	Primary (2)	129	2.41	.80	136927,88	341	401,54		
	Secondary (3)	90	2.31	.67	140291,95	344			3-4
	Highschool(4)	77	2.65	.80					
	Total	345	2.44	.77					
Branch	Preschool	43	2.49	.87	566,10	2	283,05	.69	.50
	Class teacher	159	2.39	.76	139725,85	342	408,55		
	Branch Teacher.	143	2.49	.77	140291,95	344			
	Total	345	2.44	.77					

*p<.05

No significant difference was detected among teachers' administrational spitefulness perceptions according to seniority [$F_{(3-342)}$=.42, p> .05] and branch [$F_{(3-342)}$=.50, p> .05] variables (p> .05). In the study, where the spitefulness levels of managers were examined, teachers who were from various seniorities and branches carried similar opinions and had the perception that managers presented spiteful behaviors, rarely.

There was a significant difference among the participant teachers' perceptions of administrational spitefulness according to school type variable [$F_{(3-341)}$=2.79, p<.05]. In order to identify the difference between paired groups, Scheffe test was used among post-hoc techniques due to homogeneity of the variances. Analyses put forward that there was a significant difference between secondary school and high school teachers' perceptions of administrational spitefulness. High school teachers had higher levels of administrational spitefulness perceptions.

Discussion, Conclusion and Recommendations

In this study, "Administrational Spitefulness Scale" which measures perceived administrational spitefulness by workers was developed, and validity and reliability calculations of the scale were made. Moreover, the scale was implemented on teachers working in various educational settings.

When the relevant literature was investigated no relevant scales measuring spiteful behaviors of managers were found. With this aim, perceived "Administrational Spitefulness Scale" consisting of 26 items was prepared. The scale was implemented on 300 participants for Exploratory Factor Analysis (EFA) in the first phase, then in the second phase the scale was implemented on 543 participants for Confirmatory Factor Analysis (CFA), and analyses were held on the collected data. As for the validity of the scale, construct validity was examined first. In terms of exploratory factor analysis, after maximum variability analysis made over 26 items of the scale, it was observed that the scale had one dimension with an eigenvalue over 1. Total variance rate that the scale explained was 67.71. When the literature is examined, it is seen that there are various opinions on the value of the total variance explained by a scale. While Buyukozturk (2012) thinks the total variance explained in multi factor designs over 30% is sufficient, Stevens (1996) indicates that the total variance rate explained in a scale should be over 75%. In application and especially in social sciences, it is very difficult to reach at 75%. However, it is a generally accepted view that explained total variance rate should be 0ver 50% (Çokluk, Sekercioglu & Buyukozturk, 2012; Hooper, 2012). In this respect, the contribution that the scale which is formed by one dimension to the total variance (67.71%) is sufficient.

According to confirmatory factor analysis, the items of the scale formed a meaningful structure under single factor, and standard factor loads were .55 and over. As a result of confirmatory factor analysis, path diagram and good fit measures were gathered, and these findings were interpreted. For the model to be confirmed as a result of data analysis $\chi 2/df$, RMSEA ve CFI, GFI, AGFI, SRMR ve NNFI were used as statistical fit measures. The analysis revealed that $\chi 2/df$ value was below determined breakpoint. According to this result, the scale was determined to have a good fit. In the analyses, one of the fit indices RMSEA value was obtained as 0.08 which is good fit. This result also pinpointed that there is an acceptable fit between fit indices and the model. Other fit indices (AGFI, GFI, NFI ve SRMR) also had an acceptable fit. The internal consistency for total and subdimensions of the scale were determined by Cronbach's Alpha which depends on each item's variances, and Guttman and Spearman Brown analysis which depends on splitting the scale items into two. As a result, Cronbach's Alpha value for total points of the scale was .98, Guttman value was .95, and Spearman Brown value was .95. Since all these results were over .70, the scale had high reliability. Obtained results revealed that "Administrational Spitefulness Scale" is a valid and reliable measurement tool.

The result of implementation study revealed that teachers' perceived spitefulness level was low. Although teacher perceptions related to administrational spitefulness did not differ according to gender, seniority and branch, they differed according to marital status and school type variables. Because there was no research directly related to administrational spitefulness, there was not an opportunity to compare the results of the relevant study. Among the reasons why single teachers had higher administrational spitefulness perceptions, managers' desire to load more responsibilities to single teachers because they have less responsibilities related to home, family and child/children, their demand related to jobs and duties, and getting no reaction to these demands could be counted. It is thought that these rejection and disapproval behaviors cause managers to be spiteful against single teachers.

A significant difference was also detected among teachers' perceptions related to administrational spitefulness according to school type. According to scale total points, pre-school education, primary school and secondary school teachers' perception of administrational spitefulness was at 'rarely' level whereas high school teachers' perception was at 'sometimes' level. The reason why the spitefulness perception was high for teachers working at these schools might be because there are more branch varieties, and teachers are obliged to be at school every day. Moreover, because the number of teachers is high at these schools when compared to other school types, the relations might be at a very official level. It is thought that an open and healthy relation has a very important function in the existence of spitefulness behaviors.

Even though there are not many studies in the literature related to spitefulness that could be observed in interpersonal relations, some related studies could be found (Goksu, 2018; Marcus et. al. 2014; Yilmaz, 2019). Most of these studies were at self-evaluation level, namely they tended to determine people's spitefulness levels. In this respect, although they had no direct relation to the relevant study, some study results are presented. Whisman and Freidman (1998), in their study related to nonfunctional attitudes in problem behaviors in interpersonal relations, determined that males have higher means in "spitefulness" and "coldness" subdimensions when compared to females. Some other researchers, on the other hand, found that females are more spiteful than males (Rapoport & Chammah, 1965: cited in Baron & Hoffman, 1996). Kanter (1977, 1979) claimed that lower level female managers present rude and insulting behaviors against their subordinates, and have possibilities to have grumpy, threatening and

spiteful behaviors when they are not successful in bargaining. In a study by Marcus et al. (2014), on the other hand, it was specified that males have more tendency to spiteful behaviors when compared to females, and young people are less spiteful when compared to older people. Doucet, Jehn, Weldon, Chen and Wang (2009) determined in their study that American and Chinese managers have important differences in their conflict behavior. Authors identified that Chinese managers adopt making their colleagues embarrassed and give them moral lessons as a method in conflict management whereas American managers either show emotional, cool and cooperative behaviors or hostile and spiteful behaviors depending on the extent of the workers reactions. Marcus et al. (2014) claimed in their study that features as disrespect, Machiavellism, low self-esteem, hostility and not feeling ashamed of guilt are higher in people who have a tendency to spiteful behaviors. Yılmaz (2019) held a study to determine cases according to some demographic variables by adapting spitefulness scale developed by Marcus et al. (2014). It was specified in the study that high school graduates are more spiteful than higher education graduates, single participants than married ones and young people than old people (Yılmaz 2019). Moreover, Goksu (2018) specified in their study that the points male students got from spitefulness mood scale were higher when compared to female students.

This study was implemented on teachers who worked at different education levels. The results could only be generalized for Samsun province. This scale was developed for work life and focused on managers' spitefulness behaviors. Naturally, it is limited to revealing spitefulness behaviors among workers. Although the fields where the scale could be used are extensive, it could only be implemented on workers and determine their perceptions of managers' spitefulness. In this respect, the scale could be used in other private or state institutions as well. Moreover, various studies could be held by relating it with other behaviors, attitudes and tendencies which are in organization and management field and field of interest of organizational behavior.

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Öğretmenlerin Okul Yöneticilerinin Kindarlık Davranışlarına İlişkin Algıları

Atıf:

Elma, C. (2019). Öğretmenlerin okul yöneticilerinin kindarlık davranışlarına ilişkin algıları. *Eurasian Journal of Educational Research*, 83, 57-80, DOI: 10.14689/ejer.2019.83.3

Özet

Problem Durumu: Örgütlerin varlığını sürdürmesi, kuruluş amaçlarına ulaşma derecesine bağlıdır. Örgütün amaç ve hedeflerine ulaşması da sahip olduğu insangücü kaynağının niteliğinden büyük ölçüde etkilenir. Örgütün insangücü kaynağını oluşturan yönetici ve çalışanların bilişsel, devinişsel, törel ve duyuşsal nitelikleri temel belirleyici bileşendir. Günümüz yönetim anlayışı insanı, özelde de çalışanı bir bütün olarak görmeyi gerektirir. Çalışanı sadece bilişsel ve devinişsel yönleriyle ele almak, değerlendirmek yeterli değildir. Fineman'nın (2003) da belirttiği gibi çalışanlar aynı zamanda duygusal varlıklardır ve bu da bir örgütün duygusal yönünü oluşturur. Bu bağlamda işin duygusal yapısını ve çalışanların duygusal durumlarını anlamak da herhangi bir örgüt için hayati önemdedir. Örgütlerde insanları duygusal bir varlık olarak görmek, insan ilişkilerinde ne aklı yadsımak ne de rasyonalitenin önemini küçümsemektir (Yiannis, 2005). Yönetimle ilgili alanyazın incelendiğinde, yapılan çalışmaların çok azının yöneticiler ve çalışanlar arasındaki etkileşimde duyguların önemine dikkat çekmektedir

(Hill, 2003; Watson & Harris, 1999). Bununla birlikte 1990'lı yıllardan itibaren, duyguların rolü, işlevi ve önemi ile ilgili olarak akademik ilgide önemli bir artış olmuştur (Sieben & Wettergren, 2010). Her ne kadar yöneticilikte duyguların, duygusal zekânın, duygu yönetiminin önemine ilişkin son yıllarda yapılan çalışmalar bu açığı kapatacak ölçüde olsa da halen yöneten ve yönetilen arasındaki ilişkide daha karmaşık nitelik olan düşmanlık, saldırganlık, intikam, kindarlık gibi konuların yeterince tartışıldığını söylemek güçtür. Bu tür olgulara ağırlıklı olarak psikoloji, psikiyatri ve psikoterapi alanyazınında daha fazla yer verilmiştir. Bu çalışmada örgütsel yaşam açısından etkileri sıklıkla görülen, ast-üst ilişkilerini olumsuz biçimde etkileyen ancak yeterli kadar üzerinde durulmayan kindarlıkla ilgili bir ölçeğin geliştirilmesi ve uygulamasına yer verilmiştir.

Araştırmanın Amacı: Bu çalışmanın genel amacı, yöneticilerin kindarlık davranışlarını ölçebilecek geçerli ve güvenilir bir ölçme aracı geliştirmek ve öğretmenlerin yönetsel kindarlığa ilişkin algılarını belirlemektir. Bu genel amaç doğrultusunda aşağıdaki sorulara yanıt aranmıştır:

1. Yönetsel kindarlık ölçeğinin geçerlik ve güvenilirliği ne düzeydedir?
2. Öğretmenlerin yönetsel kindarlık ile ilgili algıları ne düzeydedir?
3. Öğretmenlerin yönetsel kindarlık ile ilgili algıları cinsiyet, medeni durum, kıdem, branş ve okul türü değişkenlerine göre farklılaşmakta mıdır?

Araştırmanın Yöntemi: Yönetsel Kindarlık Ölçeği'nin geliştirilmesini ve uygulanmasını amaçlayan bu çalışma; tarama türü araştırma modeliyle gerçekleştirilmiştir. Bu araştırmanın evrenini 2018-2019 öğretim yılı Samsun ilinde bulunan okulöncesi eğitim, ilköğretim ve ortaöğretim kurumlarında görev yapan öğretmenler oluşturmaktadır. Araştırma için üç ayrı çalışma grubu belirlenmiştir. Araştırmanın yapı geçerliğinin sınanması amacıyla yapılan Açımlayıcı Faktör Analizi için ilkin Samsun merkez ilçeleri olan İlkadım, Atakum, Canik ve Tekkeköy ilçelerinde görev yapan 300 öğretmen, Doğrulayıcı Faktör Analizi için Çarşamba, Bafra ve Vezirköprü ilçelerinde görev yapan 543 öğretmen dâhil edilmiştir. Ölçeğin uygulama çalışması için de 345 öğretmenden oluşan çalışma grubuna ulaşılmıştır.

Yönetsel Kindarlık Ölçeğinin geliştirilmesi, geçerlik ve güvenirliğinin saptanmasını ve uygulanmasını amaçlayan bu çalışmada, demografik bilgileri içeren (cinsiyet, medeni durum, kıdem, okul türü, branş) bilgi formu ile "Yönetsel Kindarlık Ölçeği" veri toplama araçları olarak kullanılmıştır. Araştırma verilerinin analizinde ilkin Varimax Rotated

yöntemi ile Açımlayıcı Faktör Analizi işlemi gerçekleştirilmiştir. Ölçeğin faktörlü bir yapı sergileyip sergilemediğinin belirlenmesinde, açıklanan toplam varyans yüzdesi ve Scree Plot grafiği temel alınmış ve ölçek maddelerin faktör yükleri, madde-toplam korelasyon katsayıları hesaplanmıştır. Ayrıca test toplamındaki her bir maddenin madde-toplam korelasyonları da hesaplanmıştır. Açımlayıcı faktör analizinin sağlıklı sonuçlar vermesi üzerine Doğrulayıcı faktör analizi işlemi yapılmıştır. Araştırmanın ikinci aşamasında ölçeğin güvenirlik analizleri gerçekleştirilmiştir. Uygulama verilerinin analizin de ise aritmetik ortalama, standart sapma, t-testi ve tek yönlü varyans teknikleri kullanılmıştır. Araştırmanın analizinde SPSS ve LİSREL programları kullanılmıştır.

Araştırmanın Bulguları: Açımlayıcı faktör analizi kapsamında, ölçeğin 26 madde üzerinden yapılan maksimum değişkenlik analizinden sonra ölçeğin özdeğeri 1'in üstünde olan tek boyuttan oluştuğu anlaşılmıştır. Tek boyuttan oluşan ölçeğin açıkladığı toplam varyans oranı ise 67,716 olmuştur. Doğrulayıcı faktör analizi sonuçlarına göre ölçek maddelerin tek faktör altında anlamlı bir yapı oluşturduğu ve standart faktör yük değerlerinin .55 ve üzerinde olduğu görülmüştür. Doğrulayıcı Faktör Analizi sonucunda path diyagramı, uyum iyiliği ölçütleri elde edilmiş ve bu bulgular yorumlanmıştır. Verilerin analizi sonucunda doğrulanmaya çalışılan model için $\chi 2/df$, RMSEA ve CFI, GFI, AGFI, SRMR ve NNFI istatistiksel uyum ölçütleri olarak kullanılmıştır. Yapılan analiz sonucunda $\chi 2/df$ değerinin belirtilen kesme noktasının altında olduğu ($א 2/df=1,78$) belirlenmiştir. Bu açıdan modelin iyi uyum gösterdiği saptanmıştır. Analizde uyum indekslerinden biri olan RMSEA iyi olarak kabul edilen 0,08 değeri elde edilmiştir. Bu sonuç da elde edilen uyum indeksi verileriyle model arasında kabul edilebilir bir uyum olduğunu göstermektedir. Diğer uyum indekslerinden (AGFI, GFI, NFI ve SRMR) elde edilen değerler de kabul edilebilir düzeydedir.

Araştırmanın Sonuç ve Önerileri: Geliştirilen ölçeğin uygulanması sonucunda öğretmenlerin algıladıkları yönetici kindarlık düzeyinin düşük olduğu belirlenmiştir. Yönetsel kindarlığa ilişkin öğretmen algıları, cinsiyet, kıdem ve branş değişkenine göre farklılık göstermez iken, medeni durum ve okul türü değişkenleri açısından farklılık bulunmuştur. Yönetsel kindarlığa ilişkin doğrudan araştırmalar olmaması nedeniyle karşılaştırma yapma olanağı bulunamamıştır. Bekâr öğretmenlerin yönetici kindarlığı algısının daha yüksek oluşunun nedenleri arasında ev, aile, çocuk/çocuklarla ilgili

sorumluluklarının azlığı dolayısıyla yöneticilerin bekâr öğretmenlere daha fazla sorumluluk yüklemek istemesi, iş ve görevlerle ilgili talepte bulunması ve bu taleplerin karşılık bulmaması sayılabilir. Bu reddedilme, kabul etmeme davranışlarının yöneticilerde kindarlığa yolaçtığı düşünülmektedir.

Okul türü değişkenine göre öğretmenlerin yönetsel kindarlığa ilişkin algıları arasında da anlamlı farklılık bulunmuştur. Ölçek toplam puanlarına göre okulöncesi eğitim, ilkokul ve ortaokul öğretmenleri yönetsel kindarlığı nadiren, ortaöğretim kurumlarında öğretmenler ise bazen düzeyinde algıya sahiptir. Bu okullarda görev yapan öğretmenlerin kindarlık algısının yüksek olması; ortaöğretim kurumlarının işleyişine, branş çeşitliliğinin fazla olmasına, öğretmenlerin her gün okulda bulunma zorunluluğunun olmamasına dayandırılabilir. Ayrıca bu okullarda görev yapan ortalama öğretmen sayısının diğer okul türlerine göre daha fazla olması ilişkilerin daha resmi düzeyde kalmasına neden olabilmektedir. Açık ve sağlıklı bir iletişim, kindarlığa neden olabilecek durumların ortaya çıkmasında önemli işleve sahip olduğu düşünülmektedir.

Bu çalışma, farklı eğitim kademelerinde görev yapan öğretmenler üzerinde gerçekleştirilmiştir. Bu ölçek, iş yaşamına yönelik olarak geliştirilmiş olan ve yöneticilerin kindarlık davranışlarına odaklanan bir ölçektir. Doğal olarak çalışanlar arasındaki kindarlık davranışlarını ortaya koymada sınırlıdır. Ölçeğin kullanılabileceği alanlar geniş olmakla birlikte, sadece çalışanlara uygulanıp, onların algıladıkları yönetici kindarlığını belirlemede kullanılabilir. Bu bağlamda ölçek, diğer özel ya da kamu kurum ve kuruluşlarında da uygulanabilir. Ayrıca örgüt ve yönetim alanında yer alan ve ağırlıklı olarak da örgütsel davranışın ilgi alanı olan diğer davranış, tutum ve eğilimlerle ilişkilendirilerek farklı çalışmalar yapılabilir.

Anahtar Sözcükler: Kindarlık, yönetsel kindarlık, geçerlik, güvenirlik, öğretmen.

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Becoming a Teacher Educator: Journey of a Primary School Teacher*

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ABSTRACT

Purpose: After graduating from the faculties of education in Turkey, some of the teachers start working gravitate towards graduate education. Within or at the end of the process, these teachers start working as teacher educators at universities by finding positions or at least try to accomplish that. We do not have considerable knowledge of what these individuals experience in the process of transition from being a teacher to being a teacher educator. In this study, an attempt was made to examine the experiences of a primary school teacher who began doing graduate education while he was teaching at a public school and subsequently became a teacher educator at a university. With these experiences, we aimed to understand the dynamics of similar individuals in Turkey

Research Methods: This study was designed as - narrative research. Data were obtained through semi-structured interviews with a research assistant who had transitioned from being a primary teacher to being a teacher educator and continued his doctoral studies. In the analysis of interview data, narrative analysis was used.

Findings: The findings showed that it can be argued that the perception of teaching in society, the cultures of national schools, economic and socio-cultural factors are effective in teacher's transition to university. Public schools, with their existing cultures and regulations, are unable to respond to the graduate education demands of teachers who work within the schools. This situation causes teachers who receive graduate education to move away from national public schools.

Implications for research and practice: Move away from national public schools can be prevented by removing obstacles of the teachers' graduate education. In the process of educating teacher educators, the quality of teacher education can be increased by attaching importance to field experience.

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Introduction

Although teacher education is a commonly-studied subject, it can be said that the subject of educating teacher educators is often omitted, which remained under-researched. Murray and Male (2005) have stated that even though a lot has been said about teacher education, not much has been reported concerning teacher educators themselves. Concordantly, it can be argued that there is little research on the process of transition from the profession of teaching to teacher education. Dinkelman, Margolis and Sikkenga (2006) have stated that there is no theory that accounts for the professional development of teacher educators who are in transition into teacher education from the profession of teaching. The current studies in the literature discuss the transition to teacher education in the context of educating teacher educations. Mayer, Mitchell, Santoro and White (2011) have stated that recently a small but growing literature has started to emerge about the profession of teacher educators, the path to become teacher educators, and the need to understand teacher educators' experiences, objectives and career goals in the process.

After graduating from the faculties of education in Turkey, some of the teachers start working gravitate towards graduate education. Within or at the end of the process, these teachers start working as teacher educators at universities by finding positions or at least try to accomplish that. We should note that we do not have much knowledge of what these individuals experience in the process of transition from being a teacher to being a teacher educator. In this study, an attempt was made to shed light on the process of transition from being a teacher to being a teacher educator through the story of a primary school teacher who had managed to become a teacher educator in Turkey. With this story, we aimed to understand why and how similar individuals who transitioned from being teachers to teacher educators in Turkey entered this path, their expectations, and their experiences related to the process. Towards an understanding of these experiences, it will be worth providing general information about teacher education, being a teacher, educating teacher educators in Turkey and to elucidate the current situation.

Teaching in Turkey

Teacher education in Turkey is carried out through the faculties of education. Selection of students to faculties of education, as in other faculties, is carried out through a central examination administered by the Student Selection and Placement Center (SSPC) and by considering high school grade point averages. Since 2017, for students to be admitted to faculties of education, it has been required that students are within the first 240 thousand students in the central examination (Hacettepe University Faculty of Education [HUFoE], 2017). According to the data of the Council of Higher Education (CoHE, 2019), a total of 94 faculties of education, including 78 in public universities and 16 in foundation universities in Turkey, educate teachers in different fields.

Students who are admitted to faculties of education and successfully complete their undergraduate education are eligible to become teachers. In Turkey, certificates of teaching have been granted to graduates of certain departments of some faculties

other than faculties of education from time to time through different applications, using Pedagogical Education Programs for Teachers. The candidates who are granted the certificate to teach are appointed as teachers according to the central appointment exam and interview results administered by the SSPC.

When the profiles of the individuals who prefer the teaching profession in Turkey are examined, the following characteristics emerge. Although the individuals who prefer to be teachers come from families with low socio-economic level, their parents are largely primary school graduates. Two of the variables that are most effective in candidates' preference for the profession are the comfort of working conditions and candidates' scores on the university entrance exam. The least effective variables in candidates' preference for the profession are the desire to be with children and the prestige of the profession. More than half of them who prefer the teaching profession prefer it because they cannot score enough points to be admitted to the department they desire. The majority of them who prefer the profession consist of graduates of general high schools and teacher high schools. Given that teacher high school graduates (teacher high schools were shut down in 2014) are granted, an additional point in the university entrance exam is effective in their decision to prefer the profession. One of the biggest concerns of preservice teachers about the profession is failing to be appointed after graduation (Aksu, Demir, Daloglu, Yildirim & Kiraz, 2010; Eret Orhan & Ok, 2014; Ok & Onkol, 2007; Ozsoy, Ozsoy, Ozkara & Memis, 2010).

The report titled Teaching Profession in the Eyes of Teachers presents important data regarding the teaching profession in Turkey (TEDMEM, 2014). According to the report, teachers in Turkey think that the prestige and image of the profession is worn to the extent that cannot be repaired; as the time they spent in the profession increases, their beliefs in the prestige of the profession decrease; the society is not sensitive to the problems teachers experience; and the society treats them as educated babysitters. However, teachers express that the profession is regarded to be ideal by society, not because of the prestige of the profession, but because of the working hours and holiday times. Of the teachers who participated in the study, 75% did not want their children to be teachers. The number of teachers in public and private schools affiliated with the Ministry of National Education [MoNE] in Turkey is 1 million 30 thousand 130 (MoNE, 2018). According to the data from 2017, 49.3% of teachers are under 35 years old, 41.5% are between 36 and 50 years old, and 9.2% are over the age of 50 (MoNE, 2017). According to the MoNE data from 2015, 0.1% of the teachers in Turkey have a PhD degree, and 7.7% have master's degree (HUFoE, 2017).

Education of Teacher Educators in Turkey

Unfortunately, no special requirement is sought about the teaching profession to employ educators in faculties, who educate preservice teachers in Turkey. For example, academic staff to be employed in faculties of education are expected to have a master's degree to be a lecturer (sometimes to have experience only, rather than a master's degree), and a doctoral degree to be a faculty member. However, there are no criteria like "the master's degree should be in educational sciences or teacher

education" for graduate education as reported earlier. What is more, the academic staff to be employed is not required to have teaching experience.

Apart from the above-mentioned situation, the stages that are completed by a teacher educator — who is a graduate of a faculty of education and will complete a master's and doctoral degree in the relevant field — can be summarized as follows: A teacher graduating from a faculty of education can continue his master's and doctoral education while continuing to teach in public or private institutions. Because receiving an education is not considered an excuse for appointment in a different public school, teachers who go to a university at a place that is different from the province where they work can experience difficulties concerning round-trip travel. Even the teachers who continue their education in the same province may have trouble attending graduate courses. Some school administrations do not lean towards giving these teachers permission. Even if this problem is resolved, teachers' current course loads can make it impossible to continue graduate courses. In the study of Toprak and Tasgin (2017), teachers have stated that one of the most important factors that influence them not to receive a graduate education is that they are unable to get the schedule of their courses adjusted in public schools. Teachers may be exhausted in this process due to the aforementioned circumstances. However, teachers who cannot get involved in the university environment cannot establish robust academic relations (academic network), and due to their current employment status, they can have difficulties in finding jobs in universities after doctoral education. Another way to become a teacher educator is to work in a suitable staff position at the university during the graduate education process or to be sent abroad as a beneficiary student with a scholarship from the state for graduate education. Those who continue their graduate education or are sent abroad as a beneficiary student sponsored by the state while working as a research assistant at the university are able to complete the process relatively more comfortably, but they transfer into teacher education while lacking experience in the teaching profession.

It is thought that the factors that cause teachers — who are to become teacher educators in Turkey — to prefer this profession and their experiences regarding the process are important. Thus, in this study, we aimed to investigate the experiences of a teacher who was on a path to becoming a teacher educator. These experiences provide important clues on the processes of how the participant became a teacher educator concerning how he began his graduate studies, his process of transition to university and what he experienced after the transition.

In this study, we aimed to investigate the process of transition from being a teacher to being a teacher educator. This research study set out to examine a primary school teacher's process of becoming a teacher educator with his own story. To this end, answers to the following questions were sought.

1. How did the teacher's decision to become a teacher educator develop?

2. What are the teacher's experiences in the process of becoming a teacher educator?

3. What are the opinions of the teacher concerning the fulfillment of his expectations as the outcome of the process?

Method

Research Design

This study was designed as narrative research. Pinnegar and Daynes (2006) have described the narrative research as a study describing a series of events explaining human experiences and told that the narrative begins with experiences that have been embodied in the stories of individuals. Creswell (2007) have expressed that narrative research consists of the stages of data collection through the individual's stories, reporting the experiences of individuals, and organizing the meaningful experiences chronologically. In this study, we aimed to shed light on the experiences of a teacher about his transition from being a teacher to being a teacher educator by discussing the teacher's experiences of becoming a teacher educator in chronological order through his own narratives. According to Creswell (2007), narrative research is the best method to capture the lived experiences of one or a few individuals. In this respect, this study was designed as narrative research. In this research study, the approaches proposed by Clandinin and Connelly (2000), Creswell (2007) and Creswell (2012) on the conduct of narrative research were considered.

Participant

The participant, who had a bachelor's degree in physics education, taught at a private teaching institution for a while before starting to teach at a public school. He started his teaching duties as an elementary school teacher in multigrade classes and as an administrator at the same school in the village of a province in the southeast region. The participant began a search for a better career as he thought that the reasons, for example, the following situations did not satisfy him: the processes in public civil service were uniform, salaries were low, and teaching had a poor social status. For bureaucratic, economic and sociological reasons, the participant, wanted to quit teaching and set out on a path to become a teacher educator. Approximately six years after he started teaching, he began his graduate studies at the age of 30, married during his graduate studies and had a child. The participant graduated from the undergraduate program in 2001 and started teaching at a public school affiliated with the MoNE in 2002. He completed his master's degree between 2007 and 2010 while he was teaching. He ended his nine years of teaching life in 2011 and began to work as a research assistant at a university. After two years of waiting for the department to establish a doctoral program, he started his doctoral studies in 2012 and completed his doctorate in 2017. The participant who was waiting for the faculty position to be available at the time of the last meeting was assigned to the faculty member position after a year of finishing his doctoral studies.

The participant thought that teacher educators must have teaching experience. He claimed that the best students who graduated from faculties of education became teacher educators without gaining field experience and that institutes of educational sciences educated educational scientists/researchers but not teacher educators.

Moreover, the participant advocated that students of faculties of education could not be taught teacher qualifications. He thought that the factors that caused this were the current student profile and the quality of undergraduate education.

Data Collection and Analysis

In this study, data were obtained using three consecutive semi-structured interviews with a research assistant who had transitioned from being a teacher to being a teacher educator and continued his doctoral studies. After the interviews were recorded using a voice recorder, the interviews were transcribed along with the field notes taken during the interview. After each interview, analyses were carried out, notes were taken about the uncovered points, and the next interview was conducted according to these analyses. Creswell (2007) has stated that in interviews, the participant's narrative will not be in chronological order and that the researcher should establish a causal connection between ideas in the process of restoring. In this study, the narrative of the participant was addressed and storied within the scope of the pattern of "personal and social interaction, continuity (time), and event" in the framework of the 3-dimensional narrative research space introduced by Clandinin and Connelly (2000). Fiction was created by adhering to the three dimensions mentioned in the process of storing. During the analyses for confirmation of the accuracy and suitability of the storing that was carried out, many interviews — independent of the actual interviews — were conducted for confirmation, and the participant's approval was obtained. Five themes were created as a result of the analyses as follows: (1) Deciding on the postgraduate education, (2) Transition to university: Causes, (3) The purgatory, (4) Doing PhD: Twisted roads, and (5) The thing at the end of the tunnel: Expectations vs. reality.

Results

Deciding on the Graduate Education

The teacher explained how the idea of doing graduate studies began to sprout during his undergraduate education. At that time, the teacher realized that he was influenced by the academic staff of educational studies who were from outside the field of physics and assigned to teach courses on the teaching profession. This effect also led him to think that he could become a teacher educator. The teacher explained this situation as follows:

> *The process of my decision-making for graduate education has begun during my undergraduate studies. I would say that I was influenced a lot by some of the professors who taught the educational sciences courses and were from outside the field.*

However, he did not consider this idea of becoming a teacher much during his undergraduate studies. Although he was willing to receive education in this regard, he had a lack of knowledge, and his advisor in the science teaching program was not helpful regarding giving him information on graduate education. His advisor also told him that he should teach. All these had led him to postpone doing master's studies. At this point, the teacher stated that he postponed doing master's studies because he had

heard that the graduate education exams in physics had been stricter and that he had had lack of confidence that he would succeed in the science exam. The teacher explained the process of postponing the idea of doing a master's study or working at the academy as follows:

> *While I was a senior student, I applied to APGEEE [Academic Personnel and Graduate Education Entrance Exam]. I went to my advisor and asked, "Can I get my transcript? I got enough points on APGEEE, and I also have a language score." He told me, "Finish your school first. Why are you trying to do this? Go teach as a teacher, which is great, and so forth." He did not correctly calculate my grade point average either. And in fact, he stalled the process in my case for 5–6 years. [...]Another reason why I started my graduate studies so late was the science exams, which were a requirement for admission to the department of physics education. When you take science exams in social sciences, you can say something, but there's a little bit of trouble in sciences like physics and math. The professor can bury you there whenever he wants. I don't know whether it's a little bit of self-confidence problem. I didn't want to take the science exam, so I gradually delayed it.*

The idea of the teacher to continue doing graduate studies after being appointed as a teacher at a public school and gaining experience in teaching was strengthened. Given that teaching was not satisfactory for him anymore and that teachers with lower quality were doing or did graduate studies in his environment was effective in the re-emergence of the thought of conducting graduate studies in the teacher. The teacher explained the reason why he desired to do graduate studies while continuing to teach with his following opinions:

> *I started to work as an elementary school teacher in Mardin. You know, I liked Mardin, but after a while, I started to get bored. The work I did was not satisfactory anymore. Moreover, I was taking APGEEE and language exams from time to time. When I saw that there were people who had lower scores than mine and started doing graduate studies, I realized that I would be bored after the fifth year.*

The teacher, while continuing to teach, met with a teacher named Ahmet *(nickname)* who was doing master's studies, and this meeting became a milestone in the life of the teacher. Later on, as a result of conversations with Ahmet, the teacher applied to a master's program in his field, passed the exam, and started to do his master's studies in physics. Because the teacher was doing master's studies, he asked to be appointed and was appointed as a teacher to the city where the university of his master's program was. In the end, again with the influence of Ahmet, he started to do master's studies in the field of special education, after quitting his master's studies in physics. The teacher explained his views on these issues as follows:

> *Later on, when I was teaching in Mardin, I met a friend, Ahmet. I asked Ahmet, "Where do you work?" He said, "I work in this village, I'm a graduate student. I will ask for reappointment and leave." When Ahmet's process of leaving got prolonged, we naturally started to get closer. Ahmet said, "Why don't you do master's?" I said, "I'm a physics graduate. I'm afraid of science exams. I don't want to feel humiliated." Ahmet said on the phone after arriving here, "X University does not have a science*

> *exam." He sent me the booklets. I applied, with his help, to the Department of Physics at the Institute of Science. I got accepted. [...] The field I'm working in is not science. I am working in educational sciences. When I got here, I met my professor here. It is Ahmet who has led me to decide on my current field of study [gifted education]. This is because Ahmet has got his master's degree in our field, too.*

After the teacher realized his master's goal, he set a new goal. That goal was to be a research assistant at the university. Thus, he would be able to fulfill his dream of becoming a professor at the university, just like the academic staff of educational sciences who taught them during the undergraduate years. After that, the teacher made an effort to be a research assistant. The reasons that were effective in the teacher's desire to transition to university and become a research assistant are discussed in the following subsections.

Transition to University: Causes

The teacher pointed out that the "conflict with the public-school culture", "socio-cultural reasons" and "economic reasons" were effective in his transition to university. These reasons strengthened the idea of obtaining a graduate education in the teacher's mind before and directed the teacher to move in this direction.

Conflict with the Public-School Culture

The teacher attributed to certain reasons why he did not want to work at a school affiliated with MoNE. The teacher stated that he thought that public schools did not have a structure that could motivate their staff, that the efforts of teachers to develop themselves professionally and personally within the schools were not valued, and that this culture made individuals passive. The teacher — who expressed that he could not find common ground with the environment where he was due to the reasons mentioned — also thought that the Ministry of Education had strict regulations. Due to this structure, he experienced conflicts with public schools on the basis of goals. The teacher explained his views on this issue as follows:

> *For one thing, there is no source of motivation in public schools. For another, your work does not have a value. For yet another, you're with a team that you don't have much in common. There is the parent, the test system, the school administration, other teacher colleagues. You know, when you stay among them [...] You know, the system transforms them in such a way that dictates: Freeze, don't move, don't improve yourself, stay where you are! [...] MoNE has certain strict laws. For example, the regulation for chess education says something like this. Maybe it has changed; I don't know right now. Even though I received leadership training from the scouting federation, MoNE says, "No, you can't lead the scout group if you don't get the training offered by my expert tutors." It means nothing to be an expert in that topic. The definition of expert by MoNE is somewhat different. So, I think there were too many conflicts between our [personal] goals in public schools.*

The teacher, additionally, stated that the administrators of public schools do not provide convenience for their teachers concerning graduate education. Because of the intensity of graduate education, the teacher said that he was not able to take care of his

students in the public school, so he did not want to teach too many courses. However, he underlined that this request of him was not taken into consideration by the school where he was working. The teacher stated that his views on this issue were as follows:

> *They [school administrators] are not very helpful in the educational process frankly [...] There was a one-year period when I was very uncomfortable conscientiously. Even though we argued with the school administration, and I said that I'd appreciate it if you didn't assign many courses to me, they assigned the courses to me. I wasn't very comfortable conscientiously.*

Socio-Cultural Reasons

The teacher showed social culture as a reason why he wanted to be in the university because he thought the university would provide a better environment for him and his family in socio-cultural terms. The teacher's views on the subject are given below:

> *[...] the environment where I will enter with my family has significance culturally and socially. My child will begin elementary school; I can come to you and ask you. Or the child has something to do with the computer; I can ask a friend from the computer department. You can't provide this environment in public schools.*

The teacher, however, stated that working at the university was a status indicator and that the teaching profession in public schools was no longer valued. The teacher explained that this was one of the reasons that were effective in his desire to transition to the university:

> *If I work in the university, there is something to it. You know, it makes a difference in the way people look at you. There are times when we witness this personally. Well, there is also this. What you're doing also has a value. Nobody cares about public schools as before.*

However, the teacher stressed that the effect of the status of this transition was very limited. The teacher expressed that it was more important to have a position that would support the process of graduate education and would not interfere with this process. The teacher's views as answers to the question on the subject are given below:

> *- So, did you prefer graduate education to be able to work at the university?*
>
> *+ No, definitely not for that. I came across different positions before, non-academic positions, such as lecturing in the university and specialty, but I did not accept them. The reason was that if you come to the university as a teacher, the permission for your doctoral education has to be given by the university. The institutional chair has to give it. I didn't have much trouble with it, but there were friends who came to the university as teachers and suffered. What matters to me is to become a doctor. I just don't want to get permission from someone else in my educational process. You know, that's what happened to my other friend who took that position. The university didn't let him do his doctoral studies.*

Economic Reasons

Economic factors were also influential in the teacher's wanting to transition from the public school to the university. It can be said that this situation is also related to how the public schools mentioned in the previous sections view graduate education. The teacher had to attend a small number of courses at the public school to continue his graduate education and therefore could not receive additional course wage. As he also had a child during the process, he began to experience economic difficulties. The teacher's views on the subject are given below:

> *There are also financial reasons. You know, I was taking as few courses as I could to do my graduate studies here. The additional courses are a 25% contribution to the salary. I didn't take additional courses throughout my graduate education. I don't want any additional courses. I'm going to go to university instead; I'm going to continue my classes there. I thought, "give the courses to another friend." However, I had a child during this process and that began to tire me financially.*

The Purgatory

The teacher explained what he experienced during the process of both being an educator at the university and being a teacher at the public school, with the start of graduate education. The teacher explained this situation with the concept of "the purgatory" and stated that he neither felt belonging to the public school nor to the university. The teacher explained his being in the purgatory by relating it to the concepts of "delayed studentship", "a new profession" and "a teacher at the public school, a teacher educator at the university."

Delayed Studentship

With the start of graduate education, the teacher stated that he had difficulties in getting used to becoming a student again after a long break. He said that the intensity increased with the courses of the major, and fatigue began. The teacher also thought that he was late for graduate education and that his age was effective on these fatigue problems. Considered in the conditions of Turkey, the 30s as an age range had given the teacher a dilemma of changing the workplace and making a decision to transition to the university. The teacher's views on the subject are given below:

> *After 5-6 years of teaching, it was hard to start being a student again. When I started taking the major courses, the fatigue began. I remember when I didn't sleep for three days. And then, there is the age, you know. I began studying when I was 30 years old or so. My advisor is 3–4 years older than me. In other courses, I had professors who were younger than me.*

A New Profession

The teacher, who previously worked as an elementary school teacher, became a physics teacher in the province — his current province of employment — where the university was after he started his graduate studies. The teacher stated that he graduated from the school as a teacher of physics, but started working as an elementary school teacher. Because of the lack of experience in physics teaching, he

had difficulties in this process on the one hand; and on the other, he was trying to get used to a new city. A new city, a new job, and being a student caused the process to be painful. The teacher's views on the subject are given below.

> *I transitioned to the physics department [to the university] and started doing master's studies. The process was also very painful for me. A new profession, a new city, and you're starting your education again.*

A Teacher at the Public School, an Educator at the University

The teacher stated that the public school where he worked was in a different district, and his house was located in the city center where the university was located. The teacher — who experienced an intense process in which he was a teacher during the weekdays, an educator at the weekends, and was taking graduate courses at the same time — said that he was unable to afford the time. The teacher's statements on the subject are given below:

> *For me, time was very troublesome. I was in a different district, 40 km from here. Drive there, come here by car all the time, every single day. Do your chores there in the daytime, sit down and try to complete your master's homework in the evening. Teach the courses of the program at the weekend [special education courses at the university], and be an educator there. I was* in such a state that I conscientiously felt very uncomfortable when I slept.

The teacher — who very much felt depressed due to this intensity, said that he was away from his social environment — stated that after a while he began to see himself as a dysfunctional individual at times other than the work he did. The teacher's views on the subject are given below:

> *You know, as I started my graduate studies, the weekend courses [special education program] also began, and its responsibilities were also assigned to me, so it was a bit of an issue. I was so depressed that we were sitting right here at the university, and my wife and I could not purchase even a single item during this intensity. I had a 1+1 house from when I was a single person, and I rented it with furniture. We continued our lives in that house. In the public school where I worked, I was teaching six hours per week, and I was not able to socialize with the men there. This was because as soon as I got out of the class, I was coming here to do the work here. I was not able to meet anyone in the evenings. I wanted to meet, but we were going somewhere to eat and drink as a team, and 15 minutes later, the work for the weekend courses would have to start. I started to see myself as a human being, dysfunctional except for the work, who only did graduate studies and was a science educator during the weekend course.*

Because of the concern of socialization, the teacher moved his home to the district where he thought he could improve this situation even if a tiny bit. However, with the intensity of the process, the teacher's exhaustion increased. The teacher's opinions on the subject were as follows:

> *I moved house to the district, 40 km ahead, due to my concern for socialization. I stayed there for 1.5–2 years. I was, again, coming here from there every day. When I*

> *got there, I could at least call a friend sometime in the evening and drink tea for 1–2 hours or so. This was very good for me. Imagine you woke up at 7 o'clock at the weekend, and you were coming downtown by car. I am not exaggerating; I was thinking, "why don't I have an accident so that I do not attend the class?" I had such big exhaustion and fatigue. You go to class in the public school, you get out of there, you're going home. You open your computer for the master's classes. You have research or something. You deal with them. You wake up on the weekend and come here [the special education program] in the morning. I was coming here on Saturday morning and being at home at 8.00 p.m. on Sunday.*

In the next process, the university wanted to bring the teacher from the public school with an appointment. The teacher, who did not teach additional courses at the public school to attend graduate courses, had to deal with increased economic difficulties meanwhile. In the next process, the teacher was appointed to the university, but this time the teacher had difficulties regarding the personal rights. During this process, the teacher began to feel that he belonged nowhere. The teacher's views on the subject are given below:

> *The university asked the public school to appoint me to the university, and there were no additional courses. The lack of additional courses is a problem. This is because your salary is all gone, and you live on your additional courses. It was very troublesome. I was neither the staff of the public school nor the university. The appointment was approved, but I had no personal rights. You don't even have a meal card in the cafeteria, because you are not a university staff. You get a written guest card from the faculty, from the dean or something for the car entrance card. I felt I belonged nowhere.*

Doing PhD: Twisted Roads

The teacher summarized the doctoral education process in three phases, including the start of the doctoral studies, the process of taking courses and the thesis process. The process was called "twisted roads" because the teacher assumed the role of both a teacher and a doctoral student in the process of doing his doctoral studies.

Problems with Starting

After receiving a master's degree, the teacher had to wait a while longer because there was no doctoral program in the department. The teacher, who had already begun his graduate education late, began to think that he was even further behind due to the postponement at the doctoral level. The teacher stated that the purpose of coming to the university where he worked then was to do doctoral studies. The teacher started thinking about dropping everything and doing a PhD in other departments because of the delay. The teacher's views on the subject are given below:

> *During that time, because I completed my master's studies, I was not a student anymore. I could not begin a doctoral program. The doctoral program could not be established due to CHE's criteria for doctoral programs. I wasted 1.5–2 years of free time of mine. I continued to teach the weekend courses. However, it was troublesome. Imagine, your purpose there was sharp and clear. The reason I came to this city was to become a doctor. I finished my master's degree but couldn't start the doctoral*

program. It was so stressful and bad that during that 1.5–2 years, I started to apply to different departments in different places.

In the subsequent period, the Faculty Member Education Program [FMEP][1] was announced. However, these positions require an undergraduate degree in the same field. Since the teacher was a graduate of physics teaching, he was not admitted to these positions available in the field of special education. The teacher began to feel stuck as he struggled to simultaneously continue to teach at the public school, be an educator at the university, and be a student. The teacher's views on the subject are given below:

Then, FMEP positions were announced, and everyone was coming. But I could not apply to FMEP, either. I had to come to the university. But I was still going to public school. I was stuck somewhere weird in-between.

In the process, a position to which teachers could apply became available, but another problem rose here. The teacher asked not to share the interview records here, so that information was not included in the quote. Nevertheless, in brief, the teacher thought he had been hard done by concerning the position that was available. The teacher said the following concerning the subject:

Later on, a position through a regular procedure became available. ---- The teacher did not want this section to be published. ----- I would like to get this position. It's a research assistantship position, for god's sake! Imagine, they don't want anything else from you. They say, "do your master's and your PhD!"

After a while, the teacher got the research assistantship position he had desired. However, the department's doctoral program had not yet been established. Other concerns had begun to arise in this process for the teacher waiting for the doctoral program to be established. The teacher tried to retake the central exams and raise his score, with the concern of failing to take the position he had expected. The teacher explained this process as follows:

In short, I came as a research assistant, but the doctoral program has not yet been established. Meanwhile, a permanent concern has arisen as to what if a PhD program is established, and I fail to get accepted. I took APGEEE[2] and the language exam again.

In the subsequent period, the doctoral program of the department was established, and the teacher started his doctoral studies. The teacher highlighted in his following opinion that it was a very important development for him to be able to begin his doctoral studies:

[1] Faculty Member Education Program. Meeting the needs for faculty members is aimed in this program. Candidates are required to work at universities to do compulsory service during graduate education in exchange for employment in the research assistantship position.
[2] Academic Personnel and Graduate Education Entrance Exam. It is a central examination required for admission to graduate education in universities and employment.

> *One day, I received a surprise call from the secretary of the institute, who said, "congratulations, your doctoral program has been established." It was really important to me to begin my doctoral studies.*

Waiting for the Lessons

After the teacher began his doctoral studies, he waited for a while for doctoral courses to be offered. This delay pushed an already-delayed process even further. The teacher's views on the subject are given below:

> *You, for example, have completed your doctoral courses in two or three semesters and then taken the qualification exam. In our case, I, for example, have been able to take it after six semesters. I took regular courses for two semesters. We waited for the professor's courses in the four remaining semesters. Why did we wait for the professor's courses? [...] Only after I finished, he could have offered the course to me individually[...]That is, I waited for three years to take the qualification exam [...] The doctoral courses were done in a very stressful way by happenstance.*

Thesis Process

The teacher worked with teachers from the public school during the development of the measurement instrument he would use in his research study. He trained the teachers in this process and asked them to write appropriate test items, but he was unable to motivate teachers for this job and had some problems with the teachers. The teacher stated that the biggest problem in the thesis process was the problem that he experienced with his colleagues. The teacher's views on the subject are given below:

> *The group I work in has problems that arose from teachers now. I am working with teachers in a test development process. The teachers need to develop test items that comply with the training that I gave them. They're not motivated in any way, for god's sake! You offer them training. They don't care. You say, "I will give you certificates. You can use them," but to no avail. I'm paying them. It doesn't motivate. I'm preparing the environment for them to feel comfortable, and I'm trying to prepare food and beverages, and a convenient time for them. I have 10 teachers: four of them are unprepared, and two of them are trying to write something sporadically. Then, they offer the question, which is not suitable for our theoretical structure, not suitable for our age group, and technically problematic. You know, as a teacher and teacher educator, I experienced the biggest problem with teachers during my thesis process.*

The Thing at the End of the Tunnel: Expectations vs. Reality

In this heading, the focus was on the teacher's expectations of the doctoral education and the stories in which he faced the realities he encountered at the end of the process. The teacher articulated that his expectation initially was to get a good graduate education. However, during the process, getting a position at the university was added to this expectation. The teacher was working as a research assistant at the time of the study and was waiting for the faculty member position to become available. The teacher is currently working as a faculty member. The teacher's views on the subject are given below:

> *In the beginning, I did not have much expectation except to get a graduate education. I wanted the educational process to be as efficient as possible [...] In the process, expectations are changing, of course. At the end of the first year of my graduate studies, an expectation was raised to get a position at the university. My doctoral studies have been completed. And now, I have the expectation of an assistant professor position, of course.*

The teacher stated that he wished he finished his doctoral education earlier in this process, but that he could not achieve that (due to the circumstances mentioned in the previous sections). In addition to that, the teacher expressed that he wished he more frequently communicated with undergraduate students and more prominently assumed the role of a "teacher" in the process. The teacher's views on the subject are given below:

> *I wish I could finish my doctoral studies sooner [...] I wish I could more frequently get in touch with the undergraduate students. I wish I could teach more.*

As a result, the teacher said that his expectations about the process were met in general. However, from a familial and individual perspective, he underlined that he would give different answers to the question of whether it was worth it or not. The teacher said he thought he neglected his family in this process. The teacher's views on the subject are given below:

> *I would say that my expectations were met in general. In this process, I was expecting to become a good expert in the field and a bit of recognition, and I think I've achieved them. The question of whether it was worth it is a difficult question. I know that it didn't make up for the time I took away from my family. But I can say that it was satisfactory and worth it personally.*

Discussion

In this study, an attempt was made to investigate the experiences of an elementary school teacher who began doing master's studies while he was teaching at a public school and subsequently became a teacher educator at a university. It can be said that there were many factors that affected the teacher's decision to become a teacher educator and his transition to the university. The teacher expressed that public schools had a structure that made teachers stagnant that did not value them and their efforts to improve themselves. Additionally, the teacher said that his request to continue his master's education was not supported by the administration of the elementary school where he was working at that time.

The participant teacher stated that "working at the university" was not his primary goal given that he wanted a position that would not prevent his graduate education, and that the position that would make this possible was the academic positions at universities. It would be worth noting to say that there are some difficulties faced by people who would like to continue their graduate education if they are working in Turkish public schools or in non-academic positions of universities. It can be said that institutions are reluctant to permit their staff for graduate education, and they are not facilitative. It is also worth expressing that the current regulations have a perspective

paralleling that. When the participant teacher began his graduate studies, studying as a student was an assignment excuse for teachers working in the public sector. However, in later periods, this excuse was removed from the regulation, which meant that a new problem was added to the problems that the participant mentioned. Another reason why the participant wanted to transition to the university was economic reasons. The participant stated that he taught fewer courses at the public school to be able to continue his graduate education and that he was experiencing economic distress because he did not receive additional course wage. The aforementioned problem can be said to be related to administrators' points of view on graduate education, at public schools where teachers work. The above-mentioned structure of these institutions can push and even enforce teachers, who desire to continue their graduate education, to seek positions at universities.

The participant teacher showed the social environment as another reason for his transition to the university. The teacher wanted to be in the presence of people from whom he could get help for his child's development, and expressed that an environment consisting of teachers in public schools would not be able to provide it. It is noteworthy that the participant thought that this environment consisting of teachers would not be capable of fulfilling the request that the participant was talking about. Eret et al.'s (2014) findings show that one of the most influential variables as to why preservice teachers prefer the profession is the convenience of the profession, and one of the least effective variables is the desire to be with children. Ozsoy et al. (2010) pointed out that more than half of the preservice teachers who participated in their research study said that they preferred being teachers because their scores were not enough for the departments they desired. The current teacher and preservice teacher profile can be considered to have led to the hesitations of the participant.

The published research results show that the process of transition from being a teacher to being a teacher educator is a very stressful and wearing process. Factors, such as the changing target audience in pedagogical terms, the anxiety about conducting research activities, and the transition to a different social environment transform teachers, who transition, to a novice again in the field in which they were experts (Hatt, 1997; Kastner, Reese, Pellegrino &Russell, 2019; Loughran & Menter, 2019; Maaranen, Kynaslahti, Byman, Jyrhama & Sintonen, 2019; Murray & Male, 2005; Sinkinson, 1997; Swennen, Shagrir & Cooper, 2009). What is argued here is what the educators experience — the educators who have completed their doctoral studies and who are about to transition to a university while working at a public school. The difficulties to be experienced will be very intense if the doctoral education process is also included in this equation. The participant teacher was trying to sustain his life for a long time as a teacher at a public school, an educator at weekend courses, and a graduate student at other times. During this period, the teacher began to experience exhaustion and fatigue. The participant teacher was assigned to the university as an educator, after which the teacher could not get additional course wage. Also, the university where the teacher was employed did not grant the rights, which the university personnel benefited from, to the teacher due to the regulations. These were the beginning of the teacher's having the feeling that he belonged nowhere. Although

the processes of graduate education are considered to be painful, it will be worth saying that an important part of the pain that arises from the internal dynamics of institutions, regulations and corporate cultures. Aside from supporting and promoting teachers' self-improvement and realization efforts, institutions may impede the initiatives mentioned due to their current functioning. This situation can deter teachers from experiencing similar processes even before they go on this path. According to Toprak and Tasgin (2014), the first four variables that explain why teachers do not receive graduate education include that the process is weary, that it causes a financial burden, that course schedules at schools are not adjusted, and that people who are doing graduate studies give negative feedback. However, European educational systems regard the Continuous Professional Development [CPD] as teachers' professional duties or obligations for them. Certain European countries offer options for teachers' continuous professional development activities, such as leaves, paid leaves and educational scholarships (European Commission [EC], 2013). In this respect, it is evident that the teachers working in the public who wish to get graduate education in Turkey should be given legal assurance.

The processes of graduate education in Turkey also have many problems. The participant teacher stated that he waited for doctoral courses to begin for a long time after he began his doctoral studies. It is necessary to underline that the current problem causes graduate students to experience unjust suffering. Although the aforementioned issues are not isolated, they also overlap with the findings of previous research that researchers have carried out concerning counseling and doctoral processes (see Sever & Ersoy, 2017).

The participant said that he was happy with what he had achieved at the end of the process and that his expectations were largely realized. However, he said that he wanted to be more intertwined with students during his graduate studies, but that did not happen. As the participant mentioned, the qualifications of teaching and field experience can be said to be neglected subjects in the education of teacher educators.

Implications for Research and Practice

Public schools, with their existing cultures and regulations, are unable to respond to the graduate education demands of the teachers who work within the schools. The aforementioned, current structure of the schools may force teachers who enter the graduate education path to transition to universities. As a result of this, public schools are losing qualified teachers who receive a graduate education. Teachers can be prevented from leaving their schools by changing the existing culture and improving the regulations in public schools. It can be contributed to the improvement of existing teacher qualifications in public schools by removing the mentioned obstacles to teachers' graduate education and encouraging teachers to receive graduate education.

In the course of educating teacher educators, the subject of gaining professional experience/field experience is neglected. Teacher educators complete the process without gaining practical experience in the field during their graduate education. In the process of educating teacher educators, the quality of teacher education can also be improved by attaching importance to field experience.

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Öğretmen Eğitimcisi Olma Yolunda Bir Sınıf Öğretmeninin Yolculuğu

Atıf:

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Özet

Problem Durumu: Öğretmen eğitimi yaygın olarak çalışılan bir konu olmasına rağmen, öğretmen eğitimcilerinin eğitimi konusunun çoğunlukla ihmal edildiği söylenebilir. Öğretmen eğitimiyle ilgili çok fazla söz söylenmiş olmasına rağmen, öğretmen eğitimcilerinin kendilerine ilişkin pek fazla sözün sarf edilmemiş olduğu ifade edilmektedir. Buna paralel olarak öğretmenlikten öğretmen eğitimciliğine geçiş süreci ile ilgili de pek fazla çalışmanın olmadığı söylenebilir. Alanyazındaki mevcut çalışmalar da öğretmen eğitimciliğine geçişi, öğretmen eğitimcilerin eğitimi bağlamında çalışmaktadır. Türkiye'de eğitim fakültelerinden mezun olduktan sonra göreve başlayan öğretmenlerin bir bölümü lisansüstü eğitime yönelmektedirler. Süreç içerisinde ya da sonunda bu öğretmenler kadro bularak üniversitelerde öğretmen eğitimcisi olarak çalışmaya başlamakta ya da en azından bunu başarmaya çabalamaktadırlar. Öğretmenlikten öğretmen eğitimciliğine geçiş sürecinde bu bireylerin neler deneyimledikleriyle ilgili pek fazla bilgi sahibi olmadığımızı söylemek mümkündür. Bu çalışma Türkiye'deki öğretmen eğitimcisi olmayı başarmış bir sınıf öğretmeninin hikâyesi üzerinden öğretmenlikten öğretmen eğitimciliğine geçiş sürecine ışık tutmaya çalışmıştır. Bu hikâye ile Türkiye'de öğretmenlikten öğretmen eğitimciliğine geçen benzer bireylerin; neden ve nasıl bu yola girdikleri, beklentileri ve sürece ilişkin deneyimleri anlaşılmak istenmiştir.

Amaç: Türkiye'de öğretmen eğitimcisi olma yolundaki öğretmenlerin bu tercihlerine neden olan etmenlerin ve sürece ilişkin deneyimlerinin önemli olduğu düşünülmektedir. Bu sebeple bu araştırmada öğretmen eğitimcisi olma yolunda ilerleyen bir öğretmenin deneyimlerinin incelenmesi amaçlanmıştır. Bu deneyimler katılımcının lisansüstü eğitime başlama, üniversiteye geçiş süreci ve geçişten sonra yaşadıklarına ilişkin öğretmen eğitimcisi olma süreçleriyle ilgili önemli ipuçları vermektedir.

Bu araştırmada öğretmenlikten öğretmen eğitimciliğine geçiş süreci incelenmek istenmiştir. Bu araştırmanın amacı; bir sınıf öğretmeninin öğretmen eğitimcisi olma sürecini kendi öyküsüyle incelemektir. Bu amaç doğrultusunda aşağıdaki sorulara cevap aranmıştır.

1. Sınıf öğretmeninin öğretmen eğitimcisi olma kararını verme süreci nasıl gelişmiştir?

2. Sınıf öğretmeninin öğretmen eğitimcisi olma sürecindeki deneyimleri nelerdir?

3. Sınıf öğretmeninin süreç sonucunda beklentilerinin karşılanma durumuna ilişkin düşünceleri nelerdir?

Yöntem: Bu araştırmada bir sınıf öğretmeninin öğretmen eğitimcisi olma deneyimleri, kendi anlatımları üzerinden kronolojik olarak ele alınarak öğretmenlikten öğretmen eğitimciliğine geçiş deneyimlerine ışık tutulmak istenmiştir. Bir ya da az sayıda bireyin yaşam deneyimlerinin yakalanmasında, anlatı araştırmasının en iyi metot olduğu ifade edilmektedir. Bu yönüyle yürütülen araştırma anlatı araştırması olarak tasarlanmıştır. Araştırma verileri; Türkiye'deki bir üniversitenin eğitim bilimleri enstitüsünde araştırma görevlisi olarak görev yapan bir doktora öğrencisinden yarı-yapılandırılmış görüşmeler aracılığıyla toplanmıştır. Görüşme verilerinin analizinde anlatı analizi kullanılmıştır. Katılımcının anlatısı; sosyal etkileşim, zaman ve olay örgüsü içerisinde hikâyeleştirilerek sunulmuştur.

***Bulgular ve Sonuç*:** Bu araştırmada bir devlet okulunda öğretmenlik yapmakta iken lisansüstü eğitime başlayan, sonrasında üniversitede öğretmen eğitimcisi olan bir sınıf öğretmeninin deneyimleri incelenmek istenmiştir. Öğretmenin, öğretmen eğitimcisi olma kararında ve üniversiteye geçmesinde etkili olan birçok etkenin olduğu söylenebilir. Öğretmen milli eğitim kurumlarının öğretmenlere ve onların kendilerini geliştirme çabalarına değer vermeyen, onları durağan hale getiren bir yapısının olduğunu ifade etmiştir. Bununla birlikte öğretmen kendisinin yüksek lisans eğitimine devam etmesinin o zaman çalıştığı ilkokul yönetimi tarafından desteklenmediği söylemiştir. Katılımcı öğretmen "üniversitede çalışmanın" öncelikli amacı olmadığını, lisansüstü eğitimini devam ettirmesine engel olmayacak bir kadro istediğini, bu kadronun da üniversitelerdeki akademik kadrolar olduğunu belirtmiştir. Katılımcının üniversiteye geçmek isteyişinde etkili olan bir diğer neden ekonomik nedenlerdir. Katılımcı lisansüstü eğitimine devam edebilmek için milli eğitim kurumundan az ders aldığını, ek ders ücreti alamadığı için ekonomik olarak sıkıntı yaşamaya başladığını ifade etmiştir. Katılımcı öğretmen üniversiteye geçişe bir

diğer sebep olarak bulunduğu sosyal çevreyi gerekçe göstermiştir. Öğretmen, çocuğunun gelişiminde yardım alabileceği kişilerin çevresinde bulunmasını istemiş ve kamu okullarındaki öğretmenlerden oluşan bir çevrenin bunu sağlayamayacağını ifade etmiştir. Katılımcı öğretmen süreç sonunda geldiği yerden memnun olduğunu, beklentilerinin büyük oranda gerçekleştiğini ifade etmiştir. Ancak lisansüstü eğitim süresince öğrencilerle daha fazla iç içe olmak istediğini fakat bunun gerçekleşmediğini söylemiştir.

Tartışma ve Öneriler: Türkiye'deki milli eğitim kurumlarında ya da üniversitelerin akademik kadroları dışındaki kadrolarda çalışırken, lisansüstü eğitime devam etmenin önünde bazı güçlüklerin olduğunu söylemek yerinde olacaktır. Kurumların personeline lisansüstü eğitim için izin verme konusunda isteksiz davrandığı, kolaylaştırıcı olmadığı söylenebilir. Güncel mevzuatın da buna paralel bir bakış açısına sahip olduğunu ifade etmekte yarar vardır. Katılımcı öğretmenin lisansüstü eğitime başladığı dönemde kamuda çalışan öğretmenler için öğrenim özrü tayin gerekçesi iken, sonraki dönemlerde bu özür yönetmelikten çıkarılmış, katılımcının sözünü ettiği sorunlara mevcut durumda bir yenisi daha eklenmiştir. Lisansüstü eğitim süreçlerinin sancılı süreçler olduğu kabul edilmekle birlikte; ortaya çıkan sancıların önemli bir kısmının kurumların içsel dinamiklerinden, mevzuattan ve kurum kültürlerinden kaynaklandığını söylemek yerinde olacaktır. Öğretmenlerin kendini geliştirme ve gerçekleştirme çabalarının desteklenmesi ve teşvik edilmesi bir yana, kurumlar mevcut işleyişleri ile sözü edilen girişimlere ket vurabilmektedir. Bu durum benzer süreçlerdeki öğretmenleri daha bu yola girmeden caydırabilmektedir.

Milli eğitim okulları mevcut kültürleri ve mevzuatlarıyla, bünyesinde görev yapan öğretmenlerin lisansüstü eğitim taleplerine cevap verememektedir. Okulların sözü edilen mevcut yapısı, lisansüstü eğitim yoluna giren öğretmenleri üniversitelere geçiş yapmaya mecbur bırakabilmektedir. Bunun bir sonucu olarak milli eğitim okulları, lisansüstü eğitim alan nitelikli öğretmenleri kaybetmektedir. Milli eğitim okullarındaki mevcut kültür değiştirilerek ve mevzuatlar iyileştirilerek öğretmenlerin kurumlarından ayrılmalarının önüne geçilebilir. Öğretmenlerin lisansüstü eğitimlerinin önündeki sözü edilen engeller kaldırılarak ve öğretmenlerin lisansüstü eğitim almaları teşvik edilerek milli eğitim okullarındaki mevcut öğretmen niteliklerinin iyileştirilmesine katkıda bulunulabilir.

Öğretmen eğitimcilerinin eğitimi sürecinde, mesleki tecrübe-alan deneyimi kazanımı konusunun ihmal edilen bir konu olduğu söylenebilir. Öğretmen eğitimciler lisansüstü eğitimleri boyunca alana ilişkin pratik tecrübe kazanmadan süreci tamamlamaktadırlar. Öğretmen eğitimcilerinin yetiştirilmesi sürecinde alan deneyimine önem verilerek öğretmen eğitimindeki niteliğin de artırabileceği düşünülmektedir.

Anahtar Sözcükler: Öğretmen Eğitimi, Öğretmen Eğitimcilerinin Eğitimi, Öğretmenlikten Öğretmen Eğitimciliğine Geçiş, Anlatı Araştırması

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Examining the Development of Pre-Service Science Teachers' STEM-Focused Lesson Planning Skills*

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ABSTRACT

Purpose: In the 21st century, the importance of the fields of science, mathematics, technology, and engineering, and the need of the skilled individuals have paved a way for a great responsibility on teachers providing instruction in these four fields. Therefore, in this context, it is essential that teachers need to receive education for the cultivation of STEM skills in schools. The present study, it is aimed investigate the development of the STEM-focused lesson planning skills of pre-service science teachers who participated in STEM-focused laboratory activities.

Research Methods: This research was designed as a single case study. The participants in this research study were seven pre-service science teachers. Data were collected through the lesson plans developed by the pre-service science teachers and analyzed using descriptive analysis.

Findings: The results showed that STEM-focused laboratory activities contributed to the development of pre-service science teachers' skills about planning a STEM-focused lesson.

Implications for Research and Practice: The findings suggest that the Science Teaching Laboratory Practices course might be structured with STEM-focused activities to improve the STEM-focused lesson planning skills of pre-service teachers. Providing long-term education to pre-service teachers in person can be recommended for improving their STEM-focused lesson planning skills. In this research, lesson plans of pre-service teachers were examined in terms of content, approach, assessment and evaluation. Development of more detailed analyses is suggested for examining lesson plans.

*This research was prepared by organizing a part of the master thesis of the second author under the supervision of the first author.

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Introduction

In recent years, one of the most important reform movements that countries have enacted in education is Science, Technology, Engineering and Mathematics (henceforth referred to as STEM) education with the aim to integrate the disciplines of science, technology, engineering, and mathematics (Bybee, 2010; National Academy of Engineering [NAE] & National Research Council [NRC], 2009; NRC, 2012; Smith & Karr-Kidwell, 2000). STEM education described as finding solutions for the problems through benefiting from the procedures of mathematics and science and integrating teamwork by including process of engineering design and employing appropriate technology at the same time (Shaughnessy, 2013). STEM education includes the unification of at least two STEM fields (e.g., science and mathematics) and the use of knowledge, skills, and beliefs based on the aims of these fields (Corlu, Capraro, & Capraro, 2014; Dugger, 2010; Moore et al., 2014). STEM education allows students to think an integrated manner within the context of science, technology, engineering, and mathematics by confronting them with the situations from daily life and to implement these thoughts in real-life events (Thomas, 2014). Literature shows that the STEM learning environments have significant impacts on student experiences, their career choices, academic success, and the skills, such as advance thinking skills, entrepreneurship, and communication (Fllis & Fouts, 2001; Lou, Shih, Diez, & Tseng, 2011; Tsai, 2007; Wendell et al., 2010).

STEM and Teacher Training

The importance in the 21st century of the fields of science, mathematics, technology, and engineering and the need for individuals to have the skills that this century requires show that a great role has fallen upon teachers who provide instruction in these fields. Preparing STEM-focused lesson plans is undoubtedly important for the teachers who teach in these fields. Therefore, in this context, receiving education for the cultivation of STEM skills in schools for teaching is necessary (Capobianco, 2013; Han, Yalvac, Capraro & Capraro, 2015; Hsu, Purzer, & Cardella, 2011). In fact, teachers themselves carrying out unique contexts that provide students with interdisciplinary integration are valued for successful STEM education. Thus, teachers need to gain experience in integrated instruction during in-service or pre-service education.

Various studies draw attention to the importance of teacher training for STEM education. Siew, Amir, and Chong's (2015) findings showed that teachers could have an awareness of necessary support from the workshops of the STEM professional development in selecting STEM-focused activities that are effective, creative, and project-based to incorporate science in their classrooms. Capobianco (2013) conducted a two-week intensive training program for pre-service and in-service teachers and found that teachers' ability to use the engineering design process in the classroom improved. Han et al. (2015) recommend that teachers should receive STEM training to conduct STEM education based on effective project-based learning. Hsu et al. (2011) suggest that teachers should be more familiar with these concepts, and they need to use professional development programs to increase their motivation to apply these

concepts in their lessons. Bozkurt Altan and Ercan (2016) pointed out that STEM-focused training for in-service science teachers improves their STEM-focused course planning competence.

Researchers emphasize the necessity of developing educational content that contributes to the professional development of STEM-focused learning processes. Wilson (2011) points out that the training is provided without the coordination of the institutions that are responsible for teacher education. Thus, pre-service teachers have different efficacy for STEM education. Allen, Webb, and Matthews (2016) draw attention to the importance of having efficacy for STEM education for pre-service teachers. In this context, this study will benefit to the relevant literature by helping researchers develop programs that contribute to the improvement of pre-service teachers' skill of STEM-focused lesson planning and by supporting them to analyze the STEM-focused lesson planning skills.

Pre-service Teacher Training and STEM Education in Turkey

Teaching of science and mathematics disciplines in Turkey is carried out with separate teaching programs. There are no integrated STEM programs in schools or in teacher education programs. Thus, there are courses in science and mathematics disciplines in teacher training programs. The Higher Education Institution determines the general framework of the courses and contents to be taught in pre-service teacher training programs for science and mathematics education programs. In other words, the universities in Turkey generally have the same curriculum and content for pre-service teachers in science or mathematics education programs. Therefore, planning the content to develop teachers' skills for STEM education may contribute to both literature and teacher training programs. Otherwise stated, teacher educators from different universities in Turkey can also use the planned educational content. In the international context, planned activities can be used to improve the skills of pre-service teacher or teachers.

The relevant studies conducted to investigate STEM education in the pre-service teacher education in Turkey show that the published research mainly focuses on the attitudes, opinions, and awareness of the participants about STEM education (see Altun, Yalcin, & Yalcin, 2018; Bakirci & Karisan, 2018; Hacioglu, Yamak, & Kavak, 2017; Kizilay, 2018; Inancli & Timur, 2018). There are also studies about the STEM-focused activities carried out during undergraduate education. These studies examined the potential effects of these activities on various 21st-century skills of pre-service teachers, their attitudes toward STEM practices, and awareness about STEM fields (Bozkurt, 2014; Cetin & Kahyaoglu, 2018; Hacioglu, 2017). Unlike these studies, Ercan (2016) examined pre-service teachers' professional development about STEM education. Also, Gul (2019) planned a STEM Education lesson design that included the content of Instructional Technologies and Material Design and Special Teaching Methods I courses.

Unlike the literature, this study recommended that there would be an intensive process that fits into the nature of the Science Teaching Laboratory Practices course (in

science teacher undergraduate program). This study also investigated the potential effects of the active participation of pre-service teachers in certain activities on their skills about STEM-focused lesson planning. To apply the STEM-focused lesson in the classrooms, it is important for pre-service teachers to prepare STEM-focused lesson plans. In this context, it is believed that it might benefit the literature significantly to reveal whether the experience of those pre-service science teachers who have participated in various activities in STEM-focused learning environments help them plan the secondary school science course with a STEM-focused. In this research, we aimed to observe the development of the STEM-focused lesson planning skills of pre-service science teachers who participated in STEM-focused laboratory activities. In line with this aim, an answer is sought to the underlying question of "Do the pre-service science teachers who attend STEM-focused laboratory courses improve their STEM-focused lesson planning skills?"

Method

Research Design

In this research, STEM-focused laboratory activities were developed for the Science Teaching Laboratory Practices (STLP) course in the science teacher education undergraduate program. The aim of the STLP course is to improve pre-service teachers' skills to integrate laboratory activities into science courses. Hence, this course has a content that is suitable for the enrichment of the interdisciplinary perspective, which is the most current innovative learning approach. The activities were conducted in 13 weeks. In this research study, the pre-service science teachers were asked to write a lesson plan that was based on the STEM approach before the STLP course, during the STLP course, and after the STLP course. The pre-service science teachers were expected to write their lesson plans based on the learning outcomes of the middle school science curriculum. In this context, we aimed to investigate whether there was an improvement in the STEM-focused lesson planning skills of pre-service science teachers who participated in STEM-focused laboratory activities.

This study was conducted in the framework of the case study model, a qualitative research technique. Case study is used when researchers want to have a detailed evaluation of a program or the in-depth investigation of an incident (Marshall and Rossman, 2006). In other words, the case study can be defined as the in-depth definition of an entirely limited system (Merriam, 1998).

Participants

This research was carried out in the framework of STEM-focused activities within the STLP course. Thirty-five students were enrolled in one of the two sections of the STLP course. Seven pre-service teachers were selected as participants from these 35 pre-service science teachers on a voluntary basis. Four of the participants were female, and three of them were men from a public university. The participants were in their third year in the science education department. It is thought that the description of the participants' previous experiences on STEM education was beneficial as that experience can affect the plans that pre-service teachers write before the STLP course.

The participants had a four-week STEM training experience at the basic level and examined STEM activities. At the same time, they gained theoretical knowledge of STEM education in the Private Instruction Methods in Science Education I (PIM-I) course. The participants' names were colour coded as follows: Purple, Pink, Yellow, White, Blue, Green, and Orange.

STEM-Focused Activities

The STEM-focused activities that were conducted in the Science Teaching Laboratory Practices course were as follows: Healthy Living, Crime Scene Inspection, Heat Insulation, Animal Design with Legos, Miraculous Institution and Easy Transition with Ardunio.

The "Healthy Living" activity was developed as problem-based learning with STEM education. A problem statement was presented in which the participants were expected to prepare a diet program special to a person. Information about eating habits, physical characteristics, diagnosed diseases, and tests results were provided to this person. Then, the participants were asked to design a mobile application for the diet program. The disciplines of science, technology, and mathematics were integrated into this activity. This activity was administered in four hours (4*40').

In the "Crime Scene Inspection" activity, which was the other activity planned as STEM education through problem-based learning, a forensic crime scene scenario was presented to the pre-service science teachers. The participants conducted various analyses that helped them act like a crime scene expert and analyze the evidence related to the incident by creating a mathematical model regarding foot length and height. The disciplines of science and mathematics were integrated into the activity. The activity was administered in eight hours (8*40').

The "Heat Insulation" activity module was developed by Bozkurt Altan et al. (2016) and was structured on the axis of the engineering design problem. In this case, the participants were expected to select suitable insulation and to define heat insulation materials based on the sixth class material and heat unit learning outcomes. The disciplines of science, technology, engineering and mathematics were integrated into the activity. The activity was conducted in six hours (6*40').

For the "Animal Design with Legos" module, the characteristics (i.e., feeding habits, living space, and a form of respiration) of an unnamed animal were presented to the participants in the context of a problem case. The participants were asked to specify the physical characteristics of this animal, such as utilizing its traits in the problem, guessing which creature was described, and drawing the true dimensions of the creature at ½ scale after identifying its characteristics. Science and mathematics disciplines were in the activity. The activity was administered in six hours (6*40').

For the "Miraculous Institution" activity module structured with the engineering design process, the participants were asked to design a shelter and sailboat with certain materials under desert island conditions. Science, engineering and

mathematics disciplines were integrated into the activity. The activity was implemented in eight hours (8*40').

The final activity was the "Easy Transition with Arduino" module, which was structured around the axis of an engineering design problem. The participants were expected to develop a technological vehicle for the purpose of ensuring the controlled transit of vehicles in an intersection found in the province where they live. The disciplines of science, technology, engineering and mathematics were integrated into the activity. The activity was conducted in 16 hours (16*40').

Data Collection Tools

The data were derived from the pre-service science teachers' STEM-focused lesson plans. Pre-service teachers were asked to write their lesson plans within the scope of the learning outcomes of the secondary school science course curriculum. In this context, we aimed to evaluate the pre-service teachers' skills that they integrate STEM disciplines into courses and plan science courses within the frame of STEM-focused practices. No restriction was made regarding the format of the lesson plans. Participants had sufficient knowledge about how to write a lesson plan. The pre-service teachers were asked to write STEM-focused lesson plans in groups before the STEM-focus activities and after the STEM-focus activities in the STLP course. They were also asked to write two lesson plans individually during the process of the activities. Table 1 shows the weeks at which the pre-service teachers wrote their lesson plans individually and as a group during a term.

Table 1.

Information about the Schedule of the Lesson Plans Written by the Participants

Participants	**Before STLP Course (Prepared as a Group)**	**During STLP Course (Prepared as a Individual)**		**After STLP Course (Prepared as a Group)**
Purple	1 week ago	At week 6	At week 12	At week 14
Pink	1 week ago	At week 6	At week 8	At week 14
Yellow	1 week ago	At week 6	At week 10	At week 14
Blue	1 week ago	At week 2	At week 6	At week 14
White	1 week ago	At week 1	At week 2	At week 14
Green	1 week ago	At week 3	At week 6	At week 14
Orange	1 week ago	At week 3	At week 6	At week 14

As shown in the Table 1, all the participants wrote the lesson plans one week before the STLP course and one week after the completion of the plans in groups that they conducted the activities with.

Data Analysis

The code scheme by Ercan (2016) was used to analyze the lesson plans. The lesson plans were analyzed and provided feedback based on the categories of contents, approach, assessment, and applicability, found in this code scheme. Table 2 presents the code scheme.

Table 2.

The Code Scheme

Category	Codes	Meaning of Codes
Content	Only science	Only science learning earning objectives are considered.
	Science and other independent discipline	In addition to science, for other STEM disciplines, the learning objectives outcomes are considered, but interdisciplinary connections cannot be mentioned, disciplines are handled separately.
	Other discipline integrated with science	In addition to science, learning objectives for other STEM disciplines are considered, and there are links between field knowledge and practices for disciplines.
	Science and other independent disciplines	In addition to science, learning objectives for multiple STEM disciplines are considered, but interdisciplinary connections cannot be mentioned, disciplines are handled separately.
	Other disciplines integrated with science	In addition to science, learning objectives for multiple STEM disciplines are considered, and there are links between field knowledge and practices for disciplines.
Approach	STEM-focused	Engineering design-based learning Inquiry-based learning Problem-based learning
	STEM Non-focused	Teacher presentation Experimentation
Assessment and evaluation	No content for Assessment and Evaluation	The lesson plan does not have any content about measurement and evaluation.
	Only science content evaluated	Measurement-evaluation was planned only for evaluating the science content e.g., a multiple-choice test for science content only.
	Integrated into STEM fields	Integrated measurement and evaluation for the STEM fields included in the activity (e.g., preparing modelling questions that reflect the integration of science and mathematics into the subject of the food chain).
Applicability	Activity is applicable.	The activity contains related science outcomes. At least two STEM disciplines have been integrated. Compatible with the student's actual life/context. Applicable within the periods mentioned in the Science Curriculum.
	Organized event	The activity does not meet at least one of the four criteria of applicability.

The lesson plans of all of the participants were examined in the analysis process. The reliability of the data analysis was calculated using Miles and Huberman (1994) proposed formula (Reliability of the data analysis=[Same opinions/(Same opinions + Different opinions)]). For the reliability of the data analysis, two researchers' opinions were gathered, and the inter-reliability percentage was calculated as 89%. Then, researchers compared their results of the analysis and interpreted together. To complete the final analysis of the process, an expert who had experience in STEM education examined the latest version of the analysis.

As an example of the results, only one of the participants' (Purple) the lesson plan contents and also analysis were provided. The improvements of other participants' skills concerning STEM-focused lesson planning were commented on throughout the process.

Researchers' Roles and Ethical Considerations

Before the implementation of this study, information about the study steps was given to the participants. The study participants were determined on a voluntary basis. The names in the lesson plans of the participants were kept confidential. The activities that were administered during the study were not physically harmful to students. Both researchers of this study played an active role in carrying out the activities.

Validity and Reliability of this Research

Merriam (2013) explains the validity and reliability of qualitative research in terms of internal validity and external validity and reliability. The concept of internal validity is related to the accuracy of inferences about cause and effect made by the researcher. External validity is related to the extent to which the results of a study can be applied to other situations. Reliability is the availability of the same results when the research is repeated by the same or a different researcher. In this research, the procedures for internal validity, external validity and reliability are as follows: It was checked whether there were any other situations that might affect the development of pre-service science teachers' STEM-focused lesson planning skills. The characteristics of the participants were explained in detail. To ensure the reliability of this research, the process was followed by a second researcher. The process is presented in detail. Data were analyzed by two researchers, and the agreement percent was calculated.

Results

The lesson plans that all the participants wrote individually and as a group before the STLP course, during the STLP course, and after the STLP course were examined. The results were presented below.

Results for the Lesson Plans that Purple Prepared

The results for the lesson plans that Purple wrote individually and as a group before the STLP course and after the STLP course was presented in Table 3.

Table 3.

The Results of Purple's Lesson Plans

Category	Before STLP Course	During STLP Course		After STLP Course
	Group Lesson Plan	Individual lesson plan at week 6	Week 12 Individual Course Plan	Group Course Plan
Content	Only science	Science and engineering discipline integrated	All STEM disciplines integrated	All STEM disciplines integrated
Approach	Teacher presentation Individual study and formal teamwork	Engineering design and scientific research-inquiry Individual study and formal teamwork	Engineering design and scientific research inquiry Individual study and formal teamwork	Engineering design and scientific research-inquiry
Assessment and evaluation	Only intertwined with science-related instruction	Integrated into STEM areas	Integrated into STEM areas	Integrated into STEM areas
Applicability	The event must be organized.	The activity can be applied.	The activity can be applied.	The activity can be applied.

Before the STLP course, Purple prepared the lesson plan together with the group members. In the lesson plan, the activities included solely concepts and contents related to science discipline. The learning outcomes in the middle school sciences course instructional program were aimed. Only multiple-choice questions that included the science-learning outcome for the assessment and evaluation were found in the lesson plan. The lesson plan was aimed at the lesson outcome of "knowing and showing with a drawing that the light emerging from a source follows a unidirectional and linear path" and "classifying the items and providing examples based on the status of light permeability" found in the middle school sciences course instruction program. The instruction process began with the teacher's brainstorming on the topic of light and continued with the "Diffusion of Light" activity for the students to discover the form of diffusion of light at the same environment. Afterwards, they moved to the

"Light Permeability of Materials" activity to identify the light permeability of materials. What learned after the activity was related to daily life, and the students were split up into groups to make periscopes. An activity sheet that included the necessary materials and how to the assembly they were shown to make the periscope was provided to the students. After all the activities, the class concluded with assessment and evaluation activities with multiple choice questions and fill-in-the-blanks to evaluate the learning outcomes of the students.

In the lesson plan prepared individually in the sixth week of the STLP course, Purple discussed environmental problems and wrote a lesson plan in this topic using the engineering design process. The participants structured an instruction process using engineering design process in the context of an engineering problem relating to real-life situations and specified the roles for the individual work and teamwork of the students throughout the instruction process. For the assessment and evaluation of the lesson plan, students played an active role in the instruction process. In this case, various assessment-evaluation activities were emphasized to be integrated with the STEM fields. Purple wrote a lesson plan based on the engineering design process for the learning outcome on the topic of environmental problems in the individually prepared lesson plan. The lesson began by drawing the students' attention to the pollution of the environment. The pre-service teacher distributed activity sheets that included questions for environmental pollution. Purple prepared the sheets for the students to help them research about environmental problems. After dividing the class into groups, scenarios for different environmental issues were distributed to the students, and the groups were asked to create a design using affordable materials that were suitable for the specified environmental issue. In this case, the length of life and durability of the material was observed. The pre-service teacher indicated that adequate time would be provided to the students for the realization of the design and that the evaluation activities would be done based on the grading scale prepared in the scope of the criteria and restraint of the design.

For the lesson plan that Purple prepared individually in the 12th week of the STLP course, the disciplines of science, technology, engineering, and mathematics were included in the instruction process. Purple created a problem situation based on daily life situations to increase students' engagement with the activity. It was clearly stated that the students would be carrying out the work that they perform in teams. The assessment-evaluation of the lesson plan was dealt with in an integrated manner with the STEM disciplines. Purple expected the students to discover the factors that were influential in the formation of seasons in the lesson plan. The lesson began with a remarkable problem sentence describing a child who lived in North America and went to Australia while the season was summer. Afterwards, they moved to the topic regarding the movement of the Earth around the Sun, and the students were asked to show the Earth's movement around the Sun using the Adobe Creative Cloud animation program. Following the animation program, students were asked to create a design that showed the rotation of the Earth with a revolution they created using dynamo. The students were asked to pay attention to the movement of the Earth both around itself and around the Sun and using low-cost to create their design. The

assessment evaluation procedure at the end of the activities was composed of evaluations regarding the characteristics expected from the created design.

Purple prepared the final lesson plan together with the group members at the end of the STLP course. The lesson plan for the learning outcome found in the first plan they prepared as a group. Purple planned to conduct the instruction with the engineering design process and inquiry-based learning by correlating the inquiry-engineering disciplines. The pre-service science teachers prepared the lesson plans. They discussed the assessment and evaluation activity integrated with the instruction process that was at an applicable level. Purple and the team members had the students do the "Light Permeability of Materials" activity, so they would have information regarding the permeability of light at the beginning of the instruction process. Afterwards, they moved to the "Undercover Assignment: Line" activity regarding the topic. In this activity, students were asked to make a design that has a light source that helped them see in the dark while underwater, measure underwater pressure, and allowed them to see underground burrows in the Earth. The assessment-evaluation activities took place at the end of the class, with the grading of the created design.

Results for the Lesson Plans that Pink Prepared

Pink planned to conduct the instruction process within the framework of the engineering design process *before the STLP course*. However, the plan had to be reorganized because it did not suit the engineering design due to unspecified criteria and constraints regarding the problem case. *In the sixth week of the STLP* course, Pink planned to administer the engineering design process in the context of a problem relating to real life in the context of environmental issues. For the lesson plan that the Pink prepared *in the eighth week of the STLP* course, Pink planned a STEM-focused lesson by integrating the science and mathematics disciplines. Pink made arrangements in the first prepared lesson plan written with the group members *at the end of the STLP course*. In this respect, they planned a process in the scope of the engineering design process, just like in the first lesson plan. The assessment and evaluation in the plans (prepared 6th, 8th, and 14th weeks) were concentric with the activities, and they were related to the STEM fields. However, the plans can be applied in the science class. Because the activity contains the related science learning outcomes, at least two STEM disciplines should be integrated, compatible with the student's actual life/context and applicable within the periods mentioned in the Science Curriculum.

Results for the Lesson Plans that Yellow Prepared

Before the STLP course, it was determined that Yellow's group wanted to prepare a lesson plan suitable for the engineering design process but that the lesson plan did not reflect the steps of the engineering design process completely. In this context, the lesson plan contents were evaluated as independently from the science and engineering discipline. Yellow prepared the lesson plan contents *in the sixth week of the STLP course* by considering the steps of the engineering design process. Yellow expressly stated the roles of the student and the assessment-evaluation activities and

designed a lesson plan that could be implemented in STEM education. Lesson plan prepared individually *in the 10th week of the STLP course* that the Yellow handled with the engineering design process. The assessment and evaluation in the plan were concentric with the activities, and they were connected with the STEM fields. Yellow noted the engineering design process in the lesson plan prepared together with group members *after the STLP course*. The criteria and constraints expected concerning simple machines were specified in the activity prepared, considering the engineering design process. The group members planned the instruction process in accordance with the engineering design process and discussed in an integrated manner with the STEM fields for the assessment and evaluation activities. The plans prepared in the 6th, 10th, and 14th week can be applied in the science class.

Results for the Lesson Plans that White and Blue Prepared

Analysis of the lesson plans that White and Blue prepared as a group was provided together because they were in the same group in the STLP course.

Results for the Lesson Plans that Blue Prepared Individually

The contents of the lesson plan that Blue prepared individually *in the second week of the STLP course* were evaluated in the scope of only the science discipline. The assessment and evaluation activities of the instruction processes, where the student roles were uncertain, were related to only the discipline of science. The lesson plan must be organized. The lesson plan prepared individually *in the sixth week of the STLP course* was designed based on the steps of the engineering design process. The assessment and evaluation activities of the lesson planned to be conducted individually and as a team for the students were related to the instruction process and was aimed at the STEM fields. The plans can be applied in the science class.

Results for the Lesson Plans White Prepared Individually during the STLP Course

The lesson plan prepared by White in *the first week of the STLP course* was not suitable for STEM education. At the same time, the assessment evaluation activities were designed to be related to only the science discipline. The lesson plan must be organized. White designed a second lesson plan, which was prepared individually *in the sixth week of the STLP course*, by correlating the science and technology disciplines. The plans can be applied in the science class. For the lesson plan that White provided included detailed information for the team-work of the students and dealt in an integrated manner with the process of the assessment and evaluation activities.

Results for the Lesson Plans that Blue and White Prepared as a Group before and after the STLP course

Blue and White aimed to design the lesson plan according to the engineering design process as a group *before the STLP course*. However, they planned the lesson plan in the scope of only the discipline of science. Because they organized activities only relating to science in the assessment and evaluation activities, the prepared instruction plan should be reorganized in the framework of STEM instruction. In the lesson plan that they prepared as a group *at the end of the STLP course*, they included

the disciplines of science and mathematics in the integrated process. The assessment and evaluation activities were designed in an integrated manner with the STEM fields in the instruction plan, where the roles of the student were expressed clearly. The plans can be applied in the science class.

Results for the Lesson Plans that Green Prepared

Green designed a lesson plan with only science contents for the lesson plan prepared *before the STLP course* together with group members. In this plan, Green planned to administer assessment-evaluation activities within the instruction process regarding sciences. Green organized the instruction process by utilizing technological practices in the lesson plan prepared in the *third week of the STLP course*. The activity contents were evaluated for only science because it was only used for discovering the content of concepts. The lesson plan must be organized. In this lesson plan, results-oriented tests, including science learning outcome, were used as measurement and evaluation. Green wrote the second lesson plan, prepared individually *in the sixth week of the STLP course* based on the engineering design process. In this context, the participant expressly stated the roles of the students and the steps of the engineering design process in the prepared lesson plan. Green planned an integrated measurement and evaluation activity, including the STEM fields. In the lesson plan that Green prepared together with the group members *after the STLP course* in the framework of the topic of chemical reactions, technology was utilized, but the contents of the lesson plan were evaluated solely as a science because they did not structure the process in the context of a problem case. The instruction process continues with the other activities carried out in the scope of the science discipline and concludes with the evaluation activities regarding only science.

Result for the Lesson Plans that Orange Prepared

Orange designed a lesson plan that had only science content together with the group members *before the STLP course*. At the same time, assessment-evaluation activities comprised multiple-choice questions regarding only science. Orange aimed to capture the students' attention by utilizing technological applications for the lesson plan prepared individually *in the third week of the STLP course*. The lesson plan content was evaluated as only science because the participant planned to use only technology supported mobile application. Orange prepared plans with only science content as the process-based assessment evaluation activities. The activity should be reorganized within the framework of the STEM-focused activities. It was observed that Orange's lesson plan prepared individually *in the sixth week of the STLP course* was consistent with the steps of the engineering design process. Assessment evaluation activities in the lesson plan were handled in an integrated manner for the STEM fields. For the final lesson plan prepared together with group members *at the end of the STLP course*, Orange designed a lesson plan in the framework of the steps of the engineering design process. In the plan, the roles of the students and the activities to be carried out were clearly stated. Also, the assessment and evaluation activities were conducted as multiple-choice questions to be used for the purpose of measuring the scientific knowledge of students and in an integrated manner with regard to the STEM fields.

Discussion, Conclusion and Recommendations

In this study, participants were asked to prepare STEM lesson plans individually and as a group before the STLP course, during STLP course, and after STLP course for the purpose of determining their skills about STEM-focused lesson planning.

The results showed that the STEM-focused STLP course generally contributed to the development of the skills of participants concerning STEM education in this study. It was determined in the lesson plans that participants prepared before the STLP course and after the STLP course as a group that they showed development in the categories of "contents", "approach", "assessment and evaluation", and "applicability". Especially, the plans prepared in the sixth week were found to be more competent than the plans prepared in the previous weeks regarding these categories. Various studies also support this conclusion. For example, Bracey, Brooks, Marlette and Locke (2013) organized an intense STEM educational program and determined that the program contributed to the improvement of efficacy and beliefs of pre-service teachers with regard to STEM education. Bozkurt Altan and Ercan (2016) implemented an intense in-service teacher training program in STEM education for science teachers and stated that the teachers developed skills on the topic of instruction process planning for STEM education. Ercan (2016) planned a 14-week instruction process with theoretical and practical contents and noted that this process supported pre-service science teachers' development of skills regarding STEM education.

The content of lesson plans that were prepared individually during the STLP course was suitable for STEM education. All of the participants struggled on the topic of integrating the STEM disciplines into the lesson because of the learning outcome they selected. However, they mentioned about the activities that included the STEM disciplines in their lesson plans. The lesson plans of the four participants were evaluated as they should be and reorganized in the category of "applicability." It was seen that the other three participants prepared lesson plans by suitable integration of the STEM disciplines into course contents during the STLP process, which was seen in the lesson plans that the participants prepared that there was an improvement in the scope of the categories of "contents", "approach", "assessment and evaluation", and "applicability".

Even though the participants of this study had the theoretical background regarding STEM education, it was observed that the lesson plans prepared by pre-service teachers during the entire process improved in the following weeks because the plans became STEM-focused only beginning from the 6th week. This result suggests that it is important for pre-service teachers to actively participate in activities in addition to theoretical education. From another perspective, it can be said that long-term programs can contribute to the development of the skills of pre-service teachers. In a study conducted with science teachers, Bozkurt Altan and Hacioglu (2018) provided a 30-hour education and then analyzed problem cases that they created for implementing STEM-focused activities in their courses. The researchers found that the problem cases of teachers had to be improved, and attention was drawn to that long-

term education is necessary for teachers to gain STEM-focused instruction planning skills (Bracey et al., 2013; Capobianco, 2013; Nadelson et al., 2013).

It can be interpreted that this situation originates from the participants having encountered many examples of the engineering design process. Indeed, STEM education is handled in different dimensions. Engineering design process is one of the ways to implement STEM education (Hmelo, Holton, & Kolodner, 2000; Kelley & Knowles, 2016; Moore et al., 2014; NAE & NRC, 2009; Siew, 2017). Throughout the process, various dimensions of STEM education were discussed in STLP course, and STEM was applied with participants for the science lessons. Multiple activities were conducted by the participants concerning the means of realizing STEM education, and they were given the opportunity to implement the lesson. This situation provided to enhance the experiences of the participants regarding the implementation of engineering design along with the experiencing achievement regarding the other STEM-focused applications. Bracey et al. (2013) similarly identified that planning classes regarding STEM education contributed to participants' interests and development of efficacy regarding STEM education. In addition to this, Bracey et al. (2013), Bozkurt Altan and Ercan (2016), Ercan (2016), who researched the development of efficacy by teachers for STEM education, found an improvement of efficacy after intense or extensive education. Similarly, Capobianco (2013) conducted a two-week intensive training program for pre-service and in-service teachers and found that teachers' ability to understand the engineering design process and use them in classroom applications had improved. Moreover, Allen et al. (2016) found that in-service training for teachers contributed to the development of pedagogical content knowledge about STEM education. In the study by Hacioglu et al. (2017) pre-service science teachers specified that they would give space to STEM-focused activities in future classes in the context of engineering design-based science education activities. A similar situation is also the point in question in this study. It can be considered that the process, which was both intense regarding the class time and extensive over a term, contributed positively to the development of efficacy. Indeed, the lesson plans before the STEM-focused STLP course, during the STEM-focused STLP course, and after the STEM-focused STLP course showed towards the end that development emerged better. Sungur, Gul, and Marulcu (2014) provided short-term education to science teachers to realize STEM education in the context of the engineering design approach. Researchers determined that science teachers had fundamental knowledge regarding the engineering design product but that they were unable to develop efficacy on the topic of using the engineering design process to teach scientific concepts. Similarly, Afarah (2011) gave a seminar over three days to science and mathematics teachers using engineering for teaching the other STEM disciplines. The researcher determined that the interest of teachers increased, but perceptions of efficacy did not develop. This situation reveals the importance of the education of instructors spread out over a process.

The STEM-focused activities administered in a 13-week process for the Science Education undergraduate program STLP course were effective in the development of skills aimed to plan STEM-focused lesson. It can be suggested that the STLP course

might be structured with a STEM-focused approach to improve the STEM-focused lesson planning skills of pre-service teachers. Providing long-term education to pre-service teachers in person can be recommended for improving their STEM-focused lesson planning skills.

In this research, lesson plans of pre-service teachers were examined regarding content, approach, assessment and evaluation. Development of more detailed analyses is suggested for examining lesson plans.

The activities developed for the STLP course within the scope of this research can be used by researchers to conduct and improve similar studies with different groups. Finally, it could be suggested that the similar process could be followed to investigate the application skills of pre-service science teachers for middle school students when the pre-service science teachers enrolled Teaching Practice course at the same time with the STLP course.

The limitation of this research is as follows. The findings of this study are limited to the lesson plans of pre-service science teachers. No other data were collected to determine the lesson planning skills of pre-service teachers. However, lesson plans were analyzed thoroughly.

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Fen Bilimleri Öğretmen Adaylarının STEM Odaklı Ders Planlama Becerilerinin Gelişiminin İncelenmesi

Atıf:

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Özet

Problem Durumu: STEM (Fen, Tenoloji, Mühendislik ve Matematik) kısaltması dispilinlerin entegrasyonuna dayanan bir yaklaşımı temsil etmektedir. Bu yaklaşım, öğrenenleri günlük yaşamdan problem durumları ile karşı karşıya bırakarak, fen, teknoloji, mühendislik ve matematik alanları çerçevesinde bütüncül olarak düşünmelerini, çözüm üretmenlerini ve çözümlerini uygulamalarını ön plana çıkarmaktadır (Dugger, 2010; Moore et al., 2014; Thomas, 2014; Fllis & Fouts, 2001; Lou et al., 2011). Dünya'da ve Türkiye'de STEM eğitimine verilen önem değerlendirildiğinde disiplinlerin entegrasyonu sağlayacak özgün bağlamlar geliştirebilecek öğretmenlerin hizmet içi ya da hizmet öncesinde STEM odaklı öğrenme sürecini planlayabilme becerisi kazanmalarının gerekliliği aşikardır. Bu bağlamda STEM odaklı öğrenme ortamlarında etkinliklere katılarak deneyim sahibi olan fen bilimleri öğretmen adaylarının bu deneyimlerinin ortaokul fen bilimleri dersini STEM odaklı anlayışla planlayabilmelerine katkı sağlayıp sağlamadığının ortaya konulmasının alan yazınına önemli katkı sağlayacağı düşünülmektedir.

Araştırmanın Amacı: Bu araştırmada STEM odaklı etkinlikler ile yürütülen Fen Öğretimi Laboratuvar Uygulamaları dersine katılan fen bilimleri öğretmen adaylarının STEM odaklı ders planlama becerilerinin gelişiminin incelenmesi amaçlanmaktadır.

Araştırmanın Yöntemi: Araştırma nitel araştırma desenlerinden durum çalışması esas alınarak yürütülmüştür. Araştırmanın çalışma grubunu, 7 fen bilimleri öğretmen adayı (4 kadın, 3 erkek) oluşturmaktadır. Öğretmen adaylarının isimleri renkler ile kodlanmıştır: Beyaz, Mavi, Turuncu, Yeşil, Pembe, Sarı, Mor. Öğretmen adaylarının Fen Öğretimi Laboratuvar Uygulamaları II dersinden önce hazırladıkları planlarda etkili olabileceği düşünüldüğünden katılımcıların STEM eğitimi konusundaki önceki deneyimlerini betimlemekte fayda görülmektedir. Çalışma grubunu oluşturan öğretmen adayları Fen Öğretimi Laboratuvar Uygulamaları I dersi kapsamında temel düzeyde 4 haftalık STEM eğitimi almış ve STEM etkinlikleri incelemişlerdir. Aynı zamanda Özel Öğretim Yöntemleri I (ÖÖY- I) dersinde STEM eğitimine yönelik teorik olarak bilgi sahibi olmuşlardır. Araştırmanın yürütüldüğü Fen Öğretimi Laboratuvar Uygulamaları II dersini, iki ayrı gruptaki toplam 35 öğretmen adayı almaktadır. Araştırmanın katılımcılarını dersi alan öğretmen adaylarından gönüllü olarak katılım sağlayayan öğretmen adayları olmuştur. Ders, 13 hafta boyunca her hafta 4 ders saati olmak üzere yürütülmüştür. Uygulama sürecinde 5'i araştırmacılar, 1'i Bozkurt Altan, vd. (2016) tarafından geliştirilen toplam altı farklı STEM odaklı etkinlik kullanılmıştır. STEM odaklı etkinlik modülleri probleme dayalı STEM uygulamaları ve mühendislik tasarım süreci esas alınarak planlanmıştır.

Araştırmada öğretmen adaylarının STEM odaklı etkinlik planlama becerilerine yönelik veriler ders planları ile toplanmıştır. Öğretmen adaylarından STEM odaklı uygulamaların öncesinde ve sonrasında grup çalışması ile uygulama sürecinde ise bireysel olarak ortaokul fen bilimleri dersi öğretim programında yer alan kazanımlar kapsamında STEM eğitimine uygun ders planları hazırlamaları istenmiştir. Ders planları betimsel analiz ile çözümlenmiştir.

Araştırmanın Bulguları: Fen bilimleri öğretmen adaylarının STEM odaklı etkinlik planlama becerilerine ilişkin bulgulara göre STEM odaklı etkinliklere katılmanın genel olarak öğretmen adaylarının STEM odaklı ders planlama becerisinin gelişimine katkı sağladığı tespit edilmiştir. Çalışma grubunda yer alan 7 öğretmen adayının STEM odaklı laboratuvar etkinlikleri boyunca hazırladıkları ders planlarında "içerik", "yaklaşım", "ölçme değerlendirme" ve "uygulanabilirlik" kategorileri kapsamında gelişim gösterdikleri tespit edilmiştir.

Öğretmen adaylarının uygulama öncesinde grup olarak hazırladıkları ders planında "içerik" kategorisinde çoğunlukla yalnızca fen disiplinine yer verdikleri ve öğretim sürecini fen disiplini kapsamında planladıkları tespit edilmiştir. Buna bağlı olarak diğer kategorilerde de fen disiplini çerçevesinde etkinliklere yer vermişlerdir. Uygulama sonrasında hazırladıkları öğretim planlarında ise daha çok mühendislik tasarım odaklı ve teknoloji destekli etkinliklere yer verdikleri belirlenmiştir. Öğretmen adayları uygulama sonrası hazırladıkları ders planlarında "ölçme değerlendirme", "yaklaşım" ve "uygulanabilirlik" kategorileri bağlamında da STEM odaklı öğrenme sürecine uygun planlar hazırlamışlardır.

Öğretmen adaylarının uygulama sürecinde bireysel olarak hazırladıkları iki farklı ders planlanında STEM odaklı öğrenme sürecine uygun içeriklere yer verdikleri tespit edilmiştir. 7 öğretmen adayından 4'ü seçtikleri kazanımlar nedeniyle STEM

disiplinlerini plana entegre etme konusunda zorluk yaşamış fakat ders planlarında STEM disiplinlerini içeren etkinliklere yer verebilmiştir. Dört öğretmen adayının bireysel olarak hazırladıkları ilk ders planları "uygulanabilirlik" kategorisinde tekrar düzenlenmelidir olarak değerlendirilmiştir. Diğer üç öğretmen adayının ise uygulama sürecinde hazırladıkları iki planda da STEM disiplinlerini ders içeriğine uygun şekilde entegre ederek ders planlarını hazırladıkları tespit edilmiştir. Öğretmen adayları hazırladıkları ders planlarında "içerik", "yaklaşım", "ölçme değerlendirme" ve "uygulanabilirlik" kategorileri kapsamında gelişim göstermiştir.

Araştırmanın Sonucu ve Öneriler: Fen Bilgisi Öğretmenliği lisans programı Fen Öğretimi Laboratuvar Uygulamaları II dersi için 13 haftalık bir süreç içinde gerçekleştirilen uygulamalar öğretmen adaylarının STEM odaklı ders planlamaya yönelik becerilerinin gelişiminde etkili olmuş ve öğretmen adayları süreç içerisinde hazırladıkları ders planlarına bu durumu yansıtmışlarıdır. Öğretmen adaylarının uygulama öncesinde teorik bilgiye sahip olmasına karşın hazırladıkları planların STEM odaklı öğrenme sürecine dair unsurlar içermediği tespit edilmiştir. Kendilerinin STEM odaklı etkinlikler içerisinde yer almaları STEM odaklı etkinlik planlama becerilerinin gelişiminde etkili olmuştur. Bu araştırmanın katılımcılarının STEM eğitimi konusunda teorik alt yapıya sahip olmasına rağmen öğretmen adaylarının süreç boyunca hazırladıkları ders planlarında 6. haftadan itibaren hazırlanan planların STEM odaklı olması bakımından gelişme göstermeye başladığı daha ileriki haftalarda iyileştiği görülmektedir. Bu sonuç teorik eğitimlerin yanı sıra öğretmen adaylarının kendilerinin etkinliklere aktif katılım sağlamasının önemli olduğu biçiminde değerlendirilebilir. Bir diğer yönü ile uzun soluklu programların öğretmen adaylarının becerilerinin gelişimine destek sağladığı söylenebilir.

Öğretmen adaylarına STEM eğitim anlayışını benimseyecekleri öğrenme ortamı oluşturmak üzere Fen Öğretimi Laboratuvar Uygulamaları II dersinin STEM odaklı öğrenme sürecini esas alarak yapılandırılması önerilebilir. Bu araştırmada öğretmen adaylarının ders planları içerik, yaklaşım, ölçme-değerlendirme ve uygulanabilirlik boyutları ile incelenmiştir. Öğretmen adaylarının ders planlarının incelenmesi için daha detaylı çözümlemeler geliştirilmesi önerilebilir.

Anahtar Kavramlar*:* fen bilimleri öğretmen adayları, STEM, STEM odaklı laboratuvar etkinlikleri, öğretmenlerin becerileri, öğretmen yeterlikleri

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The Pattern of Relationship between Attachment Styles, Gaming Addiction and Empathetic Tendency among Adolescents

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ABSTRACT

Purpose: The purpose of this research was to investigate the pattern of relationship between attachment styles, gaming addiction and empathy among adolescents.

Research Methods: The correlational survey method was used herein. In order to explain the pattern of relationship between the variables, a theoretical model based on the literature was recommended, which was tested by the Structural Equality Modeling (SEM). The sample of the research consisted of 338 middle school and high school students studying in Istanbul Umraniye district. 117 of the students (52.5%) were female while 160 thereof (47.5%) were male. Student ages ranged between 10 and 17, and their age mean was 13. The data was collected by the Attachment Styles Scale, Gaming Addiction Scale and Empathetic Tendency Scale. **Findings:** According the result of the Analysis, secure addiction significantly predicted gaming addiction in a negative way while it significantly predicted empathetic tendency in a positive way. Avoidant addiction significantly predicted gaming addiction in a positive way and empathetic tendency in a negative way. Anxious-ambivalent addiction, on the other hand, only predicted gaming addiction, in a positive way and significantly, and gaming addiction significantly predicted empathetic tendency in a negative way.

Implications for Research and Practice: The relationship between the attachment styles and gaming addiction and empathetic tendency can be tested on different samples. Practitioners working in the field can work more effectively in coping with gaming addiction by taking the attachment styles and empathetic tendencies into consideration. The psycho-educational programs aimed to mitigate the gaming addiction can include modules to raise awareness about the attachment styles and increase the empathetic tendency.

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Introduction

The nature of the bond a baby develops with their mother affects their future life. The nature of the bond developed between a baby and their mother or first caretaker can affect many areas from the psychological problems they will experience to the social relationships they will establish, from marriage life to the relationship they will establish with their own children. If a secure bond is not developed between the mother or first caretaker and the baby, emotional, social and behavioral problems may occur in later life stages. One of the problems caused by insecure attachment is game addiction which is evaluated within the framework of behavioral addictions. Game addiction is a current problem affecting children and adolescents particularly. This can cause serious problems for children and adolescents in areas such as family relations, peer relations and academic status. One of the concepts that both attachment styles and game addiction is related to is the empathic tendency. Empathic tendency forms the basis of healthy social relations. Being sensitive to the feelings, thoughts and needs of others, understanding and reacting to what they feel is important in establishing and maintaining healthy social relationships. While the individuals who are attached securely establish healthy relationships with others, the interpersonal relationships of the individuals attached insecurely may be unhealthier. It is thought that individuals who develop behavioral dependence such as game addiction will have low empathic tendencies because these individuals, after the emergence of addictive behavior, do everything to win the game, to survive in the game. Therefore, they become insensitive to the needs of others both in the virtual world and in the real world and can only focus on themselves. The relationship between the concepts, and especially game addiction as an increasing problem make the research important.

The attachment theory, which entered the literature as a joint study by Bowlby and Ainsworth, however, the groundwork of which belonged to Bowlby, gave way to the rethinking of the bond between a baby and their mother as centered around separation, deprivation and death concepts (Bretherton, 1992). According to a theory that emerged as an alternative to the psychoanalytical theory of object relations, attachment is a bio-social behavioral system in a baby that evolutionarily allows them to maintain their intimacy with their mother. The system aims to protect the baby who is helpless and desperate by natural selection such as searching for food for feeding and developing sexual behaviors for procreation (Kirkpatrick & Shaver, 1990). According to the attachment theory, babies internalize the experiences they have with their caretakers. This internalization constitutes a prototype that will shape the relationship of individuals with others except the family members (Bartholomew & Horowitz, 1991). Accordingly, the relationship of an individual with others largely develops around this prototype. In other words, whether the attachment developed with a caretaker is healthy or unhealthy will affect whether the relationships with others are maintained in a healthy or unhealthy manner.

Experimental studies by Ainsworth, Blehar, Waters and Wall (2014) on babies identified three types of attachment styles. These are secure attachment, anxious-ambivalent attachment and avoidant attachment. The attachment style that has its origin in the infancy appears to affect the adult attachment styles, too (Deniz, 2006).

Hence, Bartholomew and Horowitz (1991) approached the attachment theory in a little more different way and adapted it to the adults. The model presents four types of attachment styles based on the positive and negative evaluations of the self and others. Considering that the self is affected by data received from the external world through senses (Hume, 2009 as cited by Ugurlu, 2014), the effect of the caretaker first appears in the perception of both the self and others. Accordingly, both the self and others are perceived positively insecure attachment, the self is perceived negatively and others are perceived positively in preoccupied attachment, the self is perceived negatively and others are perceived positively in dismissing attachment, and lastly, both the self and others are perceived negatively in the fearful attachment.

An individual develops different behavioral patterns depending on their attachment style. Individuals that are attached securely display healthier reactions, while individuals that are attached insecurely may display more problematic behaviors. A review of the literature for studies on the attachment styles shows that the secure attachment has a positive relationship with resorting to religion, active planning, concession-cognitive restructuring and seeking external help (Terzi & Cankaya, 2009) and compassion (Isgor, 2017), and a negative relationship with Internet addiction (Savci & Aysan, 2016), social media addiction (Monacis, Palo, Griffiths & Sinatra 2017) and loneliness (Deniz, Hamarta & Ari, 2005); that the avoidant attachment has a positive relationship with childhood abuse (Wekerle & Wolfe, 1998), social media addiction (Blackwell, Leaman, Tramposch, Osborne & Liss, 2017) and physical, emotional, verbal and sexual abuse (Oshri, Sutton, Clay-Warner & Miller, 2015); that anxious-ambivalent attachment has a positive relationship with childhood abuse (Wekerle & Wolfe, 1998), social media addiction (Blackwell et al., 2017), physical, emotional, verbal and sexual abuse (Oshri et al., 2015) and Internet addiction (Senormanci, 2013). Today, one of the serious risk factors for young adults is the digital gaming addiction. In view of the research results, digital gaming addiction is considered to be linked with attachment styles.

The virtual world's anonymous structure does not restrict the individual and is open to everyone, as well as its interactive features distinguish the online games from the traditional games and make them popular entertainment and leisure tools (Liu & Chang, 2016). Digital games have some elements that make it attractive to the individual. Establishing more easy-going and intimate relations in the online world through games, the fact that individuals with good gaming skills gain reputation in their circles and the fact that these skills help them realize themselves (Li &Wang, 2013) are some of these features. These features that are attractive to the individuals may cause them to focus more on the games and develop a gaming addiction behavior.

There are discussions among the subject-matter experts about gaming addiction. These discussions are based on addictions that involve a substance intake by the body versus behavioral addictions that do not involve a substance intake by the body (Spekman, Konijn, Roelofsma & Griffiths, 2013). However, the inclusion of the gaming addiction by the American Psychiatric Association (APA, 2013) in DSM 5 (Diagnostic and Statistical Manual of Mental Disorders), followed by the World Health Organization (WHO) that approaches the gaming addiction as a mental problem in

the Classification of Mental and Behavioral Disorders (ICD), seems to have changed the direction of these discussions. Both sources define gaming addiction with clear criteria. The gaming addiction criteria are handled in nine categories in DSM 5 (2013). These are the mind being constantly preoccupied with games within a 12-month period, spending more and more time gaming (tolerance), feeling tense, getting angry and uneasy when stopping playing (withdrawal symptoms), lying about the time spent gaming, having problems with others for over-gaming, losing either job, love or similar relationships, gaming to escape from negative feelings, continuing to play despite the desire of stopping playing, losing interest in former activities of interest (hobbies, traveling etc.). The World Health Organization (WHO, 2018) similarly defined three basic criteria as losing control over the game for at least 12 months (the starting, frequency, intensity, length of gaming, the context in which the game is played), gaming taking priority over other daily chores, interests, and continuing gaming despite its negative consequences for family, professional, social personal, educational and other important areas. Both definitions appear to define the criteria clearly. The fact that the criteria have been defined appears to have now diverted the studies toward the areas to which the gaming addiction is related, which it affects and by which it is affected. Although gaming addiction is a serious risk, there appears to be a limited number of studies on it. However, the literature suggests that gaming addiction is linked with various concepts. The studies have found that digital gaming addiction has a positive relationship with shyness (Ayas, 2012), the time spent playing computer games (Gokcearslan & Durakoglu, 2014), persistent anxiety (Mehroof & Griffiths, 2010), social anxiety (Yildiz, Tufekci & Aksu, 2016), attention deficit hyperactivity disorder, depression, anxiety and obsessive-compulsive disorder (Andreassen et al., 2016) and attention deficit hyperactivity disorder and depressed mood (Hyun et al., 2015), and has a negative relationship with emotion regulation skills (Ulum, 2016) and emotion regulation and attachment to school (Liu et al., 2017).

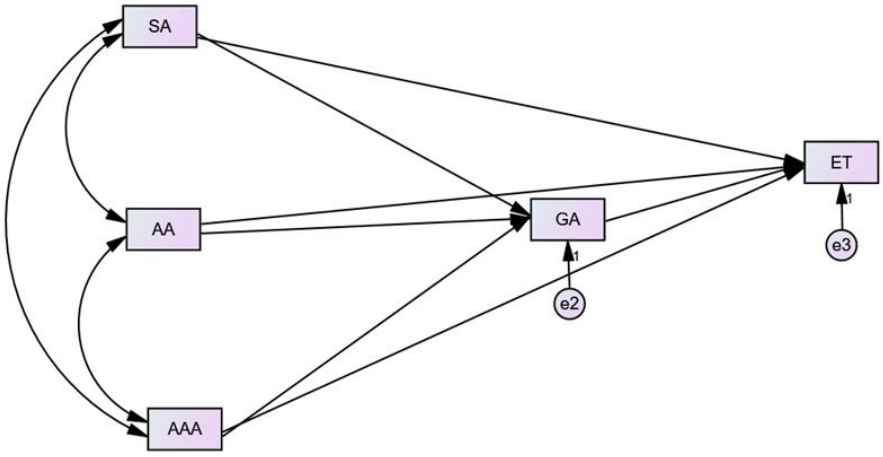
Another concept that is considered a personal trait and affected by gaming addiction is empathy. Being the capacity to place oneself in another's position, empathy represents the transition potential in emotional communication (Basch, 1983). In other words, with empathy, one can create changes also in his/her mood and feel different emotions than what he/she used to feel. Empathy is also possible by evaluating an event or circumstance from a different perspective. Empathy appears as a trait of individuals that have a positive personality also sensitive to the needs of others because their needs have been met (Yuksel, 2009). Empathy is related to children's understanding of others' problems and distress through symptoms and the maturation of their social, perceptive and cognitive abilities (Unal, 2007). The fact that individuals who are in touch with each other understand each other facilitates communication as well as minimizing the problems experienced (Rehber & Atici, 2009). A decreased empathetic tendency brings with itself the disruption of the psycho-social harmony (Kaya & Siyez, 2010). Psycho-social needs are those that emerge starting from the birth of an individual, enable individuals to live in harmony with their surroundings (Sahin & Ozcelik, 2016), and must be met for healthy development.

There is no firm information as to when empathy develops in children exactly. However, it is assumed based on the infant's reactions that a baby is born with an empathetic tendency (Ersoy & Kosger, 2016). On the other hand, Piaget (1965) reports that a child is self-centered during the time until the school period. This thought can be interpreted as that empathy cannot develop in children until the school period. Considering that empathetic tendency mostly begins to shape during the school period and the most mature response can be given in late adolescence (Stuss, Gallup & Alexander, 2001 as cited by Ersoy & Kosger, 2016), puberty and adolescence can be suggested to be critically important for the development of empathy. Risky behaviors displayed during this period may affect the development of empathy adversely. Digital gaming addiction appears as a seriously risky behavior in children and adolescents.

A review of the literature shows that there are studies suggesting that playing violent games is linked with decreased empathy (Bartholow, Sestir & Davis, 2005; Funk, Buchman, Jenks & Bechtoldt, 2003). Although these studies do not provide any information in respect of cause-effect, they can be suggested to provide information about the correlation of the concepts with each other and that this correlation is important. The literature also contains studies suggesting that empathetic tendency has a negative relationship with level of aggression (Cankaya & Ergin, 2015; Rehber & Atici, 2009) and bullying behavior (Kandemir & Ozbay 2009); has a positive relationship with the sub-dimensions of the family assessment scale including showing interest, communication, ability to give emotional reaction and behavior control (Yuksel, 2009).

When the literature is examined, no study examining the relationship between attachment styles and game addiction has been found. However, it is seen that attachment styles are related to internet addiction (Savci & Aysan, 2016; Senormanci, 2013) and social media addiction (Blackwell et al., 2017; Monacis et al., 2017), which are other types of technological addiction. Empathy appears to be related to violent games (Funk et al., 2003), digital game addiction (Kilic, 2019) and attachment styles (Kaplan & Aksel, 2013). In other words, when the studies in the literature are examined, it can be said that all three concepts are related to each other.

Gaming addiction among adolescents appears to be seriously risky behavior, and attachment styles appear to impact individuals displaying risky or risk-free behaviors. Empathy appears to be an important characteristic for an individual to adapt themselves to the social life. A less developed or damaged empathy may disrupt an individual's interpersonal relationships. The fact that game addicts have low empathy provides an insight into the impact of the games on this characteristic. Therefore, it is important that the relationship between these concepts be examined. To that end, a model is recommended and presented below, to explain the pattern of relationship between gaming addiction, attachment styles and empathy among adolescents.



SA: Secure attachment, AA: Avoidant attachment, AAA: anxious-ambivalent attachment, GA: Gaming addiction, ET: Empathetic tendency

Figure 1. *Recommended Path Analysis Diagram.*

According to Figure 1, there is a two-way relationship between secure attachment and avoidant attachment and anxious-ambivalent attachment. There is a direct one-way relationship between secure attachment, avoidant attachment, and anxious-ambivalent attachment, and gaming addiction, while there is a direct one-way relationship between secure attachment, avoidant attachment and anxious-ambivalent attachment, and empathetic tendency, and there is a direct one-way relationship between gaming addiction and empathetic tendency.

Method

Research Design

The correlational survey method was used in the present research which explores the pattern of relationship between attachment styles, gaming addiction, and empathetic tendency. In order to explain the pattern of relationship between the researched variables, a theoretical model based on literature was recommended, which was tested by the Structural Equality Modeling (SEM). With the structural equation model, it is tested whether the theoretical models explaining the relationship between the variables are congruent (Hu & Bentler, 1998). This model, with its features such as the ability to perform several analyses at one time, succeed in analyzing complex models, recommend corrections on the pattern of relationships in the model and take the errors resulting from the measurement into consideration, is used as a functional model for testing the theories and developing new models (Dursun & Kocagoz, 2010).

Research Sample

The study group consisted of 338 adolescents studying in a middle school and a high school in Umraniye , Istanbul during the 2018-2019 academic year. 117 of the students (52.5%) were female while 160 thereof (47.5%) were male. One of them left the gender box empty. The student ages ranged between 10 and 17, and their age mean was 13. It was determined that the sample size is sufficient for Chi-square tests (Barret, 2007) and Structural Equation Modeling (SEM) (Kline, 2011).

Research Instruments and Procedures

Personal Information Form: With the personal information form prepared by the researcher, information was gathered about the age, gender and grade of the participants.

Gaming Addiction Scale: The gaming addiction scale was developed by Lemmens, Valkenburg and Peter (2009) and adapted to the Turkish culture by Ilgaz (2015). The adapted scale consists of 21 items and 7 factors. 5-point Likert type scale was used for the scoring. The points are "Never", "Rarely", "Sometimes", "Often", and "Very Often." The structural validity of the scale was investigated using first-level and second-level factor analysis. The first-level factor analysis' fit index results (x^2 (165, N=265)=2.71.01, P< 0.000, RMSEA=0.049, S-RMR=0.046, GFI=0.91, AGFI=0.88, CFI=0.99, NNFI=0.98, IFI=0.99) and the second-level factor analysis results (x^2 (179, N=265)=331.68, P< 0.000, RMSEA=0.057, S-RMR=0.051, GFI=0.89, AGFI=0.86, CFI=0.98, NNFI=0.98, IFI=0.98) showed that the scale delivered good results. The scale's Cronbach's alpha was found to be 0.92. The reliability coefficient of the scale hereunder was found to be α= .88.

Empathetic Tendency Scale for Adolescents: The scale was developed by Kaya and Siyez (2010). The scale consists of 17 items and two sub-dimensions. The scale which has emotional empathy and cognitive empathy sub-dimensions is a 5-point Likert type measurement tool. A high total score from the scale shows that the empathetic tendency increases. The scale's KMO value of .91and Barlett Sphericity Test (X^2=2843.160, df=136, p<.000) were found to be significant. The scale items explain 43.588% of the total variance for the scale. 33.23% of the explained variance is emotional empathy and 10.35% thereof is cognitive empathy. Cronbach's Alpha internal consistency coefficient is .87 for the entire scale, .82 for the emotional empathy sub-dimension and .82 for the cognitive empathy sub-dimension. Fit indices derived from the confirmatory factor analysis (X^2= 270.89, sd 125, X^2/sd =2.16, GFI .96, AGFI .95, CFI .96, RMSEA .02, SRMR .03) show that the scale is a good fit. The scale's internal consistency coefficient was re-checked in this study and found to be .84.

Attachment Styles Scale: The scale was developed by Erzen (2016). The scale consists of 18 items and three sub-dimensions. The sub-dimensions are secure attachment, anxious-ambivalent attachment and avoidant attachment. The scale's Kaiser Meyer Olkin (KMO) value was found to be .84 and Barlett test result was found to be (p<.01). The scale items explain 45.73 % of the total variance for the scale. The fit indices derived from the scale's confirmatory factor analysis (GFI .93, AGFI .90, CFI .90,

RMSEA .05 and $\chi 2/sd=2.48$) show that the scale is a good fit. The scale items' total correlation values range between .49 and .75. The Cronbach's Alpha internal consistency coefficients for the three dimensions vary between .69 and .80. The scale's internal consistency coefficient was re-checked in this study and found to be 0.60.

Data Analysis

The research data was collected from the students face to face. The research was explained to the students who were also informed that the data collected would be protected for confidentiality and used only for scientific purposes. It was also stated that participation was voluntary. It was added that they could quit the study anytime they wanted. Istanbul Sabahattin Zaim University Ethics Board's approval was obtained for the research (ethics board resolution 2019/02 of 19/02/2019). 345 data sheets were obtained from the students. Seven of the data sheets were incomplete; hence, they were not included in the analysis. Data analysis was performed on 338 datasheets. Data was analyzed using Pearson Correlation and Structural Equation Modeling methods. For the Pearson correlation, data must be distributed normally. The structural equation modeling has certain assumptions. These are linearity, multivariate normality, single and multi-collinearity (Ulman, 2015). Univariate normality was tested with kurtosis and skewness values. The skewness and kurtosis values of the variables ranged between -1 and +1, and therefore, the variables had a normal distribution. The assumption of multivariate normality was calculated on AMOS program, and the variables were found to have a normal distribution. Multi collinearity problem VIF was tested with Situation index (DI) and Tolerance values, and Variance Increase Factors (VIF) appeared to be less than 10 (1.134- 1.549), and the Tolerance values appeared to range between (.646 and .882), a lot higher than .10. The Situation index was seen to be less than 30 (25.818). These values showed that there was no multicollinearity problem (Cokluk, Sekercioglu & Buyukozturk, 2012). The lack of a high correlation between the variables showed that there was no single linearity problem. When the data obtained wastaken as a whole, they were consistent with the Structural Equation Model. Data were analyzed using SPPS 25 and AMOS 25 programs.

Results

The correlation between the variables was checked before the data analysis. Later, data for the recommended model and the results regarding the valid model were provided.

Table 1.

The Correlation between The Variables

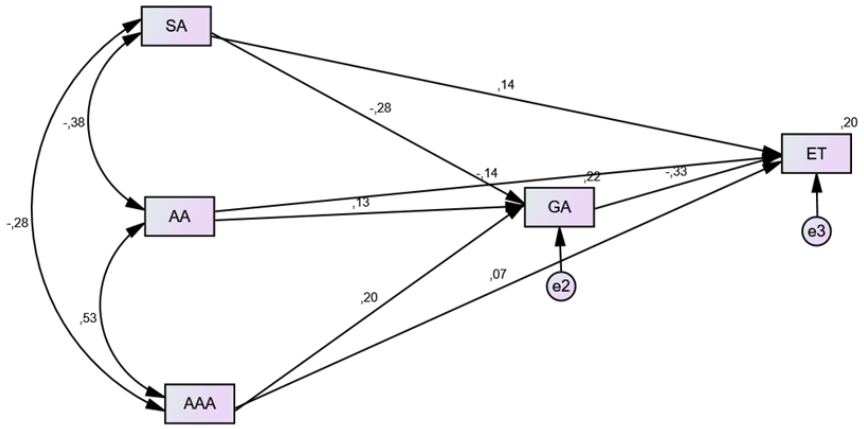
	Mean/Sd	S/K	GA	SA	AA	AAA	ET
GA	43.35/13.97	.419/-.589	1	-.389**	.345**	.347**	-.404**
SA	20.35/3.37	-.702/-.031		1	-.380**	-.276**	.300**
AA	13.36/4.70	.572/-.584			1	.527**	-.270**
AAA	14.30/4.95	.364/-.360				1	-.153**
ET	51.40/8.52	-.110/-.793					1

GA: Gaming addiction, SA: Secure attachment, AA: Avoidant attachment, AAA: anxious-ambivalent attachment, ET: Empathetic tendency, Mean: Mean, Sd: Standard deviation, S: Skewness, K: Kurtosis

When Table 1 is reviewed, gaming addiction had a medium negative relationship with secure attachment and empathetic tendency, and a positive relationship with avoidant attachment and anxious-ambivalent attachment. The skewness and kurtosis values were between +1 and -1, and the data had a normal distribution (Buyukozturk, 2014).

Findings on the Recommended Model

Figure 2 presents the correlation (double-headed arrows) and the regression values (single-headed arrows) for the recommended model.



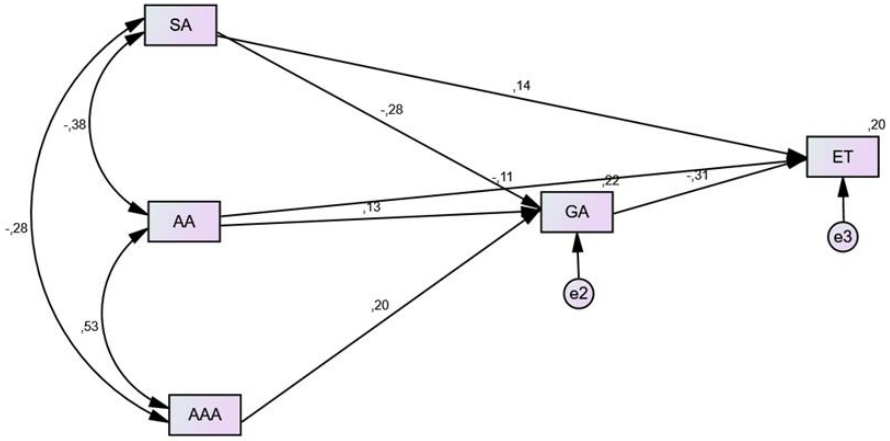
SA: Secure attachment, AA: Avoidant attachment, AAA: anxious-ambivalent attachment, GA: Gaming addiction, ET: Empathetic tendency

Figure 2. *Recommended Model Path Analysis Diagram.*

For the recommended model to be considered valid, the chi-square value, fit indices, regression coefficients, correlation coefficients and variance values must be

significant, and the insignificant parameters must be excluded from the model (Simsek, 2007). When the values of the recommended model were examined, all of the drawn paths of the regression coefficients were seen to be significant; however, the path between the anxious-ambivalent attachment and empathetic tendency was seen to be insignificant (R^2= .074, p>.05). This value was considered to indicate that the model was not valid. In light of the literature, this parameter was excluded from the model and the model was re-tested. The model analyzed this way was found to be a valid model. The values for the valid model are provided below.

Findings on the Valid Model



SA: Secure attachment, AA: Avoidant attachment, AAA: anxious-ambivalent attachment, GA: Gaming addiction, ET: Empathetic tendency

Figure 3. *Valid Model Path Analysis Diagram*

Figure 3 presents the correlation (double-headed arrows) and the regression values (single-headed arrows) for the valid model. When the fit indices were analyzed for the valid model, the data obtained appeared to confirm the model and the model was seen to the best fit. The chi-square value of the valid model was calculated to be χ^2=1.589; *df=1, p=.207, χ²/sd*=1.589. When the fit indices were analyzed (RMSEA=.042; GFI=.998; AGFI=.972; CFI=.998; NFI: .995; RFI: .951; IFI:998; TLI:981; SRMR=.0132), the model appeared to be valid (Cokluk et al., 2012).

When the path analysis diagram was examined, there was a medium negative relationship between secure attachment and avoidant attachment (r=-.38, p<.05), a low negative relationship between secure attachment and anxious-ambivalent attachment (r=-.28, p<.05), and a medium positive relationship between avoidant attachment and anxious-ambivalent attachment (r=.58, p<.05).

When the model's regression coefficients were examined, secure attachment predicted gaming addiction (R^2= -.28; p<.000) and empathetic tendency (R^2= .14; p<.05) significantly. Avoidant attachment predicted gaming addiction (R^2= -.13; p<.05) and empathetic tendency (R^2= .11; p<.05) significantly. Anxious-ambivalent attachment

predicted gaming addiction (R^2= .20; p<.000) significantly. In other words, each of the three attachment styles predicted gaming addiction significantly, however, only secure attachment and avoidant attachment predicted empathetic tendency. Also, gaming addiction (R^2= -.13; p<.05) predicted empathetic tendency (R^2= .31; p<.000) significantly.

Lastly, the variance values for the model were examined. Secure attachment, avoidant attachment and anxious-ambivalent attachment explained 22% of the change in gaming addiction significantly, and secure attachment, avoidant attachment and gaming addiction explained 20% of the change in empathetic tendency.

Discussion, Conclusion, and Recommendations

Considering game addiction as a mental health problem, interest in game addiction and related concepts have increased. The purpose of this research was to investigate the pattern of relationships between attachment styles, and gaming addiction and empathy among adolescents. For this purpose, a model was proposed based on theoretical structure, and the proposed model was tested with Structural Equation Modeling. The path analysis proved the existence of the explanatory relationships between the variables. According to the model, secure attachment and avoidant attachment and anxious-ambivalent attachment directly impacted the gaming addiction. Secure attachment and avoidant attachment directly impacted the empathetic tendency. Also, gaming addiction appeared to impact the empathetic tendency directly.

The research showed that secure attachment predicted gaming addiction negatively and significantly. The studies in the literature investigating the relationship between secure attachment and Internet addiction (Savci & Aysan, 2016), Facebook addiction (Eroglu, 2015) and social media addiction (Monacis et al., 2017) have also obtained similar results. The fact that gaming addiction is defined as a mental health problem (WHO, 2018) and that secure attachment has a negative relationship with psycho-social problems such as anxiety/depression, social ideational and attention-related problems and aggression (Nakash-Eisikovits, Dutra & Westen, 2002) support the result. According to cognitive therapy, maladaptive cognitions also impact the development of pathological Internet addiction (Davis, 2001). Individuals who are attached securely, on the other hand, are those who have a positive cognition about both themselves and others (Bartholomew & Horowitz, 1991). The findings including the present study and the other studies in the literature, when taken as a whole, suggest that people who are attached securely are psychologically healthier, have a more adaptive and positive cognition, and therefore, are less likely to be addicted to gaming compared to the other attachment styles.

The research showed that avoidant attachment predicted gaming addiction significantly in a positive way. There are studies in the literature with similar results. Blackwell et al. (2017), in their study, showed that there was a positive relationship between social media addiction and avoidant attachment style. Ghasempour and Mahmoodi-Aghdam (2015) identified that there was a positive relationship between cell phone addiction and avoidant attachment. Avoidant attachment is among the

insecure attachment styles. Individuals who have an insecure attachment style tend to develop emotional, behavioral problems and have substance abuse (Caspers, Cadoret, Langbehn, Yucuis & Troutman, 2005). This tendency may also impact digital gaming addiction, which is another behavioral addiction. According to the results of the present research as well as the studies in the literature, individuals who have an avoidant attachment style can be suggested to be more addicted to digital gaming.

The research showed that anxious-ambivalent attachment predicted gaming addiction significantly in a positive way. No study has been found in the literature that investigated the relationship between anxious-ambivalent attachment and gaming addiction. However, this result appears to be congruent with the studies investigating the relationship between anxious-ambivalent attachment and social media addiction (Blackwell et al., 2017), cell phone addiction (Ghasempour & Mahmoodi-Aghdam, 2015) and Internet addiction (Senormanci, 2013). Anxious addiction appears to have a positive relationship with depressed mood (Nakash-Eisikovits et al., 2002). A review of the studies in the literature shows that anxious addiction style is linked with behavioral and emotional problems. When the result of the present research and findings in the literature are examined together, individuals who are attached anxiously and indecisively are highly likely to be addicted to digital gaming.

The research showed that secure attachment predicted empathetic tendency significantly in a positive way, while avoidant attachment predicted it significantly in a negative way. No study has been found in the literature investigating the relationship between secure attachment and empathetic tendency. An individual whose care, nutritional and emotional needs are met and is attached to their parent or first caretaker securely in their infancy appears to be sensitive to the needs of others and able to focus on their emotions (Sali, 2013). However, individuals who are not attached securely appear to be more inclined to experience emotional and behavioral problems (Caspers et al., 2005). Based on the foregoing, it can be suggested that individuals who are attached securely will be more sensitive in their relationships with others, and therefore experience fewer interpersonal problems. However, emotional and behavioral problems experienced by individuals who are attached insecurely can be suggested to reflect to their interpersonal relationships, which will impact their empathetic tendency negatively.

Another result of the research was that gaming addiction predicted empathetic tendencies negatively. The research finding is consistent with the studies in the literature suggesting that playing violent games is linked with low empathetic tendency (Bartholow et al., 2005; Funk et al., 2003). Although it is assumed that babies are born with empathetic tendencies (Ersoy & Kosger, 2016), children are known to have a self-centered way of thinking during the preschool period. The empathy that begins to develop during the school period is believed to mature fully during late adolescence (Stuss et al., 2001 as cited by Ersoy & Kosger, 2016). When the gaming addiction variable is examined, the concept is seen to be linked with many psycho-social problems (Ayas, 2012; Andreassen et al., 2016; Mehroof & Griffiths, 2010; Yildiz et al., 2016). Considering the development course of empathy, any social, emotional and behavioral problem experienced during that period can be suggested to impact

empathy negatively. The research finding can be interpreted as that gaming addiction in adolescents will impact empathetic tendencies negatively since its developmental period.

In conclusion, the model recommended for the relationship between attachment styles, gaming addiction, and empathetic tendencies appear to be confirmed. Gaming addiction, particularly, poses as a serious risk for children and adolescents and therefore psycho-programs for coping with gaming addiction and individual studies conducted with gaming addicts can be planned in view of the impact of the attachment styles. Healthy relationships adolescents establish with their peers are important for their emotional and social development. The empathetic tendency has a key role in maintaining interpersonal relationships in a healthy way. Therefore, elements that impact empathetic tendency negatively must first be identified to protect or develop this characteristic. In this respect, studies focusing on gaming addiction as a risk factor can increase the chances of success. Relevant politicians (Ministry of National Education) can inform families about attachment styles and the effects of secure and insecure attachment on the individual. Psycho-education programs for families can be made on this subject. Similarly, awareness studies can be conducted in schools and families about game addiction, which is considered a serious risk factor in children and adolescents. Training can be organized for both students and families about the healthy use of technology. In addition, developing the empathetic tendency in children and adolescents could be effective in reducing the peer victimization encountered as a serious risk factor in schools.

Findings obtained from this study were limited to the sample subject of the study. The concepts can be tested by different researchers and the results of the study can be tested. The relationship between the variables can be tested on different samples (young adults, adults).

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Özet

***Problem Durumu*:** Bebeğin annesi ile kurduğu bağın niteliği onun gelecekteki yaşantısını etkilemektedir. Bebek ile anne veya bebek ile ilk bakıcısı arasında kurulan bağın niteliği aile fertleri dışındaki kişilerle kurulan ilişkiler için bir prototip oluşturacaktır (Bartholomew & Horowitz, 1991). Bu bağ kişinin yaşayacağı psikolojik sorunlardan kuracağı sosyal ilişkilere kadar, evlilik yaşantısından kendi çocuğu ile kuracağı ilişkiye kadar birçok alanda etkili olabilmektedir. Anne veya ilk bakıcı ile bebek arasında güvenli bir bağ geliştirilmezse yaşamın sonraki evrelerinde duygusal, sosyal ve davranışsal sorunlar meydana gelebilir (Deniz, Hamarta & Ari, 2005; Oshri, Sutton, Clay-Warner & Miller, 2015). Güvensiz bağlanmanın yol açacağı sorunlardan biri de davranışsal bağımlılıklar çerçevesinde değerlendirilen oyun bağımlılığıdır. Oyun bağımlılığı yeni yeni ortaya çıkan ve özellikle çocuk ve ergenleri etkileyen güncel bir sorun olarak karşımıza çıkmaktadır (Demirtas Madran & Ferligül Cakilci, 2014). Bu sorun aile ilişkileri, akran ilişkileri, akademik durum (Erboy & Vural, 2010; Yildiz, Tufekci & Aksu, 2016, 2016) gibi alanlarda çocuk ve ergenin ciddi problemler yaşamasına neden olabilmektedir. Hem bağlanma stillerinin hem de oyun bağımlılığının ilişkili olduğu kavramlardan biri de empatik eğilimdir. Empatik eğilim sağlıklı sosyal ilişkilerin temelini oluşturmaktadır (Kaya & Siyez, 2010). Diğerlerinin duygu düşünce ve ihtiyaçlarına duyarlı olmak, onların ne hissettiklerini anlayıp ona göre tepkide bulunmak anlamına empati (Basch, 1983) sağlıklı sosyal ilişkilerin kurulmasında ve sürdürülmesinde önemlidir. Güvenli bağlanan bireyler diğerleri ile daha sağlıklı ilişkiler kurarken, güvensiz bağlanan bireylerin kişilerarası ilişkileri daha sağlıksız olabilmektedir. Oyun bağımlılığı gibi davranışsal bağımlılık geliştiren bireylerin empatik eğilimlerinin düşük olacağı düşünülmektedir. Çünkü bu bireyler, bağımlılık davranışı ortaya çıktıktan sonra, oyunu kazanmak, oyunda varlığını devam ettirmek için her şeyi yapmaktadırlar. Bu doğrultuda gerek sanal dünyada gerekse gerçek dünyada diğerlerinin ihtiyaçlarına duyarsız olmakta, sadece kendi odaklı olabilmektedirler. Kavramların birbirleri ile olan ilişkisi ve özellikle oyun bağımlılığının giderek artan bir sorun olması araştırmayı önemli kılmaktadır.

***Araştırmanın Amacı*:** Bu araştırmanın amacı ergenlerde bağlanma stilleri ile oyun bağımlılığı ve empatik eğilim arasındaki ilişkiler örüntüsünü Yapısal Eşitlik Modellemesi (YEM) ile ortaya koymaktır.

***Araştırmanın Yöntemi*:** Bağlanma stilleri ile oyun bağımlılığı ve empatik eğilim arasındaki ilişkiler örüntüsünün incelendiği bu araştırmada ilişkisel tarama modeli kullanılmıştır. Araştırılan değişkenler arasındaki ilişki örüntüsünü açıklamak amacıyla alan yazına dayalı olarak kuramsal bir model önerilmiş ve önerilen model Yapısal Eşitlik Modellemesi ile test edilmiştir. Araştırma grubunu, 2018-2019 eğitim-öğretim yılında İstanbul Ümraniye de bir ortaokul ve bir lisede öğrenim gören 338 ergen oluşturmaktadır. Öğrencilerin 177'si (%52.5) kadın, 160'ı (%47.5) erkektir. Öğrencilerin yaşları 10 ile 17 arasında değişmekte olup yaş ortalamaları 13'tür.

***Araştırmanın Bulguları*:** Yapılan analize göre bağlanma stilleri ile oyun bağımlılığı ve empati arasında ilişki tespit edilmiştir. Güvenli bağlanmanın negatif, kaçınan ve kaygılı-kararsız bağlanma stillerinin ise pozitif yönde anlamlı şekilde oyun

bağımlılığını yordadığı görülmektedir. Empatik eğilimi güvenli bağlanmanın pozitif kaçınan bağlanmanın ise negatif yönde anlamlı şekilde yordadığı tespit edilmiştir. Ayrıca oyun bağımlılığının empatik eğilimi negatif yönde anlamlı şekilde yordadığı görülmektedir.

***Araştırmanın Sonuç ve Önerileri*:** Yapılan yapısal eşitlik modellemesinde değişkenler arasındaki açıklayıcı ilişkilerin varlığı kanıtlanmıştır. Modele göre güvenli bağlanma ile kaçınan bağlanma ve kaygılı kararsız bağlanma oyun bağımlılığını doğrudan etkilemektedir. Güvenli bağlanma ile kaçınan bağlanma empatik eğilimi doğrudan etkilemektedir. Ayrıca oyun bağımlılığının empatik eğilimi doğrudan etkilediği görülmektedir.

Oyun bağımlılığı özellikle çocuk ve ergenler için ciddi bir risk oluşturduğundan oyun bağımlılığıyla baş etme psiko-programları ve oyun bağımlılarıyla yapılan bireysel çalışmalar bağlanma stillerinin etkisi göz önüne alınarak planlanabilir. İlgili politikacılar tarafından aileler bağlanma stilleri, güvenli ve güvensiz bağlanmanın birey üzerindeki etkileri hakkında bilgilendirilebilir. Bu konuda ailelere yönelik psiko-eğitim programları yapılabilir. Benzer şekilde çocuk ve ergenlerde ciddi bir risk faktörü olarak değerlendirilen oyun bağımlılığı hakkında okullarda ve ailelere yönelik farkındalık çalışmaları yapılabilir. Teknolojinin sağlıklı kullanımı hakkında hem öğrencilere hem de ailelere yönelik eğitimler düzenlenebilir. Ayrıca çocuk ve ergenlerde empatik eğilimin geliştirilmesi okullarda ciddi bir risk faktörü olarak öne çıkan akran zorbalığının azaltılmasında da etkili olabilir.

Anahtar Sözcükler: Bağlanma stilleri, Oyun bağımlılığı, Empati, Ergenlik

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Gender Perceptions of the Primary School 4th Graders Regarding "Children's Rights"*

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ABSTRACT

Problem Statement and Purpose: It is crucial to determine the gender stereotypes, learned at an early age and limiting the freedom and rights of individuals to initiate the change in the egalitarian direction at an early age. Therefore, the present study aimed to investigate the 4th-grade primary school students' perceptions towards gender (in)equality based on children rights and to assess whether the perceptions differ by gender.

Method: This study was conducted using a descriptive survey method. The study group, which were assigned using a convenience sampling strategy, comprised by.570 4th grade students, 264 of whom were girls and 306 were boys, from six districts of Ankara Province. The research data were obtained by a data collection tool that was developed by the researchers drawing on the books, namely The Declaration of Girls' Rights and The Declaration of Boys' Rights by Élizabeth Brami and Estelle Billion-Spagnol, which were written for children. Data were analyzed using frequency, percentage and Chi-square test.
Findings: Overall results of this study suggested that the primary school fourth-grade students failed to consider professions, plays, toys, colors, daily life skills, academic, artistic, and sportive activities based on "rights", that they had explicit stereotypical approaches, and that girls had more equalitarian perception than boys regarding gender roles.
Implications for Further Research and Practice: Efforts should be made to eliminate all kinds of sexist items and practices from the content and functioning of the education (e.g. programs, books, teacher behaviors, spaces, activities). Steps should be taken to increase the awareness of families and society in general about gender equality.

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Introduction

The first question ever asked about a due or new-born baby is if it is a boy or a girl. The answer would refer to the biological sex of the child at first. Biological sex emphasizes the differences between the female and male sexes regarding chromosomes, anatomy, hormones, reproductive organs, and other physiological components. The biological sex refers to "real" differences between female and male, which are not learned but natal (Dokmen, 2010). The answer to the baby's sex refers at the same time to her/his "gender", which should shape how she/he is to be treated, the plays she/he will be playing, the colors she/he will wear on or use, the roles she/he will be assuming, her/his perception of oneself, success, and profession. Gender is a learned condition that is determined by social norms, constructed within particular social contexts, and furthermore, it expresses social, cultural, and psychological traits attributed to roles and behaviors that are considered appropriate for men and women. Gender is also a condition that produces differences and inequalities (Dokmen, 2010; Lindsey, 2016; Ryan, 2015; Wharton, 2005; Wienclaw, 2011). Separating women and men into masculine and feminine identities, imposing them roles appropriate for such identities, and identifying the same with a certain status, gender is the origin of the suppressive and subordinating approaches and behaviors both at home, and in public space in the historical process. Having been constructed upon religious, cultural, economic, and political power structures, gender is not static but is subject to change.

Children learn the stereotyped considerations and expectations regarding how should they look, think, feel, and act based on their sex at very early ages (Bem, 1983; Bian, Leslie & Cimpian, 2017; Guldu & Ersoy-Kart, 2009; Halim & Ruble 2010; Martin, 2011). Stereotyped sexual considerations and expectations as learned during early ages result in that gender inequality is adopted as normal and unchangeable and leads to blindness towards inequalities. In the foregoing context, the present study aims to investigate how the fourth-graders at primary school perceive gender equality based on "children's rights". In accordance with the aforementioned purpose, answers to the following questions are sought: what are the gender perceptions of fourth-graders as regards "children's rights" and if such perception of the students varies by their sex?

It is important for being able to launch change that aims equality to detect during early ages the sexist presuppositions that restrict the freedom and rights of individuals as acquired during early ages. Accordingly, the authors hope that this study would contribute in a clearer and more in-depth understanding of the issues that need to be intervened to form a society that is sensitive to gender equality. It is considered that the results of the study would also be instructive in raising awareness in children that gender equality is a human right and protecting their basic rights. There are various studies on social gender equality/inequality in the framework of educational programs and practices (e.g., Dokmen, 1995; Esen 2015; Gumusoglu, 2008; Kalayci & Hayirsever, 2014; Kirbasoglu-Kilic & Eyup, 2011; Ministry of National Education [MoNE], 2016; Sayilan & Ozkazanc, 2009; Sayilan, 2012). However, to our knowledge, in the relevant literature, there is not any study that investigated the gender perception

of the primary school students based on "children's rights", which remained under-researched. Thus, the present study will provide valuable insights in that regard.

Development of Gender Roles

When and how the children recognize their gender identity, role, a "sexist" self, and differentiation based on sex, and to what extent such awareness direct their behaviors? There are theories that address the questions above from diverse perspectives. Such theories are generally categorized under two groups; namely, nature-based - biological and raising based-sociocultural (Kilvington & Wood, 2016, p. 61-63). Biological explanations of gender differences emphasize the biological basis of the sex difference. The differences between male and female behaviors are genetic. In other words, given that the chromosomes, reproductive organs, hormones, structure of the brain, and brain chemistry are different in men and women, this difference leads to different behaviors of men and women, all of which are a part of the evolutional process (Kilvington & Wood, 2016). According to the biological theory, the basic factor that differentiates the roles of men and women is that women can bear children, while men cannot. Biological explanations disregard the variety of individual behaviors, and they are generally used to justify social inequalities (Martin, 2011).

Sociocultural theories, on the other hand, tend to elucidate the acquisition of appropriate behaviors as attributed to men and women similar to "learning" processes in general (Kretchmar, 2011). For instance, the social learning theory is an extension of the behaviorist tradition that defines learning as stimulant and response (Kretchmar, 2011). Social learning theory is focused on observable behavior. According to the social learning theorists, socialization is based on rewards (encouraging appropriate behaviors) and punishment (removing inappropriate behaviors). Imitation and modelling spontaneously occur in children, yet the said behavior is developed by reinforcement and becomes a regular practice as a result. According to that theory, similar to the other behaviors, the social gender identity and roles are learned through punishment and rewards (Bem, 1983) and indirectly through observation and imitation (Lindsey, 2016). Children observe and copy the behaviors of men and women, and then, receive positive or negative responses against their social gender behaviors, which strengthens the development of the social gender roles (Kilvington & Wood, 2016). Children are encouraged by the adults for behaving in accordance with the roles determined in line with their biological sex (Guldu & Ersoy-Kart, 2009).

Unlike the social learning theory, the cognitive development theory considers children as the basic subject in the socialization of the gender roles (Bem, 1983). According to that theory, the reason of the fact that children want to be feminine or masculine is not that they were rewarded by others but that they identify themselves as a girl or a boy (Dokmen, 2010). Once the child constructs one's gender identity (acting as a girl), the reciprocal interaction between the behaviors and thoughts (I am a girl) leads to constant gender identity or in cognitive development theory terms, the child acquires gender constancy (Bussey & Bandura, 1999). By the age three, the children begin to define themselves by sex and apply the sex-related labels to

themselves and mostly towards others; by the age six, the gender constancy becomes established (Lindsey, 2016).

The social gender schema theory bears the attribute of the social learning theory and cognitive development theory. The theory suggests that development of gender roles is a phenomenon that is both attributable to own cognitive processes, and learned within the society (Bem, 1983). According to the social gender schema theory, once the child first learns the cultural definitions of social gender, such schemas become the center, where all the other information is organized. Children learn what it means to be a woman or a man from their culture. Pursuant to the said theory, children adapt their behaviors to comply with the norms and expectations of sex in their culture (Kilvington & Wood, 2016). The schemas tell children what they can or cannot do according to their sexes. The schemas also affect the behaviors and self-respect of children. For example, once a girl learns that to be polite and courteous is valid for women in her culture, such behaviors are incorporated into the emerging social gender schema, and the behaviors are organized in respect of it (Lindsey, 2016). "The motivating force guiding children's gender-link conduct, as in cognitive-developmental theory, relies on gender-label matching in which children want to be like others of their own sex" Such coupling may, for instance, be in the form of the following: dolls are for girls and 'I am a girl' (Bussey & Bandura, 1999).

The Social Cognitive Theory suggests that development and differentiation of gender emerge through reciprocal and bidirectional effects occurring between the three factors, namely personal, behavioral and environmental (Bussey & Bandura, 1999). This theory suggests that children are active participants in the socialization process and that their cognitive skills are important in that regard. Children form their abstract models for the behaviors appropriate for both women, and men, and then adopt behaviors that comply with their models. Such modelling of children may not suit their relatives' behaviors. Thus, a girl may not imitate her mother or brother (Kilvington & Wood, 2016).

As it was stated in the introduction section of this study, children learn the acceptable and unacceptable situations for their sexes at very early ages using the reactions of people surrounding them. As age increases, the developed gender roles manifest in their most explicit state during adulthood (Guldu & Ersoy-Kart, 2009). In almost all the societies, children learn the existing gender roles explicitly and implicitly from a variety of channels, such as family (Bussey & Bandura, 1999; Leaper, 2014; Lindsey, 2016; Witt, 1997, Yagan-Guder & Guler-Yildiz, 2016), teachers (Asan, 2010; Bussey & Bandura, 1999), schools (Bussey & Bandura, 1999; Esen 2015; Gumusoglu, 2008; Kalayci & Hayirsever, 2014; Kirbasoglu-Kilic & Eyup, 2011; Martin, 2011; Ministry of National Education [MoNE], 2016; Sayilan & Ozkazanc, 2009; Sayilan, 2012) peer groups (Aina & Cameron, 2011; Bussey & Bandura, 1999; Lindsey, 2016; Serbin, Connor, Burchardt & Citron, 1979), fairy tales (Sezer, 2004), TV programs for children (Aubrey & Harriston, 2004; Barner, 1999), advertisements (Furnham, Babitzkow & Uguccioni, 2000), cartoons (Kalayci, 2015), plays (Martin, 2011; O'Connor, McCormack, Robinson & O'Rourke, 2017), computer games (Kan, 2012),

courses (Gumusoglu, 2008; Dokmen, 1995; Esen, 2015) and illustrated books for children (Catalcali-Soyer, 2009; Oskamp, Kaufman & Wolterbeek, 1996).

Legal Bases of Gender Equality

While on the one hand, gender roles are adopted by the new generations and reproduced in the society through the aforementioned channels, the national and international legislation, on the other hand, provided for the legal framework for gender equality as a fundamental "right". For example, Article 10 of the Constitution of Republic of Turkey, titled as "Equality before the law", including the provision that "Everyone is equal before the law without distinction as to language, race, color, sex, political opinion, philosophical belief, religion and sect, or any such grounds. Men and women have equal rights. The State has an obligation to ensure that this equality exists in practice. Measures taken for this purpose shall not be interpreted as contrary to the principle of equality" emphasized the women-men equality.

The most important and internationally valid document for ensuring women - men equality is the Convention on the Elimination of All Forms of Discrimination against Women (CEDAW), adopted by the United Nations (UN) in 1979 (UNICEF, 2004). This document lists seven actions that prevent differentiation against women for the parties of the Convention to ensure that women have equal rights with men in education based on women-men equality. Among the foregoing actions, "The elimination of any stereotyped concept of the roles of men and women at all levels and in all forms of education by encouraging coeducation and other types of education which will help to achieve this aim and, in particular, by the revision of textbooks and school programs and the adaptation of teaching methods" measure especially emphasize the women-men equality in the context of gender roles.

Along with the Convention on the Elimination of All Forms of Discrimination against Women (CEDAW), the Beijing Declaration and Platform for Action constitutes another international legal legislation for ensuring gender equality. The Beijing declaration obligates the "governments to ensure empowerment and advancement of women in the society, to increase women - men equality and ensure that gender perspectives reflected in all fundamental policies and programs" (Sabanci University Gender and Women's Studies Forum, 2015, p. 5). Article 2 of the United Nations Convention on the Rights of the Child, which provides the direct framework for the children's rights, confirm and commit that without discrimination of any kind, irrespective of the child's or his or her parent's or legal guardian's race, color, sex, language, religion, political or other opinion, national, ethnic or social origin, property, disability, birth or other status would be imposed on children. Unfortunately, despite the legal regulations, deep inequalities between women and men, and girls and boys arise from the gender roles and pattern prejudices that are learned at early ages through socialization.

In the light of all these above explanations, this study aimed to investigate fourth-grade primary school students' perceptions towards gender (in)equality based on children rights and to test whether their perceptions differed by sex. For this aim, the following research questions were posed for this study:

1. What are the perceptions of fourth-grade primary school students' towards gender (in)equality based on children rights?
2. Do the perceptions of fourth-grade primary school students' towards gender (in)equality based on children's rights differ according to their sex?

Method

Research Design

This study was designed upon descriptive simple survey model with an aim to examine, on the basis of rights, the perceptions of primary school fourth-graders for gender and if such perceptions vary by their sex. Descriptive studies aim to describe the events and phenomena without any intervention (Karasar, 2005, p. 77; Buyukozturk, Kilic-Cakmak, Akgun, Karadeniz & Demirel, 2008, p. 19). No explanation or direction was provided to the participant students that might influence their perceptions before the data collection, and that the data were collected upon "as is" principle. Only their sexes as regards their personal information were asked to determine if their perception regarding gender changed.

Research Sample

The study group of this research was comprised of a total of 570 students, i.e. 264 girls (43.6%) and 306 boys (50.6%) attending to a public school each selected from Cankaya, Elmadag, Mamak, Pursaklar, Sincan, and Yenimahalle districts of Ankara Province. The study group was determined by convenience sampling method; a non-random sampling method, on the grounds that it was accessible and data collection tools were easy to apply (Buyukozturk, Kilic-Cakmak, Akgun, Karadeniz & Demirel, 2008). This research was conducted with the fourth-graders on the grounds that they would complete the surveys more comfortably and consciously since the "rights" matters were included in this study, that fourth-graders attended to the Social Sciences and Human Rights, Citizenship, and Democracy courses, and that their reading, writing, and comprehension skills were more developed compared to the other grade levels.

Research Instruments and Procedures

The data collection tool was developed by the researchers upon inspiration from the books, namely La déclaration des droits des filles (The Declaration of Girls' Rights) and La Déclaration des droits des garçons (The Declaration of Boys' Rights) by Élizabeth Brami and Estelle Billion-Spagnol (2017), which were written for children but addressed to people from any age group and made them think. The rights provided in clauses in both of the books (e.g. "similar to the boys, the girls also have the right to have their hair cut very short") were transformed into survey items (e.g. "who has the right to have her/his hair cut very short") and 70 items were generated. Each item was provided with three options, namely "girls' right", "boys' right", and "both girls', and boys' right". Accordingly, the data collection tool was submitted for review of experts each from child development, educational law, educational management, and curriculum and instruction and two doctorate students. Upon suggestions of the experts, the number of items was decreased to 48 and the wording of certain items was edited. The tool was also subject to trial to see whether it was

appropriate regarding clarity and time to be applied to a fourth-grade student. During the trial of the survey, "This is not a test, and there are no right or wrong answers." phrase was added into the remarks section of the survey along with other clarifications upon a student's question if he would be scored. Having been finalized accordingly, the "Gender Equality Survey in terms of Children's Rights" was applied by the researchers in the classrooms of the participant students upon permission by the Ministry of National Education. Before being distributed to the students, the purpose of the survey was explained to students, their kind assistance was requested, it was made clear that they might decline to participate, and explanations as regards how the survey was to be completed were provided. The personal information of the children and the names of their schools were kept confidential based on ethical considerations. Approximately 25 - 30 minutes took for the students to complete the surveys.

Data Analysis

The data collected using the surveys were analyzed by the SPSS software program. Thirty-five surveys were excluded on the grounds that sex section was left blank, or the same item was marked twice, or at least five items were left blank, and thus the analyses were performed on 570 surveys. The data were analyzed by frequency, percentage and Chi-Square since the variables in question included two (2) attributes for sex (Girls, Boys), and three (3) attributes for "girls' right", "boys' right', and "both girls', and boys' right". As a result of the analysis, significance interpretation was not performed for the items that the number of cells below anticipated frequency was more than 20% of the total number of cells and that such items were used only as a cross table. For the items, where significance interpretation was possible, percentages were also considered to have healthier interpretations as regards the items with intergroup differences.

Results

This section presents the findings based on data analysis. On the grounds that significance interpretation was not performed for the items that the number of cells below anticipated frequency was more than 20% of the total number of cells as a result of Chi-Square analysis, the degree of freedom (*df*), chi-square value (X^2) and significance value (*p*) columns were left blank for the aforementioned items.

Various questions were introduced to students as regards the right to play, and their responses to such questions were analysed by their sex. The student perceptions as regards the right to play are provided in Table 1.

Table 1.

Chi-Square Test Results regarding the Sex of Students and their Perceptions regarding the "Right to Play"

Children's Rights	Sex	Girls' Right		Boys' Right		Both Girls', and Boys' Right		Total		*df*	X^2	*p*
		f	%	*f*	%	*f*	%	*f*	%			
Who has the right to play with marbles?	Girls	1	0,4	64	24,2	199	75,4	264	100,0	2	7,31	.03
	Boys	10	2,3	83	27,2	212	69,5	305	100,0			
	Total	11	1,9	147	25,8	411	72,2	569	100,0			
Who has the right to play with airplanes?	Girls	6	2,3	119	45,6	136	52,1	261	100,0	2	1,67	,43
	Boys	7	2,3	155	51,0	142	46,7	304	100,0			
	Total	13	2,3	274	48,5	278	49,2	565	100,0			
Who has the right to play computer games?	Girls	1	0,4	10	3,8	252	95,8	263	100,0	-	-	-
	Boys	3	1,0	58	19,2	241	79,8	302	100,0			
	Total	4	0,7	68	12,0	493	87,3	565	100,0			
Who has the right to play with dolls?	Girls	180	68,7	0	-	82	31,3	262	100,0	-	-	-
	Boys	238	78,8	1	0,3	63	20,9	302	100,0			
	Total	418	74,1	1	0,2	145	25,7	564	100,0			
Who has the right to play at families?	Girls	140	53,2	0	-	123	46,8	263	100,0	-	-	-
	Boys	220	72,1	1	0,3	84	27,5	305	100,0			
	Total	360	63,4	1	0,2	207	36,4	568	100,0			
Who has the right to climb trees?	Girls	1	0,4	52	20,5	201	79,1	254	100,0	-	-	-
	Boys	6	2,0	110	36,9	182	61,1	298	100,0			
	Total	7	1,3	162	29,3	383	69,4	552	100,0			
Who has the right to play with toy cars?	Girls	1	0,4	148	56,3	113	43,0	263	100,0	-	-	-
	Boys	3	1,0	180	59,4	120	39,6	303	100,0			
	Total	4	0,7	328	58,0	233	41,2	566	100,0			
Who has the right to play hopscotch?	Girls	60	22,7	0	-	204	77,3	264	100,0	-	-	-
	Boys	73	23,9	1	0,3	231	75,7	305	100,0			
	Total	133	23,4	1	0,2	435	76,4	569	100,0			
Who has the right to skip rope?	Girls	88	33,3	0	-	176	66,7	264	100,0	-	-	-
	Boys	96	31,7	2	0,7	205	67,7	303	100,0			
	Total	184	32,5	2	0,4	381	67,2	567	100,0			

Table 1 provides that significance interpretation can be performed for the items regarding the rights of playing with marbles and playing with toy airplanes. In that respect, the perceptions of 4th graders as regards the right to playing with marbles significantly differ by sex and that considering the percentages, the girls had a more egalitarian attitude compared to boys that the said right was entitled to both girls and boys. On the other hand, perceptions regarding the right to play with toy planes did not significantly differ by sex and that upon review of the percentages, it was highly seen as a right for both sexes, and in addition, it was remarkable that there was an agreement that it was only boys' right. Taking into consideration the Chi-Square analysis -but without interpretation- playing computer, playing hopscotch, skipping

rope, and climbing to trees were highly seen as a right by both sexes, where playing at families and playing with dolls were highly seen as a right of girls and playing with toy cars was highly seen that of boys.

Table 2 provides the perceptions of fourth-grade students by sex as regards clothing and appearance rights in a social gender context.

Table 2.

Chi-Square Test Results regarding the Sex of Students and their Perceptions regarding the "Right to Clothing and Appearance"

Children's Rights	Sex	Girls' Right		Boys' Right		Both Girls', and Boys' Right		Total		*df*	X^2	*p*
		f	%	*f*	%	*f*	%	*f*	%			
Who has the right to have his/her hair cut short?	Girls	41	15,6	37	14,1	184	70,2	262	100,0	2	36,79	.00
	Boys	31	10,3	110	36,5	160	53,2	301	100,0			
	Total	72	12,8	147	26,1	344	61,1	563	100,0			
Who has the right to grow hair?	Girls	89	34,0	1	0,4	172	65,6	262	100,0	2	16,23	.00
	Boys	95	31,6	21	7,0	185	61,5	301	100,0			
	Total	184	32,7	22	3,9	357	63,4	563	100,0			
Who has the right to keep ponytail?	Girls	145	55,6	0	-	116	44,4	261	100,0	2	13,29	.00
	Boys	165	54,1	15	4,9	125	41,0	305	100,0			
	Total	310	54,8	15	2,7	241	42,6	566	100,0			
Who has the right to cloth in blue color?	Girls	3	1,2	52	20,0	205	78,8	260	100,0	-	-	-
	Boys	3	1,0	93	30,9	205	68,1	301	100,0			
	Total	6	1,1	145	25,8	410	73,1	561	100,0			
Who has the right to cloth in pink color?	Girls	98	37,4	3	1,1	161	61,5	262	100,0	-	-	-
	Boys	174	57,6	5	1,7	123	40,7	302	100,0			
	Total	272	48,2	8	1,4	284	50,4	564	100,0			

As it can be seen from Table 2, the students' perceptions regarding the rights to have their hair cut short, grow hair, and keep a ponytail significantly differed in statistical terms and that the boys held more sexist attitude towards the foregoing rights. In general, to have one's haircut and grow hair was seen as an equal right for both sexes, where keeping a ponytail was mostly considered a right of girls. However, considering the percentages of those rights, students deem that the right to wear blue or pink was an equal right for both sexes, where they think that wearing blue was more of a right of boys, where wearing pink was that of girls.

Table 3 below provides the perceptions of students by sex regarding the rights to make vocational choices in the context of social gender.

Table 3.

Chi-Square Test Results regarding the Sex of Students and their Perceptions regarding the "Right to Make Occupational Choices"

Children's Rights	Sex	Girls' Right		Boys' Right		Both Girls' and Boys' Right		Total		*df*	X^2	*p*
		f	%	*f*	%	*f*	%	*f*	%			
Who has the right to become a surgeon?	Girls	9	3,5	8	3,1	240	93,4	257	100,0	2	14,19	.00
	Boys	22	7,3	29	9,6	250	83,1	301	100,0			
	Total	31	5,6	37	6,6	490	87,8	558	100,0			
Who has the right to become a secondary school teacher?	Girls	3	1,2	5	1,9	252	96,9	260	100,0	2	12,94	.00
	Boys	8	2,6	25	8,2	271	89,1	304	100,0			
	Total	11	2,0	30	5,3	523	92,7	564	100,0			
Who has the right to become a fashion model?	Girls	125	49,2	8	3,1	121	119,2	254	100,0	2	2,02	.36
	Boys	144	48,0	17	5,7	139	140,8	300	100,0			
	Total	269	48,6	25	4,5	260	46,9	554	100,0			
Who has the right to become a sculptor?	Girls	4	1,6	89	34,8	163	63,7	256	100,0	2	1,25	.54
	Boys	7	2,3	93	30,9	201	66,8	301	100,0			
	Total	11	2,0	182	32,7	364	65,4	557	100,0			
Who has the right to become a truck driver?	Girls	0	-	179	67,8	85	32,2	264	100,0	-	-	-
	Boys	7	2,3	237	77,7	61	20,0	305	100,0			
	Total	7	1,2	416	73,1	146	25,7	569	100,0			
Who has the right to become an astronaut?	Girls	6	2,3	40	15,3	216	82,4	262	100,0	-	-	-
	Boys	3	1,0	69	22,7	232	76,3	304	100,0			
	Total	9	1,6	109	19,3	448	79,2	566	100,0			
Who has the right to become a public judge?	Girls	5	1,9	15	5,7	241	92,3	261	100,0	-	-	-
	Boys	3	1,0	43	14,1	259	84,9	305	100,0			
	Total	8	1,4	58	10,2	500	88,3	566	100,0			
Who has the right to be the President?	Girls	2	0,8	59	22,5	201	76,7	262	100,0	-	-	-
	Boys	2	0,7	119	29,3	182	60,1	303	100,0			
	Total	4	0,7	178	31,5	383	67,8	565	100,0			
Who has the right to become a nurse?	Girls	109	41,9	1	0,4	150	57,7	260	100,0	-	-	-
	Boys	170	56,1	6	2,0	127	41,9	303	100,0			
	Total	279	49,6	7	1,2	277	49,2	563	100,0			
Who has the right to become a police officer?	Girls	2	0,8	17	6,5	243	92,7	262	100,0	-	-	-
	Boys	0	0,0	24	7,9	281	92,1	305	100,0			
	Total	2	0,4	41	7,2	524	92,4	567	100,0			
Who has the right to become a babysitter?	Girls	186	71,8	1	0,4	72	27,8	259	100,0	-	-	-
	Boys	225	74,0	1	0,3	78	25,7	304	100,0			
	Total	411	73,0	2	0,4	150	26,6	563	100,0			
Who has the right to become a dancer?	Girls	104	40,0	1	0,4	155	59,6	260	100,0	-	-	-
	Boys	137	45,4	4	1,3	161	53,3	302	100,0			
	Total	241	42,9	5	0,9	316	56,2	562	100,0			
Who has the right to become a nursery class teacher?	Girls	54	20,7	2	0,8	205	78,5	261	100,0	-	-	-
	Boys	67	22,0	6	2,0	231	76,0	304	100,0			
	Total	121	21,4	8	1,4	436	77,2	565	100,0			

According to Table 3, the perceptions of the fourth-grade students regarding the right to become a "surgeon" and a "secondary school teacher" significantly differed by sex. Girls adopted a more egalitarian attitude towards both rights. Perceptions as regards fashion model and sculptor professions were significantly differed by sex: becoming a fashion model was seen more of a right of girls by both sexes, where becoming a sculptor was seen as a right of both sexes. Students stated that becoming an astronaut, a public prosecutor/judge, and a police officer was highly a right for both sexes. However, there was a high level of agreement as regards that becoming a truck driver was a right of boys, where becoming a nurse or babysitter was that of girls. Furthermore, while becoming a dancer or a nursery school teacher was seen as a right for both sexes, there was also an agreement that performing such professions was mostly a right of girls.

Table 4 presents the perceptions of students as regards the right to know daily skills by sex.

Table 4.

Chi-Square Test Results regarding the Sex of Students and their Perceptions regarding the "Right to Know Daily Skills"

Children's Rights	Sex	Girls' Right		Boys' Right		Both Girls', and Boys' Right		Total		*df*	X^2	*p*
		f	%	*f*	%	*f*	%	*f*	%			
Who has the right to know how to wash dishes?	Girls	13	51,2	7	2,7	120	46,2	260	100,0	2	6,56	.04
	Boys	18	61,8	7	2,3	109	35,9	304	100,0			
	Total	32	56,9	14	2,5	229	40,6	564	100,0			
Who has the right to know how to iron?	Girls	13	50,4	3	1,1	127	48,5	262	100,0	2	8,61	.01
	Boys	18	61,1	7	2,3	111	36,6	303	100,0			
	Total	31	56,1	10	1,8	238	42,1	565	100,0			
Who has the right to know how to repair?	Girls	0	-	160	60,8	103	39,2	263	100,0	-	-	-
	Boys	7	2,3	215	71,0	81	26,7	303	100,0			
	Total	7	1,2	375	66,3	184	32,5	566	100,0			
Who has the right to know how to drive nails?	Girls	1	0,4	140	53,6	120	46,0	261	100,0	-	-	-
	Boys	7	2,3	203	66,6	95	31,1	305	100,0			
	Total	8	1,4	343	60,6	215	38,0	566	100,0			
Who has the right to know how to cook?	Girls	10	40,2	0	-	158	59,8	264	100,0	-	-	-
	Boys	12	40,8	8	2,6	173	56,5	306	100,0			
	Total	23	40,5	8	1,4	331	58,1	570	100,0			
Who has the right to know how to make cleaning?	Girls	12	47,7	1	0,4	137	51,9	264	100,0	-	-	-
	Boys	17	56,4	2	0,7	130	42,9	303	100,0			
	Total	29	52,4	3	0,5	267	47,1	567	100,0			
Who has the right to know how to sew?	Girls	15	57,7	2	0,8	108	41,5	260	100,0	-	-	-
	Boys	18	60,5	5	1,6	115	37,8	304	100,0			
	Total	33	59,2	7	1,2	223	39,5	564	100,0			
Who has the right to know how to knit?	Girls	17	66,0	3	1,1	86	32,8	262	100,0	-	-	-
	Boys	22	74,1	4	1,3	75	24,6	305	100,0			
	Total	39	70,4	7	1,2	161	28,4	567	100,0			

As it can be seen from Table 4, perceptions regarding the right to know how to wash dishes and iron significantly differed by sex, and that such right was mostly attributed to girls. Considering the ratio, it was seen that the boys held a more sexist attitude in that context. There was a high level of agreement as regards the fact that repairing and driving nails were a right for boys, where to know how to sew and knit was that of girls. Although knowing how to cook was seen as an equal right for both sexes, there is a more intensive agreement as regards given that girls were entitled to that right.

Table 5 provides the perceptions of fourth-grade students by sex as regards rights pertaining to areas of interest and engaging activities in a social gender context.

Table 5.

Chi-Square Test Results regarding the Sex of Students and their Perceptions regarding the "Right to Engage in Academic, Artistic, Sportive, and Cultural Activities"

Children's Rights	Sex	Girls' Right		Boys' Right		Both Girls', and Boys' Right		Total		*df*	X^2	*p*
		f	%	*f*	%	*f*	%	*f*	%			
Who has the right to learn how to shoot arrows?	Girls	6	2,3	41	15,8	213	81,9	260	100,0	2	9,95	.01
	Boys	4	1,3	80	26,5	218	72,2	302	100,0			
	Total	10	1,8	121	21,5	431	76,7	562	100,0			
Who has the right to play football?	Girls	4	1,5	108	41,5	148	56,9	260	100,0	2	12,47	.00
	Boys	6	2,0	167	56,0	125	41,9	298	100,0			
	Total	10	1,8	275	49,3	273	48,9	558	100,0			
Who has the right to read adventure stories?	Girls	10	3,9	9	3,5	240	92,7	259	100,0	2	41,93	.00
	Boys	6	2,0	67	22,0	232	76,1	305	100,0			
	Total	16	2,8	76	13,5	472	83,7	564	100,0			
Who has the right to act naughty?	Girls	0	-	25	9,7	234	90,3	259	100,0	-	-	-
	Boys	7	2,3	16	5,3	278	92,4	301	100,0			
	Total	7	1,2	41	7,3	512	91,4	560	100,0			
Who has the right to be successful in mathematics?	Girls	4	1,5	1	0,4	257	98,1	262	100,0	-	-	-
	Boys	2	0,7	11	3,6	291	95,7	304	100,0			
	Total	6	1,1	12	2,1	548	96,8	566	100,0			
Who has the right to play chess?	Girls	1	0,4	3	1,2	256	98,5	260	100,0	-	-	-
	Boys	1	0,3	28	9,2	274	90,4	303	100,0			
	Total	2	0,4	31	5,5	530	94,1	563	100,0			
Who has the right to boxing?	Girls	2	0,8	115	44,1	144	55,2	261	100,0	-	-	-
	Boys	6	2,0	192	63,4	105	34,7	303	100,0			
	Total	8	1,4	307	54,4	249	44,1	564	100,0			
Who has the right to ballet?	Girls	167	64,0	2	0,8	92	35,2	261	100,0	-	-	-
	Boys	224	73,7	7	2,3	73	24,0	304	100,0			
	Total	391	69,2	9	1,6	165	29,2	565	100,0			
Who has the right to weep for being affected while watching a film?	Girls	37	14,2	0	-	224	85,8	261	100,0	-	-	-
	Boys	63	20,7	4	1,3	237	78,0	304	100,0			
	Total	100	17,7	4	0,7	461	81,6	565	100,0			
Who has the right to read detective stories?	Girls	6	2,3	36	13,7	220	84,0	262	100,0	-	-	-
	Boys	3	1,0	76	25,2	223	73,8	302	100,0			
	Total	9	1,6	112	19,9	443	78,5	564	100,0			

Table 5 Continue

Children's Rights	Sex	Girls' Right		Boys' Right		Both Girls', and Boys' Right		Total		*df*	X^2	*p*
		f	%	*f*	%	*f*	%	*f*	%			
Who has the right to like horror films?	Girls	4	1,5	17	6,5	240	92,0	261	100,0	-	-	-
	Boys	3	1,0	85	28,3	212	70,7	300	100,0			
	Total	7	1,2	102	18,2	452	80,6	561	100,0			
Who has the right to be successful in literacy?	Girls	1	0,4	0	-	262	99,6	263	100,0	-	-	-
	Boys	5	1,6	4	1,3	296	97,0	305	100,0			
	Total	6	1,1	4	0,7	558	98,2	568	100,0			
Who has the right to read poems?	Girls	4	1,5	1	0,4	256	98,1	261	100,0	-	-	-
	Boys	8	2,6	8	2,6	287	94,7	303	100,0			
	Total	12	2,1	9	1,6	543	96,3	564	100,0			

As it can be understood from the table, there were statistically significant differences by sex as regards the students' perception of rights to learn how to shoot arrows, play football, and read adventure stories. Although boys held a more sexist attitude towards the three items, in general, it was considered that shooting arrows and reading adventure stories was an equal right, where playing football was a right of boys. Success in mathematics, acting naughty, playing chess, weeping for being affected while watching a film, favouring detective stories and horror films, success in literacy, and reading poems were seen as an equal right by the students. However, the ballet was seen as a particular right for girls, where boxing is for boys.

Discussion, Conclusion and Recommendations

In the present study, we aimed to investigate fourth-grade primary school students' perceptions towards gender (in)equality based on children's rights and to test whether their perceptions differed by sex. A general evaluation of the findings indicates that in 45 items out of 48, the girls marked the "both girls', and boys' right" option unlike boys regarding percentages. This result suggests that compared to boys, the girl students participated in this study had a more egalitarian perception as regard to social gender roles. The relevant literature includes different studies (e.g., Kimberly & Mahaffy, 2002; Keith & Jacqueline, 2002; Vefikulucay-Yilmaz et al., 2009) that support that boy students have a more sexist and traditional perception regarding gender roles compared to girls.

The findings showed that in 30 survey items out of 48, more than half of both girls, and boys held an egalitarian perception, where sexist perspectives were adopted in 18 items. For instance, more than half of both girls, and boys think that "to know how to repair and drive nails" and a daily life skill, were a right of boys. Similarly, more than half of both girls, and boys are convinced that "to know how to wash dishes, sew, knit, and iron" was a right of girls. Half of the girl students consider that "cleaning" is a right for both girls, and boys, where more than half of the boys consider "to know how to make cleaning" is a right of girls. Such responses indicate that students adopted sexist roles as regards daily life skills. Similarly, a research in the scope of International Survey of Children's Well-Being (ISCWeB) by Bruckauf and Rees (2017) on 8-, 10, and 12-years-old children in Turkey, Estonia, Finland, Germany, Israel, Malta, Norway,

Poland, Romania, Korean Republic, Spain, and United Kingdom suggested that there was a common social gender gap between the participation of girls and boys in housework. According to the researchers, the persistence of that difference indicates the reproduction of gender roles with the potential to reinforce lifelong inequality within the family.

Plays that have been traditionally identified with girls and boys were concurred by the students also in this study. Most of the students agree that "playing at families", "playing with dolls" were the rights of girls, where "playing with toy cars" was that of boys. However, a student held a more egalitarian perspective regarding "playing with marbles", "playing hopscotch", "skipping rope", and "climbing to trees" plays. The results as regards the perceptions of the girl and boy students towards plays are consistent with the results presented in national and international literature. For example, Bagceli-Kahraman and Basal (2011) found that in the 7-8 years' age group, girls instead prefer playing at families and playing with dolls, where boys prefer playing with toy cars, trucks, and balls. Similarly, Pomerleau, Bolduc, Malcuit and Cossette's (1990) study suggested that girls mostly liked playing with dolls, where boys liked playing with balls and vehicles.

As regards sports branches, slightly more than half of the girls consider "playing football" and "boxing" as an equal right, more than half of the boys held a more sexist approach compared to girls towards both sports branches. "Ballet" as a sports branch and field of art are highly seen as the right of girls by both student groups. Yuksel (2014) suggested that men tended to prefer football, basketball, wrestling, and boxing, where women tended to prefer fitness, step-aerobic, Pilates, volleyball, and gymnastics, which are the sports branches that incorporate the characteristics attributed to each sex. In addition to the foregoing findings, both groups held a highly egalitarian perspective as regards academic success, poetry and reading variety of books, expressing feelings while watching a film, playing chess, and watching a horror movie.

Both girls and boys highly consider performing such professions that require education, such as police officers, public prosecutor/judge, president, surgeon, nursery school/secondary school teacher, and astronaut, as an equal right. However, both groups held highly sexist perceptions as regards becoming "a truck driver" or "a babysitter". Perceptions of the girls as regards nursing are more egalitarian, where boys mostly consider that profession as associated with girls. Cetin-Gunduz and Tarhan (2017) obtained similar findings and suggested that primary school fourth-grade boys held more negative "attitudes towards women's choice of a profession" compared to the girls. Similarly, Bagceli-Kahraman and Basal (2011) asserted that boys in the 7-8 age group had more stereotypical approaches compared to girls.

While both girls and boys consider wearing blue and pink colored clothes as an equal right, considering the ratios, there was a sexist approach in both sexes, and in especially the boys, that men wear blue, where women wear pink. According to a study by Pomerleau et al. (1990) on babies and their families, the reason for the above approach was that parents mostly have their boys wear blue clothes, and girls wear pink clothes, that they acted based on sex for the choices from the color of paint in the child's room to the color of nipples, and that the environment they provided to their children and the daily experiences supported such choices.

Another result of the present study is that the perceptions of the students regarding the rights to have their hair cut short, grow hair, and keep a ponytail significantly differed in statistical terms and that the boys held a more sexist attitude towards the foregoing rights. In general, to have one's haircut and grow hair was seen as an equal right for both sexes, were keeping a ponytail was mostly considered a right of girls. In Yagan-Guder's (2014) study, both girls and boys associated the reason for being a girl or a boy themselves with the form of their hair. This finding suggests that the assertion of hair form as a sex criterion stems from a social perception and precept.

The results of this study suggested in consistence with the results of other studies that the primary school fourth-grade students had explicit stereotypical approaches in many fields, including, professions, plays, toys, colors, daily life skills, academic success, art, and sports.

Recommendations

Similar to racial, linguistic, religious, and economic fields, the establishment of a structure towards equal gender in society definitely requires questioning the political, legal, religious, and cultural power structures and transformation from which is asymmetrical to which is equal. As per the principle of equality in democracies, the essential responsibility of such transformation belongs to the state. Therefore, it is first expected from the state to implement laws for equal genders in each field of life. The present study found that the primary school fourth-grade students had explicit stereotypical approaches in many fields, including, professions, plays, toys, colors, daily life skills, academic, art, and sports, as it is commonly observed in our society. The students adopt the sexist perspective at early ages, yet they can also change such sexist tendencies towards an egalitarian direction. In order for that change is ensured, the policies, plans, and programs towards removing all kinds of sexist elements and practices from the contents and conduct (programs, books, teacher behaviors, spaces, activities) of education that play an important place in children's life and is performed under supervision and control of the state, should be implemented again by the state. Naturally, it is most likely that there will be a resistance based on religious and cultural grounds in the process of policies, plans, and programs that would establish equality of gender in daily life and educational environments. It is of utmost importance that the awareness all the employees in the field of education, the role models of children, as regards equal gender is raised before the children.

As a social entity, the child becomes a member of other social systems (such as school, neighbor, peers, groups, associations, and laws) other than their family as their age increases. Given that all the environments involving the children respect for human rights and freedoms and protect such rights and freedoms, hold an important place in learning and development of equality of gender. Therefore, the most important contribution any relevant adult can offer to a child is to create an environment, which will respect for the child only as a "human being" without regard to her/his sex.

Unlike the other studies on social gender, the present study holds an approach based on "rights" towards equality of gender. However, the findings showed that participant students did not consider professions, plays, toys, colors, daily life skills, academic, artistic, and sportive activities as an "equal right" for both sexes. This

requires problematizing how the "rights", "equality", and "justice" concepts are taught, learned, perceived, and experienced. Deeper studies towards such concepts may provide the field with new perspectives. Furthermore, this study was performed with the fourth-grade students that lived in Ankara, a metropolitan city and also the capital city of the country. Based on the characteristics of the city, it is possible that the participant students experienced a variety of learning experiences regarding gender roles and identities. Focusing on the experiences of the students living in different settlements and cultural environments, new studies that address social gender from the "rights" perspective will provide new insights.

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İlkokul Dördüncü Sınıf Öğrencilerinin "Çocuk Hakları" Temelinde Toplumsal Cinsiyet Algıları

Atıf:

Aksoy, N., Nurlu-Ustun, O., & Coban-Sural, U. (2019). Gender perception of primary school 4th graders in terms of "children's rights". *Eurasian Journal of Educational Research, 83, 145-166,* DOI: 10.14689/ejer.2019.83.7

Özet

Problem Durumu ve Amaç: Toplumsal cinsiyet toplumsal normlar tarafından belirlenen, belirli sosyal bağlamlarda inşa edilen, öğrenilen, erkek ve kadın için uygun görülen rol ve davranışlara atfedilen sosyal, kültürel, psikolojik özellikleri ifade eden ve aynı zamanda bir sistem olarak farklılık ve eşitsizlik üreten bir durumdur. Kadın ve erkeği kadınlık ve erkeklik kimliklerine ayıran, onlara bu kimliklere uygun roller yükleyen ve belli statülerle özdeşleştiren toplumsal cinsiyet, tarihsel süreçte kadını hem ev içinde hem de kamusal alanda ezen ve ikincilleştiren anlayış ve davranışların kaynağını oluşturmaktadır. Erken yaşlarda öğrenilen, bireylerin özgürlüğünü ve haklarını sınırlayan cinsiyetçi ön kabullerin yine erken yaşlarda tespit edilmesi, eşitlikçi yönde değişimin başlatılabilmesi açısından önemlidir. Bu nedenle bu

çalışmada ilkokul dördüncü sınıf öğrencilerinin "çocukların hakları" temelinde toplumsal cinsiyet eşit(siz)liğine yönelik algılarını ve bu algılarının cinsiyetlerine göre farklılık gösterip göstermediğini incelemek amaçlanmıştır.

Yöntem: Çalışma, betimsel tekil tarama modeliyle gerçekleştirilmiştir. Seçkisiz olmayan örnekleme yöntemlerinden uygun örneklemeye göre belirlenen çalışma grubu, Ankara ili Çankaya, Elmadağ, Mamak, Pursaklar, Sincan ve Yenimahalle ilçelerinden seçilen birer kamu ilkokulunun dördüncü sınıfında öğrenim gören 264'ü kız, 306'sı erkek olmak üzere toplam 570 öğrenciden oluşturmaktadır. Araştırma, içeriğinde "hak" konularının yer aldığı, Sosyal Bilgiler ile İnsan Hakları, Yurttaşlık ve Demokrasi derslerini alıyor olmaları ve diğer sınıf düzeylerine göre okuma, yazma ve kavrama becerilerinin daha gelişmiş olmasına bağlı olarak anketleri daha rahat ve bilinçli doldurabilecekleri düşüncesiyle dördüncü sınıf öğrencileri üzerinden gerçekleştirilmiştir. Araştırmanın verileri Élizabeth Brami ve Estelle Billion-Spagnol tarafından çocuklar için yazılmış özgün adları La déclaration des droits des filles (Kız Çocuk Hakları Bildirgesi) ve La Déclaration des droits des garçons (Erkek Çocuk Hakları Bildirgesi) olan kitaplardan esinlenilerek araştırmacılar tarafından geliştirilen veri toplama aracı ile elde edilmiştir. Araştırmanın anketler yoluyla elde edilen verileri SPSS programıyla analiz edilmiştir. İncelenen değişkenlerin birisi "kız" ve "erkek" şeklinde iki (2) nitelik, diğeri de "kızların hakkıdır", "erkeklerin hakkıdır" ve "hem kızların hem de erkeklerin hakkıdır" şeklinde üç (3) nitelik halinde olduğu için veriler frekans, yüzde ve kay-kare ile analiz edilmiştir. Analiz sonucunda beklenen frekansı 5'in altına düşen hücre sayısının toplam hücrelerin yaklaşık %20'sinden fazlasını oluşturduğu maddeler için anlamlılık yorumu yapılmamış, bu maddeler sadece çapraz tablo olarak kullanılmıştır. Anlamlılık yorumu yapılabilen maddelerde gruplar arasında farklılık çıkanlar ile ilgili daha sağlıklı yorumlar yapılabilmesi için de frekans ve yüzdelerine bakılmıştır.

Bulgular: Ankette yer alan 48 maddenin 30'unda hem kız hem erkek öğrencilerin yarıdan fazlasının eşitlikçi bir algı içerisinde olduğu görülürken 18 maddede ise cinsiyetçi bakış açılarına sahip oldukları tespit edilmiştir. Örneğin hem kız hem de erkek öğrencilerin yarıdan fazlası gündelik yaşam becerilerinden "tamirat yapmayı ve çivi çakmayı bilmenin", erkeklerin hakkı olduğu düşüncesindedir. Benzer şekilde yine hem kız hem de erkek öğrencilerin yarıdan fazlası "bulaşık yıkama, dikiş dikme, örgü örme ve ütü yapmayı bilmenin" kızların hakkı olduğu inancındadır. Geleneksel olarak kız ve erkek çocuklar ile özdeşleştirilen oyunlar bu çalışmada da öğrenciler tarafından onaylanmıştır. Öğrencilerin çoğunluğu "evcilik oyunu" ve "oyuncak bebekler ile oynamanın" kızların hakkı, "arabalarla oynamanın" da erkeklerin hakkı olduğu görüşündedir. Spor dallarından "futbol oynama" ve "boks yapma"yı kız öğrencilerin yarısından biraz fazlası eşit bir hak olarak görürken erkek öğrencilerin yarıdan fazlası her iki spor dalında da kızlara göre daha cinsiyetçi bir bakış açısı içerisindedir. Hem bir spor hem de bir sanat dalı olan "bale" ise her iki öğrenci grubu tarafından da yüksek oranda kızların hakkı olarak algılanmaktadır. Bu bulguların yanı sıra akademik başarı, şiir ve türlerine göre kitap okuma, film izlerken duygularını açığa vurma, satranç oynama, korku filmi izleme gibi konularda ise her iki grubun da yüksek düzeyde eşitlikçi bir görüş içerisinde oldukları görülmüştür. Polis, savcı/hakim, heykeltıraş, cumhurbaşkanı, cerrah, anaokulu/ortaokul öğretmeni, astronot gibi eğitim gerektiren meslekleri edinmeyi hem kız hem erkek öğrenciler yüksek oranda eşit bir hak olarak görmektedir. Ancak "kamyon şoförü olmak" ile

"bebek bakıcısı olmak" konusunda her iki öğrenci grubunun da yüksek düzeyde cinsiyetçi olduğu görülmüştür. Hemşirelik mesleğinde ise kızlar daha eşitlikçi iken, erkekler bu mesleği daha çok kızlarla ilişkili görmektedir. Hem kız hem de erkek öğrenciler mavi ve pembe renk giymeyi her iki cinsiyet için de eşit bir hak olarak görürken oranlar dikkate alındığında erkeğin mavi, kadının ise pembe rengin taşıyıcısı olduğu cinsiyetçi bakış açısının da özellikle erkekler olmak üzere tüm öğrencilerde belirgin olduğu görülmüştür. Araştırmadan elde edilen diğer bir sonuca göre, öğrencilerin saçlarını kısa kestirme, uzatma ve atkuyruğu yapma haklarına yönelik görüşleri, cinsiyetlerine göre istatistiksel olarak anlamlı bir şekilde farklılaşmakta ve erkeklerin bu haklarla ilişkili olarak daha cinsiyetçi tutumlara sahip oldukları görülmektedir. Genel anlamda saçlarını kestirmek ve uzatmak her iki cinsiyet için de eşit bir hak olarak görülürken saçlarını atkuyruğu yapmak çoğunlukla kızların hakkı olarak görülmektedir. Araştırmanın bütününde ilkokul dördüncü sınıf öğrencilerinin mesleklere, oyunlara, oyuncaklara, renklere, gündelik yaşam becerilerine, akademik, sanatsal ve sportif etkinliklere genel olarak "eşit hak" temelinden bakmadıkları, belirgin cinsiyet kalıp yargılarına sahip oldukları ve kız öğrencilerin erkek öğrencilere göre toplumsal cinsiyet rolleri açısından daha eşitlikçi bir algıya sahip olduğu sonucuna ulaşılmıştır.

İleriye Dönük Araştırma ve Uygulama için Öneriler: Eğitimin içerik ve işleyişinin (programlar, kitaplar, öğretmen davranışları, mekânlar, etkinlikler) her türlü cinsiyetçi ögeden ve uygulamadan arındırılmasına yönelik çaba gösterilmelidir. Aileler ve genel olarak toplumun cinsiyet eşitliğine yönelik bilinçlerinin yükselmesi yönünde adımlar atılmalıdır.

Anahtar Kelimeler: toplumsal cinsiyet, çocuk hakları, dördüncü sınıflar, cinsiyet rolleri gelişimi, tarama modeli.

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Comparison of Different Forms of a Test with or without Items that Exhibit DIF

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ABSTRACT

Purpose: This research investigates Tests that include DIF items and which are purified from DIF items. While doing this, the ability estimations and purified DIF items are compared to understand whether there is a correlation between the estimations.

Method: The researcher used to R 3.4.1 in order to compare the items and after this situation; according to manipulated factors, we carried out the data production under different circumstances with the help of simulation study. The manipulated factors were determined levels of sample size (1000, 2000), test length (40, 60) and percentage of DIF (%5, %10). By using the new data each condition's DIF items' ability estimations were carried out. Afterward, DIF items purified from the tests and later the abilities were estimated. The correlation between the ability parameters was calculated by using the Spearman's Rank Correlation Coefficient and these parameters were calculated separately according to the eight conditions.

Findings: After calculations, all of the coefficients of correlations (rs)' values were almost zero ($p<0.01$). In other words the test length 40 and 60, sample size 1000 and 2000, percentage of DIF %5 and %10, when we crossed these parameters in different eight conditions, there was no familiar correlation between the tests that include DIF items and tests of that purified from DIF items. Besides, there was no correlation between the tests thinking the ability estimations; if we exclude DIF items from the tests, the individuals' test ranking changes, too.

Implication for Research and Practice: This study showed that tests that include DIF items affect the ability estimation of individuals. In the frame of this result, teachers, administrators, and policymakers should bear in mind tests DIF potential. Also, this study may be carried out by using various conditions.

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Introduction

Measurement and evaluation studies, which are an indispensable part of the education system, make it possible to observe whether or not the targeted characteristics are acquired by individuals during the education and training process or to note the extent of their acquisitions and based on these observation results, several decisions can be made for these individuals. However, these decisions, which may be of vital importance to individuals at times, should be based on structurally acceptable foundations which underline the necessity of objective evaluations. Objective evaluations in education and psychology are only possible through the use of measurement tools which should have distinct properties so that results obtained from the evaluation process can be used in line with the purpose of evaluation. These are validity, reliability, and usability.

In the classical sense, the validity of an assessment tool is defined as the ability of the tool to measure the quality of the desired trait without the interference of any other trait. However, in recent years, current definitions exist for validity and a new formation is discussed. Validity can be defined in a broader and more contemporary manner as the extent of support for the interpretations made on test scores based on the purpose of test both by theoretical means and by the evidence collected (AERA, APA, and NCME, 2014; cited in Kelecioğlu and Şahin, 2014).

Many factors threaten the validity of the measurement tool. The scope of the assessment tool, the reliability of the scores, the length of the assessment tool, the average difficulty, inadequate examination periods and cheating, etc. are the factors that can pose a threat to validity (Turgut and Baykul, 2015). Bias is one of the factors that threaten the validity of the measurement tool (Clauser and Mazor, 1998). Bias is the advantage provided by the test, based on the conditions not covered by the purpose of the test or based on the properties of test items, to one of the groups at the same ability level but is included in different subgroups (Zumbo, 1999).

The purpose of studying item bias is to determine whether the difference between the subgroups of individuals at the same ability level originates from an actual difference in the measured property or from the assessment process. The first thing that should be done in bias studies is to determine whether there are any differences between the response structures of subgroups in responding to items. Determining whether there are differences between the response structures of subgroups is possible via differential item functioning (DIF) analysis. DIF is different from the concept of item bias. Hambleton, Swaminathan, and Rogers (1991) reported that an item exhibits DIF if individuals having the same ability level, but from different subgroups based on gender, race, etc., do not have the same probability of getting the item right. As it is seen, the common idea in both DIF definitions is that individuals with the same ability level are expected to respond in a similar manner to items. If responses differ, it can be argued that DIF is present in that item. In order to be declared biased, the item must first exhibit DIF. However, the presence of DIF in an item does not mean that the item is definitively biased. In other words, each biased item exhibits DIF; but not all items exhibiting DIF are biased. In order to determine the bias of an item with

DIF, the possible causes of DIF should be determined and the expert opinion should be consulted on whether the item is advantageous for one of the subgroups other than the structure it intends to measure (Camilli and Shepard, 1994; Zumbo 1999). Within the scope of this study, only DIF studies were carried out on the items exhibiting DIF in the data set. No expert opinion was sought as to whether these items demonstrated possible bias. In other words, studies on DIF, the first step of bias determination studies, were carried out by the researcher and bias determination study which is a continuation of this step were not carried out.

According to Dorans and Holland (1993), individuals from different subgroups in DIF analyzes should be similar in terms of the properties that the test aims to assess, i.e. they should be matched at the same ability level. As a matter of fact, DIF investigations are based on the assumption that the likelihood of responding to an item is similar for the groups which are similar in terms of the properties the test wants to measure. In DIF analyzes, the total scores of individuals, especially from the tests based on binary scoring, are used as matching criteria. Similarly, Clauser, Mazor, and Hambleton (1993) stated that reference and focus groups could be matched by the use of valid subtest scores. However, the degree of purification of the relevant sub-test scores of the variable to be used as the matching criterion is an issue that needs attention and care.

The total scores used as the matching criterion which are calculated by using the responses to the items in a test are the total scores obtained by taking into account the items exhibiting DIF if the test contains items that exhibit DIF. The process of calculating the total score by subtracting the mentioned DIF items from this test is called purification. Briefly, purifying the matching criterion means the removal of items exhibiting DIF from the test while calculating total scores; thus, it is ensured that only DIF-free items are used for the necessary analyzes (Lee and Geisinger, 2016).

Tests with specific properties are used to measure psychological characteristics such as ability and achievement. Based on the results, it is necessary to prove the validity of these tests which are used to make important decisions about individuals. Studies exist which demonstrate the presence of items that exhibit DIF, which is a significant threat to the validity of the test items used in national-level large scale tests which require ranking (Bakan Kalaycioglu and Kelecioglu, 2011; Basusta, 2013;Cepni 2011; Demir, 2013; Dogan and Ogretmen, 2008; Erdem, 2015; Gok, Kelecioglu and Dogan 2010; Ogretmen 2006; Yildirim, 2017). However, studies that investigate the changes that will occur in achievement ranking in test areas based on recalculations after the removal of the items that exhibit DIF are not conducted often. It is believed that the presence of items that provide advantage to a certain group in the test may cause inequality and injustice among individuals in such examinations where vital decisions are taken about individuals. Therefore, tests should be purified from these items. This study aimed to compare the ability estimates predicted from test forms that contained items with or without DIF based on different number of items, different sample size and different DIF ratio conditions.

Method

Research Model

This study, which aimed to compare the ability estimates predicted from a test form that contained items with or without DIF based on a different number of items, different sample sizes and different DIF ratio conditions, utilized relational screening model.

Simulation Conditions

In this study, the comparison of the predictive estimates of a test form that contained items with or without DIF under various conditions was carried out by a simulation study. The conditions that were constant and manipulated in data generation for this simulation study are described below.

Constant conditions

The simulation data were generated in accordance with the items that were scored based on the two-category structure in the study. The uniformity of the items that exhibit DIF was another constant condition of the study. In addition, in all conditions, ability parameters of individuals were obtained according to a standard normal distribution with a mean of 0 and a standard error of 1. The generation of data fit for the Item Response Theory (IRT) model was based on a three-parameter logistic model. For this model, the mean and standard deviation or minimum and maximum values of a, b and c parameters were determined and data were generated between these values.

Manipulated conditions

The literature on DIF studies shows many variables, such as test length, sample size, and the proportion of items exhibiting DIF, have an effect on DIF (Clauser, Mazor and Hambleton, 1993; Narayanan and Swaminathan 1996; French and Maller 2007; Atar and Kamata, 2011). In this study, these conditions were manipulated based on the determined levels of the related conditions for data generation.

The number of items (k): For this condition, two levels were determined as k=40 and k=60. Standardized achievement and ability tests generally have between 35-80 items (Narayanan and Swaminathan 1996; French and Maller 2007). Sample size (n): Two levels were determined for the sample size of the study as n=1000 and n=2000. In simulation studies conducted on IRT based DIF determination methods, it was found that the minimum sample size for each group was 200-250 and 600 people in total (Narayanan and Swaminathan 1996; French and Maller 2007; Atar and Kamata, 2011).

The proportion of items exhibiting DIF: There were two levels in the proportion of items exhibiting DIF as d=5% ve d=10% in this study since according to Jodoin and Gierl (2001), higher proportions of items exhibiting DIF would threaten test validity. In addition, it was found that tests that were investigated in DIF studies included more than one item that exhibited DIF.

Data Generation

In this simulation study, data generation was performed by writing codes to R 3.4.1 program based on a three-parameter logistics model. 50 replications were performed for each condition considered.

Table 1 displays the study plan for the simulated data generation performed according to the levels of each of the manipulated conditions such as the number of items, sample size and the proportion of items exhibiting DIF.

Table 1.

Simulative Data Generation Plan

K	Number of Items	Sample Size	The proportion of Items Exhibiting DIF
1	40	1000 (R:500/O:500)	5%
2	60	1000 (R:500/O:500)	5%
3	40	2000 (R:1000/O:1000)	5%
4	60	2000 (R:1000/O:1000)	5%
5	40	1000 (R:500/O:500)	10%
6	60	1000 (R:500/O:500)	10%
7	40	2000 (R:1000/O:1000)	10%
8	60	2000 (R:1000/O:1000)	10%

K: Condition, R: Reference group, O: Focus group

Data based on the planned conditions were obtained from the normal distribution in which the mean *parameter a* was 0.8 and standard deviation was 0.04 under all conditions. The minimum and maximum values of *parameter b* were identified to be -2 and +2. Finally, the value range of *parameter c* was determined to be between 0.2- 0.3 and then the data were generated. 0.75 was added as the amount of DIF to the b parameters of the respective items in accordance with the number of items required for the production of items that exhibit DIF with respect to the determined levels of the proportion of items exhibiting DIF as manipulated condition.

Data Analysis

For the purpose of the study and in accordance with the conditions described above, the "difR" package was used in the R program to generate data sets that contained items with DIF. "ltm" package of the R program based on the three-parameter logistic model of IRT was used to conduct ability estimations of individuals based on their test responses in the data tests iteratively generated according to each condition. Individuals' abilities were re-estimated by removing the items that exhibited DIF from the same test under each condition. Ability estimations of individuals for the test containing items that exhibited DIF, i.e., the θ (theta) values of individuals, were determined to be θ_1 while ability estimations of individuals for the test with no DIF items were determined to be θ_2.

The relationship between θ_1 and θ_2 for each iteration was examined by SPSS 22.0 program, by using Spearman *Rho Correlation* Analysis. Mean correlation coefficients (r_s) obtained by Spearman *Rho Correlation* Analysis in each iteration at the same condition were calculated. Fisher-Z transformation proposed by Corey, Dunlap, and Burke (1998) was performed to obtain more clear results in calculating mean correlation coefficients. For this purpose, each r_s coefficient was converted to z value with Fisher-Z transformation, then the mean z values of the transformed values were calculated and the obtained mean z value was re-converted to r_s by Fisher-Z transformation. In this way, a relationship existed between θ_1 and θ_2 values obtained with 50 iterations for each condition was observed by finding a mean correlation coefficient. This process was performed for 8 different conditions in investigating the relationship level.

Results

For a total of eight conditions, the findings obtained by Spearman *Rho Correlation* Analysis for the relationship level between the ability estimations of individuals for the test with items that exhibited DIF (θ_1) and ability estimations of individuals for the test with no DIF items (θ_2) were first interpreted generally and later the findings that were presented separately were interpreted according to sob problems based on manipulated conditions of number of items, sample size and proportion of items exhibiting DIF.

The following table demonstrates the correlation coefficient values between θ_1 and θ_2 variables for all conditions.

Table 2.

Correlation Coefficients Obtained Under All Conditions

K	Sample size	The proportion of items exhibiting DIF	Number of items	r_s
1	1000	%5	40	0.199
2	1000	%10	40	0.069
3	2000	%5	40	0.058
4	2000	%10	40	-0.143
5	1000	%5	60	0.048
6	1000	%10	60	0.024
7	2000	%5	60	0.172
8	2000	%10	60	-0.027

Note 1: K refers to the condition for each crossing

Note 2: r_s indicates the Spearman rho correlation coefficient value ($p<0.01$).

Figure 1 is presented below in addition to Table 2 since it is thought to be useful to examine the level of the relationship according to all the conditions that were crossed, in a more detailed and clear manner in which all conditions are demonstrated interactively.

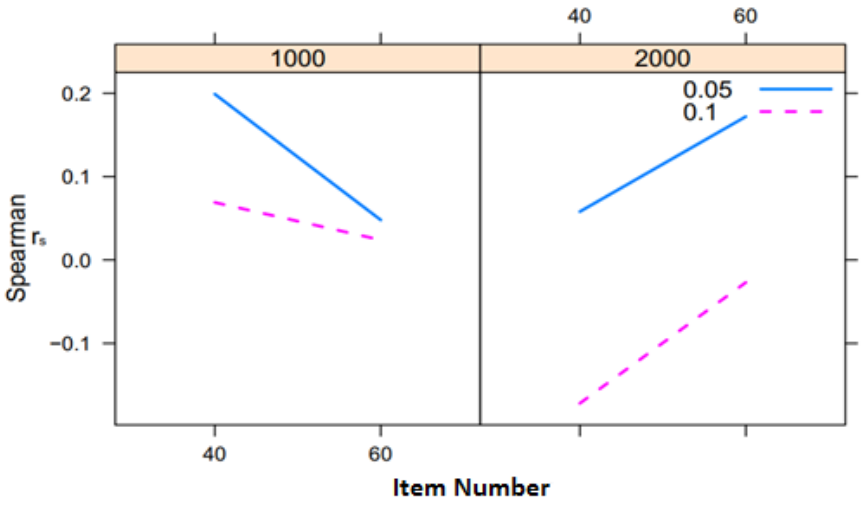

Figure 1. *Correlation coefficients of all conditions*

When Figure 1. was examined in general, it was observed that all r_s values presented in Table 1 changed between 0.2 and 0.15 according to the levels of the researcher's conditions. In other words, it was found that for all the conditions including the conditions where the relationship at the vertical axis was maximum or minimum, each was between either smaller than positive 0.3 or bigger than negative 0.3. These findings also indicate the lack of a general relationship between the predicted ability estimates, regardless of any of the determined conditions. Specifically, when the items that exhibited DIF were removed from the test and re-estimates were made, the rankings of the individuals who took the test changed. This situation caused a low level of relationship.

Since the validity of a test will be affected by the presence of items that exhibit DIF, the exactness and soundness of the scores obtained from the test become controversial. That is, it is not desirable to have items that exhibit DIF in a test. In fact, change in individual rankings when individuals are re-scored after eliminating the items that exhibit DIF shows that actual scores are not really obtained. In this case, individuals will need to question the vital decisions taken from the examinations given for ranking or selection purposes in many national and international areas when actual scores are not definitively obtained.

Bakan Kalaycioglu and Kelecioglu (2011), Basusta (2013), Cepni (2011), Demir (2013), Dogan and Ogretmen (2008), Erdem (2015), Gok, Kelecioglu and Dogan (2010), Ogretmen (2006), Yildırim (2017) found that national or international achievement tests include items that exhibit DIF. The presence of DIF items in these tests constitutes a significant threat to the validity of these tests.

The current study found that changes occurred in the achievement ranking of the individuals as a result of the estimations made by the purification of DIF items. Therefore, it is thought that tests in which items that exhibited DIF were identified in literature would give different results in achievement rankings of individuals if new analyses were to be conducted by purification of these items from the test. This argument points to a significant effect of the purification of items with DIF. In this sense, the findings of this study are parallel to studies that pointed to the need to purify tests from items that exhibited DIF for DIF studies (French and Maller, 2007; Holland and Thayer, 1988, Lee and Geisinger, 2016, Zumbo 1999).

When Table 2 and Figure 1 were re-examined based on the number of items, it was seen that Spearman correlation coefficient value (r_s) decreased and got closer to 0 when the number of items was increased from 40 to 60 in two different graphics where the proportion of items exhibiting DIF was 5% and 10% and the sample size was 1000. The fact that the relationship between ability estimations decreased and became closer to 0 as the number of items increased demonstrated no relationship between individuals' rankings in a test with or without items that exhibited DIF and hence, these rankings change to a great extent. Although the level of relationship between ability estimations increased when the number of items was increased from 40 to 60 in two different when proportion of items exhibiting DIF was 5% and 10% and the sample size was 2000, it was still not sufficient to mention the existence of any relationship because the

correlation coefficients were not differentiated to allow the existence of the relationship for both 40 and 60 number of items. The lack of a significant relationship also indicates that purification of the test changed the rankings of individuals in the test.

When Table 2 and Figure 1 were re-examined based on the differentiation status of sample size, it was seen that Spearman correlation coefficient value (r_s) somewhat decreased when the sample size was increased from 1000 to 2000 while the number of items was identified to be 40 in two different graphics where the proportion of items exhibiting DIF was 5% and 10%. However, this decrease was not significant enough to point to a relationship. It is also seen that increasing sample size under this condition in the graphic where the proportion of items exhibiting DIF was 10% generated a decrease in the correlation coefficient but this change was not significant to eliminate the finding in regards to lack of relationship. In other words, there was no significant relationship between ability estimations for the test with or without DIF for conditions such as the same number of items, the same proportion of items exhibiting DIF and different sample sizes (n=1000 and n=2000). The lack of a significant relationship also indicates that purification of the test changed the rankings of individuals in the test.

When Table 2 and Figure 1 were re-examined based on the differentiation status of the proportion of items exhibiting DIF, the existing lack of relationship still decreased when the proportion of items exhibiting DIF was increased from 5% to 10%. In other words, as the proportion of items exhibiting DIF increased, Spearman correlation coefficient value (r_s) got closer to 0. This was due to the increase in the number of items marked with DIF resulting from the increase in the proportion of items exhibiting DIF and the fact that an abundance of number of items that exhibited DIF generated less relationships among variables. As a result, it was found that increasing the proportion of items exhibiting DIF from 5% to 10% under all conditions with respect to the level of relationship did not have a significant effect on the non-correlation between the test forms that included items that exhibited DIF and items that exhibited no DIF. Therefore, it was found that the purification of the test from DIF items under conditions where the proportion of items exhibiting DIF was 5% and 10% caused changes in the rankings of the individuals.

Spearman correlation coefficient value (r_s) somewhat increased when the sample size was increased from 1000 to 2000 in the graphic where the proportion of items exhibiting DIF was the 5%, the number of items was 60. However, this increase was not significant. In other words, there was no significant relationship between ability estimations for the test with or without DIF for conditions such as the same sample size, same number of items and different proportions of items exhibiting DIF (d=%5 and d=%10). The lack of a significant relationship also indicates that purification of the test changed the rankings of individuals in the test.

Discussion, Conclusion and Recommendations

The differentiation of the rankings of the individuals who take the test when the test is purified from items that exhibit DIF can make the validity of the problematic. In fact, while the presence of DIF in the test constitutes a significant threat to the validity of the test, the removal of these items from the test changes individuals' ranking, therefore, it appears that the purification process has a significant effect. In this case, the vital decisions are taken from the examinations given for ranking or selection purposes in many national and international areas become questionable.

The measurement tool used in a test should not provide any advantages to any group taking the test. In some cases, other variables may be mixed with the properties we want to measure. These variables include gender, type of school, socio-economic level, ethnic origin, etc. (Atalay Kabasakal, 2014). The construct that the test wants to assess and the effect of unrelated variables on the test scores generate a threat on validity and lead to the bias of test scores (Camilli and Shephard, 1994). The first step in determining bias is the DIF analyses developed for this purpose with a large number of methods.

Undesirable results can be obtained if items in any test exhibit DIF, even partially. One of these undesirable results is the fact that DIF directly affects parameter estimation (Han, 2008). Another unintended consequence is the incorrect estimation of ability parameters (Atalay Kabasakal, 2014). As a result of the erroneous estimation of item and ability parameters, the results of many statistical studies based on these parameters become suspect. The literature presents studies investigating the negative effects of the presence of items that exhibit DIF in tests on statistical processes. Some of these studies examined the effects items that exhibit DIF on test equalization process (Atalay Kabasakal, 2014; Chu, 2002; Chu and Kamata, 2005; Turhan, 2006) and their effect on computer-adapted tests (Miller, 1992; Zwick, Thayer and Wingersky, 1995; Zwick, 2000).

According to the results obtained from studies, incorporation of items that exhibit DIF in a test can affect item and ability parameters directly and the statistical studies performed with these parameters indirectly. In this study, it is concluded that there was no relation between the ability estimations predicted with the help of a test form with or without items that exhibited DIF, in other words, the achievement ranking of individuals changed when the test was purified. Thus, the study presented the importance of purification of a test from the items that exhibit DIF in a practical manner

Recommendations

This research was conducted as a simulation study. Considering that use of simulation studies on DIF with real data can help obtain more reliable results, a similar study can be performed with a simulation study supported by real data. In this study, manipulated variables included the number of items, sample size and proportion of items exhibiting DIF. A similar study can be conducted by manipulating different variables (such as reference-focus group ratio).

This study investigated the effect of purification of tests from items that exhibited DIF on the estimation of the ability parameters. A similar study can be performed via item parameters estimation. The results of the study demonstrated that the purification of tests from items that exhibited DIF changed the rankings of individuals. According to this result, it can be suggested that the practitioners should first detect the item that exhibit DIF in a test and recover the test results by purification according to appropriate conditions.

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Bir Testin DMF'li Madde İçeren ve DMF'li Maddeden Arındırılmış Formlarının Karşılaştırılması

Atıf:

Tulek, O.K., & Kose, I.A. (2019). Comparison of different forms of a test with or without ıtems that exhibit DIF. *Eurasian Journal of Educational Research*, 83, 167-182, DOI: 10.14689/ejer.2019.83.8

Özet

***Problem Durumu*:** Bir ölçme aracında bulunması gereken yapısal niteliklerden en önemlisi olarak kabul edilen geçerlik, klasik anlamıyla bir ölçme aracının ölçmek istediği özelliği başka özelliklerle karıştırmadan ölçebilmesi olarak açıklanabilir. Ancak bir testten elde edilen puanların test ile ölçülmek istenen özellik dışında farklı değişkenlerden de etkilenmesi her ne kadar istenmeyen bir durum da olsa pratikte bu durum kaçınılmazdır. Testi alan bireylerin bulunduğu alt grupların da bu değişkenlerden ne derece etkilendiği önemlidir. Değişkenlerin alt grupları farklı biçimlerde etkilemesi ise madde yanlılığına sebep olabilmektedir. Yanlılığının ilk koşulu olan Değişen Madde Fonksiyonunun (DMF'nin) bir maddede bulunması o maddenin, maddeyi yanıtlayan farklı alt gruplardan herhangi birine ya da birkaçına avantaj sağlamasına neden olmaktadır. Bir testin madde ya da maddelerinde DMF'nin bulunabilme ihtimali özellikle sonuçlarına bakarak bireyler hakkında çeşitli kararların alındığı geniş ölçekli sınavlar için ayrıca dikkat edilmesini zorunlu hâle getirmiştir. Öyle ki eğitimin birçok alanında, sıralama ya da seçme amaçlı uygulanan sınavlarda alınan kararlar bireyler için hayati olabilmekte ve bu sınavların niteliği alınan kararların doğruluğuna, isabetli ve yerinde olmasına direkt olarak etki etmektedir. Peki bahsi geçen yanlı maddelerin testten arındırılması bireyler hakkında verilen hayati kararları değiştirmekte midir? Yanlılık üzerine yapılan birçok çalışmada, SBS, TEOG, ÖSS, PISA, ALES, KPSS gibi geniş ölçekli sınavlarda DMF içeren maddeler tespit edilmiştir Ancak geniş ölçekli bu sınavlarda DMF içeren maddelerin testten çıkarılmasının sonuçlar üzerinde nasıl bir etki oluşturduğuna dair; başka bir ifadeyle DMF'li maddelerin testten çıkarılmasıyla yeniden belirlenen sonuçlara göre bireylerin sınavdaki başarı sıralamalarının etkilenip etkilenmediğine dair çalışmalar sınırlı sayıdadır.

Araştırmanın Amacı: Bireyler hakkında hayati kararların alındığı sınavlarda belirli bir gruba avantaj sağlayan maddelerin testte bulunmasının bireyler arasında eşitsizliğe ve adaletsizliğe neden olabileceği düşünülmektedir. Bu nedenle bu maddelerin testten arındırılması gerekli olabilmektedir. Bu düşünceyle gerçekleştirilen araştırmanın amacı bir testin DMF'li madde içeren ve DMF'li maddeden arındırılmış formlarından kestirilen yetenek kestirimlerinin farklı madde sayısı, farklı örneklem büyüklüğü ve farklı DMF oranı koşulları altında karşılaştırmaktır.

Araştırmanın Yöntemi: Araştırma kapsamında araştırmacı tarafından R 3.4.1 paket programı kullanılarak manipüle edilen değişkenlere göre farklı koşullar altında simülasyon çalışmasıyla veri üretimi gerçekleştirilmiştir. Manipüle edilen değişkenler düzeylerine göre örneklem büyüklüğü (n=1000 ve n=2000), madde sayısı (k=40 ve k=60) ve DMF oranı (d=%5 ve d=%10) olarak belirlenmiştir. Değişkenlerin çaprazlanması sonucunda sekiz koşulun her birine uygun olacak şekilde DMF'li madde içeren veriler üretilmiştir. Çeşitli düzeylerde DMF'li maddeler içerecek şekilde verilerinin üretildiği bir testin öncelikle DMF'li maddeler içeriyorken yetenek kestirimleri gerçekleştirilmiştir. Testin DMF'li maddeler içeren hâliyle kestirilen yetenek kestirimlerine θ_1 ismi verilerek veriler saklı tutulmuştur. Ardından bu testte yer alan DMF'li maddeler testten arındırılarak aynı şekilde yetenekler kestirilmiştir. Testin DMF'li maddeler içermeyen hâliyle kestirilen yetenek kestirimleri ise θ_2 şeklinde saklanmıştır. Son olarak da aynı testin θ_1 ve θ_2 adıyla elde edilmiş olan bu kestirimleri arasındaki ilişkiye bakılmıştır. Bu yetenek kestirimleri ilişkisine göre bireylerin sıralamalarının farklılaşıp farklılaşmadığını tespit etmek amaçlandığı için spearman sıra farkları korelasyon analizi uygulanmıştır.

Araştırmanın Bulguları: Yöntem bölümünde özetlenen bir testin DMF'li madde içeren ve DMF'li maddeden arındırılmış formlarından kestirilen yetenek kestirimlerini (θ_1 ve θ_2) arasındaki ilişki düzeyine bakmak için gerçekleştirilen spearman sıra farkları korelasyon analizi sonucunda elde edilen katsayıların 0'a yakın olmasından dolayı yetenek kestirimleri arasında pozitif ya da negatif yönlü bir ilişki görülmemiştir. Yetenek kestirimleri arasında ilişki görülmemesi ise bireylerin test sonuçlarındaki sıralamalarının değiştiğini işaret etmektedir. Başka bir ifadeyle test DMF'li maddeden arındırıldıktan sonra bireylerin testteki sıralamaları, bir önceki DMF'li madde içeren test formu sıralamalarına göre farklılaşmıştır. Bu tespit, çeşitli koşulların araştırıldığı tüm alt problemlerde benzer şekilde olmuştur. Başka bir ifadeyle madde sayısının 40 ve 60, örneklem büyüklüğünün 1000 ve 2000, DMF oranın %5 ve %10 olarak çaprazlandığı 8 farklı koşulda da testin DMF'li maddeden arındırılmasının bireylerin sıralamalarını değiştirdiğini belirlenmiştir.

Araştırmanın Sonuçları ve Öneriler: Bu çalışma ile bir testin DMF'li madde içeren ve DMF'li maddeden arındırılmış formlarından kestirilen yetenek kestirimleri arasında ilişki bulunmadığı, başka bir ifadeyle DMF'li maddelerin testten çıkarılmasıyla bireylerin başarı sıralamalarının değiştiği sonucuna ulaşılmıştır. Bir testin DMF'li maddelerden arındırılmasıyla testi alan bireylerin sıralamalarının farklılaşması o testin geçerliğini yani özelliğe sahip olanla olmayanı ayırt etme derecesini problemli hâle getirebilecektir. Öyle ki testte DMF'li madde bulunması testin geçerliğine önemli bir tehdit oluştururken bu maddelerin testten çıkarılmasıyla bireylerin sıralamaları değişiyorsa, yapılan arındırma işleminin önemli bir etkisinin olduğu görülmektedir. Bu durum, gerek ulusal gerekse de uluslar arası düzeyde bireyler hakkında hayati kararların alındığı, sonuçlarına bakılarak seçme ve yerleştirme işlemlerinin gerçekleştirildiği sınavların bireyler arasındaki farklılıkları ölçme derecelerinin sorgulanabilir olduğunu gösterebilmektedir.

Anahtar Kelimeler: Yanlılık, değişen madde fonksiyonu, yetenek kestirimi, arındırma.

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The Effects of Creative Writing Practices on the Writing Skills of Students Learning Turkish as a Second Language*

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ABSTRACT

Purpose: The purpose of this research is to understand how creative writing practices affect the written expression skills of B2 level students.

Method: In this study, a pretest-posttest control group semi-experimental model was used. While creative writing practices were implemented in the experiment group, instruction in alignment with the Teacher Guide of Yunus Emre Institution was provided in the control group. The study was conducted with 49 students at the B2 level at the Aksaray University Turkish Learning Application and Research Center during the 2018-2019 academic year. Written expression works (composition), writing self-efficacy, and writing anxiety scales were used as data collection instruments. Written expression works were evaluated according to the Creative Writing Evaluation Scale. Dependent and independent t-tests were conducted for pairwise comparisons.

Findings: The means for post-test scores in the experiment group for the scales except for the writing anxiety scale were higher than the means of post-test scores in the control group. This indicates that creative writing practices in comparison with the traditional methods are an important factor in improving the written expression skills of students who learn Turkish as a second language.

Implications for Research and Practice: Future research to identify the effects of creative writing practices on fundamental language skills that are reading, speaking, and listening can be conducted.

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Introduction

Creativity is a concept that is frequently used particularly in education and technology in recent years. Technology has entered individuals' lives at a fast pace and caused changes in their lifestyles. It has become a necessity for individuals to keep up with the changes and to find creative ideas for the issues they encounter. Creativity is an identifying component of human intelligence, and the power of imaginary and symbolic thinking (Robinson, 2003, p. 131). Torrance (1998) defines creativity as seeing the differences, making predictions on the missing pieces of the current knowledge, hypothesizing, and as the process of testing and developing of these predictions and hypotheses. According to Senemoglu (2015), creativity is to be able to adapt to changing conditions, to layout ideas clearly, authenticity, and to think untraditionally while Honig (2001) defines creativity as originality, imagination, discovering new things, doing what is not done, and saying what is not said.

There are direct and indirect associations between creative thinking and writing skills. Writing is one of the fundamental language skills that is used to express emotions, thoughts, imaginations, and impressions in accordance with written expression rules. In teaching Turkish, both as native and as a second language, writing is a skill that is learned last and that is the most challenging.

Writing skills require the use of cognitive and psychomotor skills together due to having multiple components such as word selection, using words in the right context, correct grammar use, consistency, text type, theme, style, spelling rules, punctuation, format, and good hand-writing (Cetin, 2017, p. 394). As it involves these multiple elements, writing skills is considered to be the most challenging skill for students in teaching Turkish both as a native and as a second language (Bagci & Basar, 2018, p. 311; Bolukbas, 2011; Cakir, 2010; Erol, 2016, p. 178; Kara, 2010; Yilmaz, 2015).

Improvement of writing skills in foreign language learning is possible through knowing the phonetics, morphological, semantic and syntax structure of the language. These structures of the target language should be instructed from simple to complex over time (Cetin, 2017, p. 395). Written expression skills of students can be improved by approaches that focus on planning the writing process and having the learner to follow the writings with the teacher in the beginning and then gradually by himself, and evaluate (Karatay, 2011, p. 26). That's why it is important to use process-based writing practices in improving writing skills. Common European Framework of Recommendations for Languages also emphasizes utilizing process-based writing practices (Balci & Melanlioglu, 2015).

In the process-based writing model, teaching should include triggering prior knowledge of students on the content of a writing, organizing thoughts, creating a writing outline, reviewing the expression in written works and evaluating (Karatay, 2011, pp. 27-28). During this process, students are supported in writing creatively through being able to think differently by using their experiences and making connections between events, situations, and people (Temizkan, 2014, p. 6).

It is known that creative writing practices have an important role in revealing the hidden and creative power in students (Gunduz & Simsek, 2012, p. 229). The purpose of creative writing practices is to provide an environment that encourages students to express their knowledge from their point of view and in a different way by improving their writing skills and creativity (Gocer, 2016, p. 119). Creative writing, which is a cognitive and psychological process, contributes to the social, psychological and academic fields. These activities primarily prevent the alienation of the person, increase self-confidence and give him the courage to write. Creative writing also enriches narrative power, enhances literary pleasure and opens the way for originality. Creative writing activities provide opportunities for educators to get to know students' inner worlds closely and to build affection with them, as well as helping students to know themselves. It enables students to freely express their own thoughts and is effective in gaining the habit of respecting and accepting other people's feelings and thoughts (Oral, 2003).

Following are things that can be said about the process of creative writing (Gocer, 2016, pp. 120-121; Ipsiroglu, 2006, p. 27; Ipsiroglu, 2007, p. 23; Maltepe, 2006, pp. 60-61; Ungan, 2007, p. 469):

- The purpose in creative writing is not to raise writers but to allow individuals to see the creative power in themselves.
- The fundamental condition of writing is to have a good command of the language. It is necessary to see possibilities of the language by pushing the limits with writing exercises because language improvement is faster through writing.
- The focus of creative writing should be meaning and thoughts.
- Teachers should be tolerant towards students in selecting their own writing models.
- Creative writing should be considered as a product of imagination.
- Creating writing products should be addressed and discussed with different perspectives in classrooms.
- Teachers should engage in writing activities with students.

Ipsiroglu (2006, pp. 27-30) lists the phases of writing as follows:

- Preliminary Work (Brainstorming): Associations related to the content of writing and the field should be triggered.
- Preparation (Research, sorting, selecting): In the preparation phase, materials collected during the preliminary phase are sorted and selected. Additionally, materials that are not relevant are eliminated and the ones that are missing are completed.
- Design Phase (Organization): After collecting thoughts, associations, images, data and documents during the preliminary and preparation phases, these

are selected, sorted, and organized in a systemic unity. In other words, a construct is created. In this phase, questions such as 'where do I start?, how do I create coherence in thoughts?, how will the writing develop?, how will I express my thoughts in order?.." are of high importance. As writing is not an activity of writing random thoughts, it is important to plan and organize thoughts.

- Writing phase (shaping): After the preliminary, preparation, and design phases, the most important phase, the writing phase, starts with shaping. In this phase in which associative and analytic thinking are intertwined, some writers adhere to their outlines prepared prior to writing while some do not adhere to the outline and experience the phase like a journey.
- Self-assessment (Critique): During the last phase following the writing phase, the written work is evaluated. In this phase, the written text is reviewed with a holistic view and revised as needed (Gocer, 2016, pp. 121- 122).

There are two important psychological thresholds during the use of writing skills that are anxiety and anxiety-control phase, and motivation that is the driving force of writing (Yalcin, 2018, pp. 372-373). Methods, strategies, and techniques used in the writing phase should be planned and implemented to support students to control their anxiety. A program designed accordingly would affect students' self-efficacy perceptions and their attitudes towards writing positively and motivate them.

It is seen in the literature that creative writing practices are effective in improving writing skills in teaching Turkish both as a native and a second language (Alar, 2018; Beydemir, 2010; Demir, 2011; Duran, 2010; Duru, 2014; Erdogan, 2012; Kasap, 2019; Maltepe, 2006; Ozturk, 2007; Top, 2013; Uzun, 2015). There are very few studies on using creative writing practices to improve writing skills in teaching Turkish as a second language. Thus, the current study is significant as it will contribute to the field.

Purpose of the Study

The current study was conducted to identify the effects of creative writing practices on the writing skills, writing self-efficacy, and writing anxiety of B2 level students who learn Turkish as a second language. Within the scope of the purpose, the research question guiding the study is "are creative writing practices effective in improving the writing skills of students who learn Turkish as a second language?" The following hypotheses were developed in alignment with the purpose of the study.

1. **Hypothesis:** There is a significant difference between the posttest scores of the experiment group in which creative writing practices are implemented and the control group in which traditional methods of instruction are implemented when the sum of pretest scores of 'self-efficacy scale' are controlled.
2. **Hypothesis:** Between the experiment group in which creative writing practices are implemented and the control group in which traditional methods of instruction are implemented,

2.1. when the total pretest scores for the *general (the whole scale)* writing anxiety scale are controlled, there is a significant difference in posttest scores,

2.2. when the total pretest scores for the subscale of *action-oriented anxiety* are controlled there is a significant difference in posttest scores,

2.3. when the total pretest scores for the subscale of *environment-oriented anxiety* are controlled, there is a significant difference in posttest scores.

3. Hypothesis: For the 'creative writing evaluation scale',

3.1. when the pretest total scores of the creative writing scale are controlled, there is a significant difference in posttest total scores between the experiment and control groups.

3.2. when the pretest total scores of the *creativity* sub-scale are controlled, there is a significant difference in posttest total scores between the experiment and control groups.

3.3. when the pretest total scores of the *text structure* subscale are controlled, there is a significant difference between the experiment and control groups.

3.4. when the pretest total scores of the *writing*, *punctuation and presentation* sub-scale are controlled, there is a significant difference between the experiment and control groups.

Method

Research Design

An experimental design was used for this study to identify the effects of creative writing practices on the written expression skills of students learning Turkish as a second language. In experimental research, the effects of differences created by the researcher on the dependent variable are tested. As there are two groups, experiment and control, a semi-experimental design was used in this study. In accordance with this design, paired groups were assigned randomly to the experiment and control groups, and a pretest-posttest control group model was used (Buyukozturk, Cakmak, Akgun, Karadeniz, & Demirel, 2015).

Participants

The participants of the study consisted of advanced B2 level students at Aksaray University, Turkish Education Application and Research Center. The study was conducted during the spring semester of the 2018-2019 academic year. Random sampling was used to identify the experiment and control groups. While creative writing practices were implemented in the experiment group consisting of 24 students, methods from the Teacher Guide of Yunus Emre Institution were implemented in the control group consisting of 25 students. The experimental methods were implemented 7 hours a week during an 8-week period.

Data Collection

For data collection, the 'writing self-efficacy scale' developed by Buyukikiz (2011) to measure the writing skills of international students learning Turkish, the 'writing anxiety' scale developed by Sen and Boylu (2017), and compositions written by students were used.

To identify the effects of creative writing practices on the writing self-efficacy of students, the scale developed by Buyukikiz (2011) for students learning Turkish as a second language was used. In developing the scale for the target group, expert opinions were received, and analyses were completed for the pilot study. The final scale was a 7- point Likert scale with 16 items. The coefficient of internal consistency, Cronbach Alpha value was 0.928 for the first factor, 0.743 for the second factor, and 0.922 for the whole scale. These results indicated that the scale was reliable. The scale was piloted with five students in the current study, and the scale items were found to be comprehensible.

To identify the effects of creative writing practices on the anxiety level of students, a scale developed by Sen and Boylu (2017) to measure the anxiety levels of students learning Turkish as a second language was used. In developing the scale, first, a literature search was conducted and then, in light of the information collected, an item pool was developed to identify writing anxiety of students learning Turkish. The items in the item pool were organized and a scale was created. Expert opinion was sought for the survey. The scale was implemented with 280 students at the Aksaray University Turkish Education Center and Yunus Emre Institution. An exploratory and confirmatory factor analysis were conducted to identify the structure and validity of the scale. The analyses revealed that the scale had two dimensions and 13 items with a good fit score. The Cronbach alpha reliability coefficient of the scale was 0.84. The two-factor structure explained 46.82 % of the total variance.

A "creative writing evaluation scale" developed by Karatay and Tonyali (2010) to assess creative writing activities and writing skills was implemented as a pretest-posttest. During the scale development, creative writing scales and written expression evaluation scales from the literature were reviewed. Experts commented on the items developed in alignment with these scales. The scale consisted of 3 sub-dimensions that were; 'creativity', 'text structure', and 'punctuation and presentation.' Creativity dimension consisted of 4 items, text structure dimension consisted of 12, and presentation dimension consisted of 4 items. In the scale developed as a rubric, students got a score of 1, 3, or 5 for each measure. This procedure was completed by 3 experts including the author of this article. The reliability coefficient was 0.796, and there was a positive and high correlation between the scores.

To identify the effects of creative writing practices on writing skills, composition topics were identified by the author. These topics were implemented in the form of pre-test and post-test. In identifying the topics, first a literature was reviewed and 20 topics for composition were identified. In determining whether these topics were suitable for the study, expert opinions were asked. Based on the feedback received from eight experts in the field of Turkish education as a second language, five topics

were selected to be used in the experimental study. The topics selected were: "If you invent something that would make your life easier, what would you do? How would you use it?", "What would you like to do to raise awareness in environmental issues and global warming?", "If you had a magic key and if this key would open all the doors, which doors would you want to open, and why?", "If you had a chance to be a tale hero, in which tale would you like to be a hero, and why? What would you do in this tale and how would your presence change this tale?", "He waited here only for an hour…/ complete the story activity".

Data Analysis

The findings for each research question and sub-questions are presented under separate headings in the findings section. Pairwise mean comparisons were conducted to answer all research questions. Before the comparison tests were completed, the fitness of data with the analyses were tested. First, a normality assumption was tested. The results of normality assumptions are presented in the form of a table in the findings section. SPSS 22.0 software was used in analyzing the data, and Excel was used to create the graphics.

In pairwise comparisons, t-tests were completed for dependent and independent groups because an experimental design was used in the study. In an experimental design, individuals paired based on all characteristics are randomly assigned into groups. There are one experiment and one control group in this design. A pretest and a posttest were implemented to both groups. An intervention is done only in the experiment group for the independent variable (Karasar, 2017, p. 130).

Experimental Procedures

This study aimed to identify the effects of creative writing practices on the writing skills of B2 level students learning Turkish as a second language. The study was conducted in the spring semester of the 2018-2019 academic year. In developing the creative writing practices, Yunus Emre Institution Turkish Education Set B2 level writing outcomes and the B2 writing competency of Common Application Text for European Languages were considered. The study was conducted for an eight-week period with an average of seven class hours per week by the researcher. The researcher has a Ph.D. in Turkish education. In developing the creative writing activities, related literature was reviewed. In alignment with the information obtained, the activities were developed. These activities were presented to experts for feedback to finalize the activities.

The procedural activities were as follows: 1. If I had a magic wand… 2. Freewriting (brainstorming and cluster of thoughts). 3. If I were to build a new city for myself… 4. Writing a dialogue between a crow and a fox. 5. Writing a story departing from comics. 6. Developing a new text from another text. 7. If I come back to world as an animal. 8. As a superhero… 9. If I were invisible… 10. If I were a tale hero… 11. Life in 100 years… 12. Writing an influential letter. 13. Completing a story. 14. If I had a chance to come back to the world… 15. Writing a story from a poem. 16. Writing a text-based on comics. Creating an environment that students can express themselves comfortably

was taken into consideration while developing creative writing activities. Sufficient time was provided for students to write their texts.

Results

Test of Normality

Kolmogorov-Smirnov test results for all sub-groups were reported to test normality. Statistical values obtained are presented in Table 1.

Table 1.

Results of Normality Tests According to Total Scale Scores of the Control and Experiment Groups.

Group			Test Statistical Value	p Value*
Control	Pretest	Writing Self-Efficacy	0.146	0.182
		Writing Anxiety	0.111	0.200
		Creative Writing Evaluation	0.111	0.200
	Posttest	Writing Self-Efficacy	0.103	0.200
		Writing Anxiety	0.084	0.200
		Creative Writing Evaluation	0.102	0.200
Experiment	Pretest	Writing Self-Efficacy	0.189	0.026
		Writing Anxiety	0.142	0.200
		Creative Writing Evaluation	0.127	0.200
	Posttest	Writing Self-Efficacy	0.150	0.174
		Writing Anxiety	0.152	0.155
		Creative Writing Evaluation	0.154	0.147

According to the results presented in Table 1, the total scores of control and experiment groups were distributed normally (p>.05). Independent and dependent t-tests were completed on all groups. The results of the analyses for each hypothesis are presented below.

1. For B2 level learners of Turkish as a second language, when the total pre-test scores for 'writing self-efficacy' scale were controlled, there was a significant difference between the experiment group in which creative writing practices were implemented and the control group in which traditional methods of instruction were implemented.

Table 2.

T-test Results of the Control Group for Pre-test and Post-test in the Writing Self-Efficacy Scale Scores.

Group	N	Mean	Standard Deviation	T	df	p*
Pre-test	25	77.48	10.21	3.81	24	.001*
Post-test	25	74.60	10.85			

*Significant at the .05 level **Significant at the .01 level

The results presented in Table 2 indicated that there was a significant difference between the pre-test and post-test scores of the control group in writing self-efficacy ($t_{(24)}$=3.81; p<.05).

Table 3.

T-test Results of Control and Experiment Groups between the Pre-tests in Writing Self-Efficacy.

Group	N	Mean	Standard Deviation	T	df	p*
Control	25	77.48	10.21	- .85	47	.400
Experiment	24	80.08	11.24			

*Significant at the .05 level **Significant at the .01 level

The results in Table 3 showed that there was no significant difference between the control and the experiment group in pre-test scores in writing self-efficacy ($t_{(47)}$=-.85; p>.05). The control and the experiment group had similar means for pre-test scores.

Table 4.

T-test Results of Pre-test and Post-test Scores of the Experiment Group in Writing Self-Efficacy.

Group	N	Mean	Standard Deviation	T	df	p*
Pre-test	24	80.08	11.24	-11.73	23	.000**
Post-test	24	97.83	6.68			

*Significant at the .05 level **Significant at the .01 level

The results in Table 4 showed that there was a significant difference between the pre-test and post-test scores of the experiment group ($T_{(23)}$=-11.73; p<.01). This difference was for the post-test scores of the experiment group. This indicated that interventions implemented in the experiment group had a positive and significant effect on the scores of writing self-efficacy.

Table 5.

T-tests Results between the Post-test Scores of the Control and Experiment Groups in Writing Self Efficacy.

Group	N	Mean	Standard Deviation	T	df	p*
Control	25	74.60	10.85	-8.98	47	.000**
Experiment	24	97.83	6.68			

*Significant at the .05 level **Significant at the .01 level

The results presented in Table 5 showed that there was a significant difference in post-test scores of the experiment and control groups in the writing self-efficacy scale ($T_{(47)}$=-8.98; p<.01). This difference was in favor of the experiment group. This indicated that the creative writing practices implemented in the experiment group had a positive and significant difference compared to the control group.

2. For the "Writing Anxiety Scale" for B2 level students learning Turkish as a second language, when the pre-test scores were controlled, there was a significant difference between the post-test scores in favour of the experiment group.

Table 6.

T-test Results for the Pre-test and Post-test Scores of the Control Group in Writing Anxiety.

Group	N	Mean	Standard Deviation	T	df	p*
Pre-test	25	32.24	5.61	-0.21	24	.835
Post-test	25	32.44	4.57			

*Significant at the .05 level **Significant at the .01 level

According to the results in Table 6, there was no significant difference between the pre-test and post-test scores in writing anxiety for the control group ($t_{(24)}$=-0.21; p>.05).

Table 7.

T-test Results for Pre-test Scores between the Control and Experiment Groups in Writing Anxiety.

Group	N	Mean	Standard Deviation	T	df	p*
Control	25	32.24	5.60	-2.15	47	0.370
Experiment	24	36.28	6.88			

*Significant at the .05 level **Significant at the .01 level

The results presented in Table 7 showed that there was no significant difference in pre-test scores between the control and experiment groups in writing anxiety ($t_{(47)}$=-2.15; p>.05). The pre-test scores of the control and experiment groups had similar means.

Table 8.

T-Test Results for Pre-test and Post-Test Scores of the Experiment Group in Writing Anxiety.

		Group	N	Mean	Standard Deviation	T	df	p*
	General	Pre-test	24	36.08	6.88	5.51	23	0.000**
		Post-test	24	28.41	6.07			
Sub-scale	*action-oriented*	Pre-test	24	16.92	5.72	4.41	23	0.000**
		Post-test	24	13.38	3.81			
	environment-oriented	Pre-test	24	19.16	4.41	3.63	23	0.001*
		Post-test	24	15.04	3.33			

*Significant at the .05 level **Significant at the .01 level

According to the results shown in Table 8, there was a significant difference between the pretest and posttest scores of the experimental group in which creative writing activities were performed (T (23) = 5.51; p <.01). This difference was in favor of the pretest scores of the experimental group. Accordingly, the study conducted on the experimental group scores had a positive effect on writing anxiety scores. When the table was examined, the writing anxiety scale of the experimental group in which creative writing activities were carried out indicated the difference in the pre-test and post-test scores of the action-oriented sub-dimension (T (23) = 4.41; p <.01) and the pre-test and post-test scores of the environment-oriented sub-dimension (T (23) = 3.63; p). <.05). This difference was in favor of the pretest scores of the experimental group. Accordingly, the change in the experimental group scores had a positive effect on writing anxiety environment and action-oriented subscale scores because anxiety level decreased as expected in posttest scores.

Table 9.

T-Test Results for Post-Test Scores of the Control and Experiment Groups in Writing Anxiety.

Group	N	Mean	Standard Deviation	T	df	p*
Control	25	32.44	4.57	2.63	47	0.012*
Experiment	24	28.42	6.07			

*Significant at the .05 level **Significant at the .01 level

The results in Table 9 showed that there was a significant difference in post-test scores between the experiment and the control group in writing anxiety ($T_{(47)}$=2.63; p<.05). This difference was in favor of the control group. The interventions implemented in the experiment group had a positive and significant difference compared to the control group because the level of anxiety decreased in the experiment group as expected.

3. There was a significant difference between the post-test scores of the experiment group in which creative writing practices were implemented and the control group in which traditional methods of instruction were implemented when the sum of pre-test scores of 'Creative Writing Evaluation Scale' were controlled.

Table 10.

T-test Results for the Pre- and Post-Test Scores Between the Control and the Experiment Group in Creative Writing Evaluation Scale.

Group	N	Mean	Standard Deviation	T	df	p*
Pre-test	25	39.68	8.81	-3.36	24	0.003*
Post-test	25	43.68	8.56			

*Significant at the .05 level **Significant at the .01 level

According to the results presented in Table 10, there was a significant difference between the pre- and post-test scores of the control group in creative writing ($t_{(24)}$=-3.36; p<.05).

Table 11.

T-Test Results for Pre-Test Scores of the Control and Experiment Groups in Creative Writing.

Group	N	Mean	Standard Deviation	T	df	p*
Control	25	39.68	8.80	-3.49	47	0.001*
Experiment	24	49.00	9.86			

*Significant at the .05 level **Significant at the .01 level

The results in Table 11 showed that there was a significant difference between the pre-test scores of the control and experiment groups in creative writing ($t_{(47)}$=-3.49; p<.05).

Table 12.

T-Test Results Between the Pre- and Post-Test Scores of the Experiment Group in Creative Writing.

		Group	N	Mean	Standard Deviation	t	df	p*
	General	Pre-test	24	49.00	9.87	-25.17	23	0.000*
		Post-test	24	83.42	8.08			
Sub-scale	*Creativity*	Pre-test	24	8.58	2.47	-13.44	23	0.000**
		Post-test	24	16.17	2.82			
	Text Structure	Pre-test	24	30.33	6.51	-21.92	23	0.000**
		Post-test	24	49.67	4.92			
	Writing, Punctuation and Presentation	Pre-test	24	10.08	2.67	-13.84	23	0.000**
		Post-test	24	17.58	1.77			

*Significant at the .05 level **Significant at the .01 level

According to the results presented in Table 12, there was a significant difference between the pre-test and post-test scores of the experimental group in which creative writing activities were performed (T (23) = - 25.17; p <.01). This difference was in favor of the posttest scores of the experimental group. Accordingly, the change in experimental group scores had a positive effect on creative writing scores. In addition, when the sub-dimensions of the scale were examined, the *creativity* pre-test and post-test scores of the experimental group (T (23) = - 13.44; p <.01), the *text structure* pretest and posttest scores (T (23) = -21.92; p) <.01), and *punctuation and presentation* pretest and posttest scores (T (23) = - 13.84; p <.01) there was a significant difference. This difference was in favor of the post-test scores of the experimental group. Accordingly, the change in the experimental group scores had a positive effect on the creative writing scale and its sub-dimensions.

Table 13.

T-Test Results of the Post-Test Scores Between the Control and Experiment Groups in Creative Writing.

Group	N	Mean	Standard Deviation	t	df	p*
Control	25	43.68	8.56	-16.70	47	0.000*
Experiment	24	83.42	8.08			

*Significant at the .05 level **Significant at the .01 level

The results in Table 13 showed that there was a significant difference between the post-test scores of the control and the experiment groups ($T_{(47)}$=-16.70; p<.01). This difference was in favor of the experiment group. The interventions in the experiment group had a positive and significant difference compared to the control group.

Discussion, Conclusion, and Recommendations

According to the research design, the desired analyses from pre-tests and post-tests were completed. The findings of the analyses are presented below:

1. There was not a significant difference between the pre-test and post-test scores of the control groups only for the second hypothesis.

2. A significant difference between the pre-test scores of the control and experiment groups was found only in the third hypothesis. In order to observe the effect of the interventions in groups with experimental designs, similar pre-test scores in both groups were expected. Thus, this was provided for the other research hypotheses.

3. Significant differences between the pre- and post-test scores of the experiment groups as a result of interventions were only found for the first and the third hypotheses. The significant difference for the second hypotheis was in favor of the pre-test due to the expected decrease in the anxiety scores. Therefore, the interventions resulted in a significant and positive effect on the experiment groups. This change is illustrated in Figure 1.

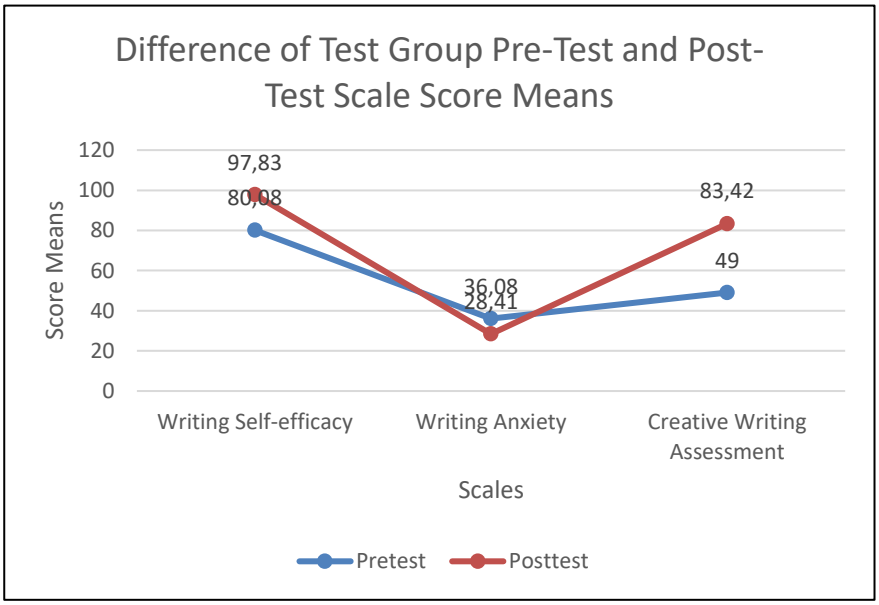

Figure 1. The Change in the Mean Scores of Pre- and Post-Test in the Experiment Group

As illustrated in Figure 1, the post-test scores of writing self-efficacy and creative writing scales in the experiment group were higher than the pre-test scores while it was the opposite in the writing anxiety scale. This was an expected outcome of the research as a decrease in the level of anxiety was expected.

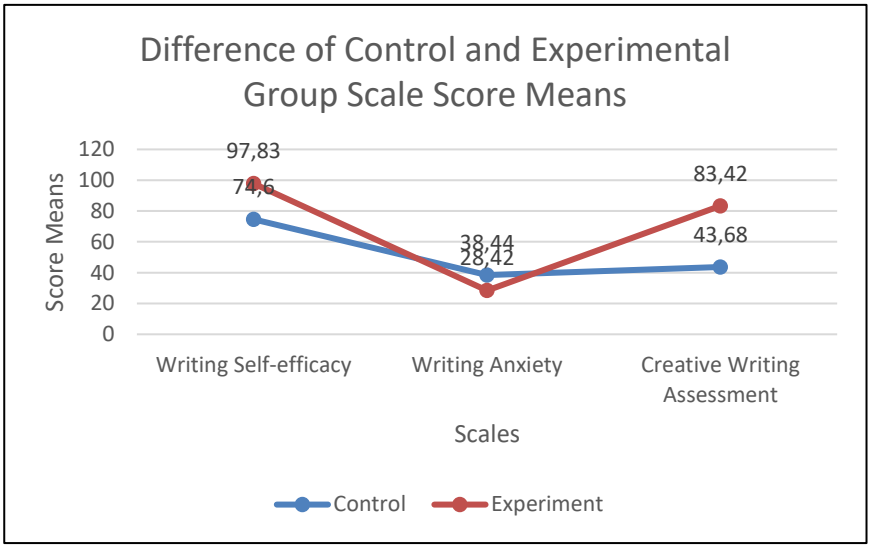

Figure 2. The change in the post-test mean scores of the control and experiment groups

As illustrated in Figure 2, the post-test mean scores in the experiment groups were higher than the control group except for the writing anxiety scale. The post-test scores of the experiment group were lower than the control group.

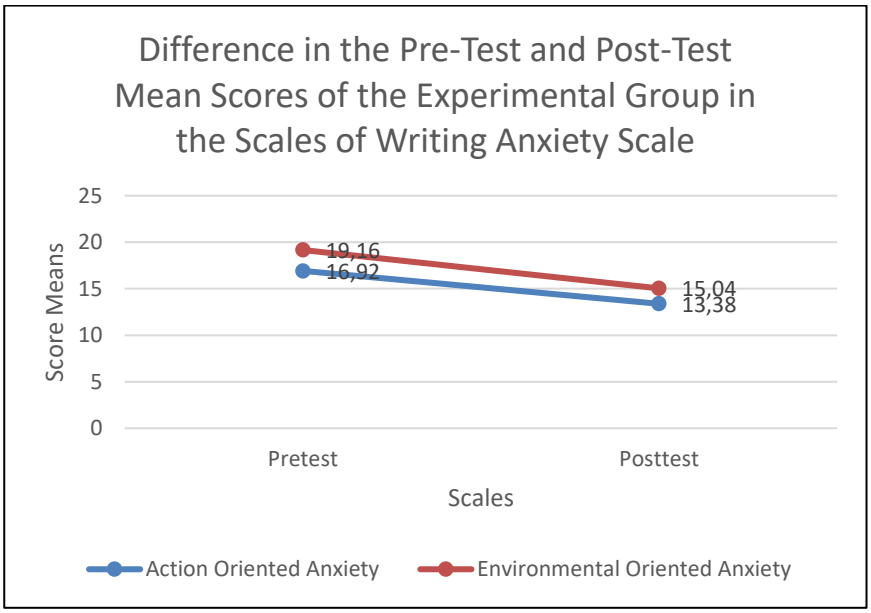

Figure 3. Change in the mean scores of the pre- and post-test of the experiment group in the sub-scales of writing anxiety.

Figure 3 shows the change in the pre- and post-test scores of action- and environment-oriented scale scores. The decrease in the post-test scores indicated a decrease in the level of anxiety.

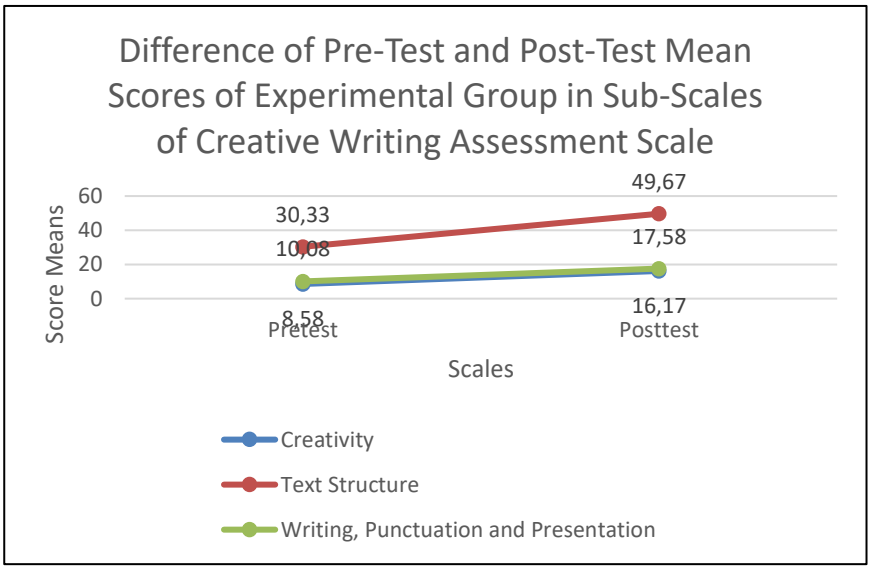

Figure 4. Change in the Mean Pre- and Post-Test Scores of the Experiment Group in the Sub-Scales of Creative Writing Scale.

Figure 4 shows the change in the pre- and post-test scores of creativity, text structure, and punctuation and presentation sub-scales of the creative writing scale. As illustrated, there was an increase in the post-test scores in all the sub-scales.

Writing skills are the most challenging skillset for students learning Turkish either as a native or as a second language. Departing from the current study, it can be said that activities throughout the process would contribute to students' writing skills. In this study, it was found that creative writing practices were effective in improving students' text writing and creativity levels. The presence of going outside the box, challenging imagination, being authentic, and writing by enjoying impacted students' development especially in the creativity dimension. The literature shows to support that creative writing activities improve students' creativity (Dorlay, 2018; Ozturk, 2007; Tonyali, 2010; Top, 2013).

Ozturk (2007) determined that creative writing skills improved 5th-grade students' skills to include original (creative and extraordinary) thoughts in the texts they wrote. It was found that the pre- and post-test scores of "originality" in the texts written by students in the experiment and control groups were significantly different [F(1,38) =11,39, p.<.05]. Tonyalı (2010) found a significant difference between the pre- and post-test scores of 6th grade students in the experiment group in which creative writing activities were performed. These findings support the current study's findings. Creative writing activities are found to be effective in including original thoughts in writing. Another study supporting our findings was conducted by Top (2013). The researcher conducted the study with B1 and C1 level students learning Turkish as a second language and found that there was a significant difference in post-test scores of students who engaged in creative writing activities.

The findings of the study indicate that creative writing practices are effective in students' written expression skills. Analyses revealed that the study was effective in students' text structure, punctuation, and presentation dimensions. Ozturk (2007), in their study, found that creative writing practices were effective in students' word choices in the texts they wrote, in improving sentence structures, reflecting organization (introduction, body, conclusion) in order, revealing their own styles, and expressing their feelings. These findings are compatible with the current study's findings. Similarly, in Tonyali's (2010) study, there was a significant difference in the scores for text structure, punctuation and presentation dimensions in the experiment and control groups. In studies conducted with 5th-grade students (Beydemir, 2010) and 6th-grade students (Korkmaz, 2015), the group that was instructed with a creative writing approach was more successful than the group that was instructed with traditional methods in teaching Turkish. Temizkan (2011) studied the impact of creative writing practices on the writing skills for story-writing of higher education students. The results of the study revealed that there was a significant difference between the post-test scores in story-writing skills of students in the experiment and control groups [t(29)= -5,172; p≤ .05]. Top, Fidan, and Gunay (2015) determined that creative writing practices improve the writing skills of B1 and C1 level student learning Turkish as a second language. Therefore, this study is significant as it focuses on learning Turkish as a second language.

According to the findings of the study, creative writing practices had a positive impact on the perceptions of writing self-efficacy. Demir (2011) found a positive and statistically significant relationship between the creative writing levels and perceptions of writing self-efficacy of 8th-grade students. Korkmaz (2015) identified a positive effect of creative writing methods on 6th-grade students' writing self-efficacy perceptions. Meier, McCarthy and Schmeck (1984) stated that writing self-efficacy increases the writing performance of college students. Buyukikiz (2011), in the study they conducted, found a significant relationship between the writing skills and writing self-efficacy perceptions of students learning Turkish as a second language.

One of the sub-questions of the research is whether creative writing practices have an impact on students' writing anxiety. The current study showed that the intervention activities were effective on students' writing anxiety. There are several studies in the literature focusing on writing anxiety which is an important factor impacting written expression success and development (Daly & Miller, 1975; Martinez, Kock & Cass, 2011; Yaman, 2010; Zorbaz, 2010). Daly (1985, p. 43) stated that students who have writing anxiety do not enjoy activities related to written expression. A high level of anxiety is one of the reasons that impact students' success in written expression and that causes students to shy away from writing. Iscan (2015) studied writing anxiety in students learning Turkish as a second language and found that students had a high level of somatic and social anxiety while they had a low-level cognitive anxiety. In a study conducted by Maden, Dincel and Maden (2015), it was found that international students experience anxiety frequently when writing in Turkish, and the levels of anxiety vary depending on factors such as nationality, different alphabet, and reading habits.

Departing from the findings of the current study, it can be said that creative writing practices are effective in the writing skills of students learning Turkish as a second language. Based on the findings, recommendations can be made. Learning environments should be designed for students learning Turkish as a second language that allows them to express their opinions comfortably, express their emotions, and allow them to enjoy writing. Methods such as active learning, collaborative learning, or creative drama-based activities should be used effectively to improve students' writing skills. Writing activities should be performed through a process-based learning model. Teachers should plan this process and provide guidance to students. In teaching Turkish as a second language, anxiety should be considered as an important factor, and attitudes, behaviors and actions to eliminate this anxiety should be developed during the education process. Practices to improve students' perceptions of writing self-efficacy would also increase their academic success. Future research is recommended to identify the effects of creative writing practices on reading, speaking, and listening that are fundamental language skills.

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Yaratıcı Yazma Uygulamalarının Yabancı Dil Olarak Türkçe Öğrenen Öğrencilerin Yazma Becerilerine Etkisi

Atıf:

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Özet

Problem Durumu: Yazma becerisi, hem ana dili eğitiminde hem de yabancı dil olarak Türkçe öğretiminde en son öğrenilen aynı zamanda en çok zorlanılan bir beceri alanıdır. Yazma becerisi; kelime seçimi, kelimelerin bağlama uygun kullanımı, dil bilgisi kurallarının doğru kullanımı, anlamlı bir bütünlük, tutarlılık, metin türü, tema, üslup, yazım kuralları, noktalama işaretleri, sayfa düzeni, güzel el yazısı vb. birçok bileşene sahip olması nedeniyle, bilişsel ve psikomotor becerilerin birlikte işe koşulmasını gerektirir. Bu kadar unsuru bir arada barındırması sebebiyle öğrencilerin en çok zorlandıkları bir beceri alanıdır. Yabancı dil öğretiminde yazılı anlatım becerilerinin geliştirilmesi özellikle o dilin fonetik, morfolojik, semantik ve sentaks yapımını bilmekle mümkündür. Hedef dile ait bu yapıların süreç içerisinde aşama aşama basitten karmaşığa doğru verilmesi gerekmektedir. Yazma sürecinin planlanmasına ve aşamalı olarak öğrenenin yazdıklarını başlangıçta öğretmenle daha sonra kendi kendine izlemesi ve değerlendirmesine ağırlık veren, yazmayı çeşitli

aşamalardan oluşan bir süreç olarak ele alan yaklaşımlarla öğrencilerin yazılı anlatım becerileri geliştirilebilir. Bu nedenle de yazma becerisinin geliştirilmesinde süreç temelli yazma uygulamalarının kullanılması önem taşımaktadır. Diller İçin Avrupa Ortak Öneriler Çerçevesi de süreç temelli yazma uygulamalarının yapılmasının önemine vurgu yapmaktadır. Bu süreçte öğrencilerden sahip oldukları birikimi, deneyimi kullanarak, başkalarından farklı düşünebilmeyi, o güne kadar aralarında bağlantılar kurulmamış olaylar, durumlar, kişiler, varlıklar arasında bağlantılar kurarak özgün yaratıcı yazmaları desteklenir. Öğrencilerin içlerindeki gizli ve yaratıcı gücü, ortaya çıkarmada yaratıcı yazma uygulamalarının önemli bir işleve sahip olduğu bilinmektedir. Yaratıcı yazma çalışmalarında amaç, öğrencilerin yazma yeteneklerini ve yaratıcılıklarını geliştirerek edindikleri bilgi ve birikimleri kendi bakış açılarından ve farklı bir biçimde ifade edebilmelerine ortam hazırlamaktır. Alanyazına bakıldığında yaratıcı yazma uygulamalarının hem ana dili eğitiminde hem de yabancı dil olarak Türkçe öğretiminde yazma becerilerini geliştirmede etkili olduğu görülmektedir. Yabancı dil olarak Türkçe öğretiminde yazma becerilerinin geliştirilmesinde yaratıcı yazma alanında yeterli çalışmaların olmadığı görülmektedir. Mevcut çalışma bu anlamda alana katkı sağlayacağı için önem taşımaktadır. Araştırmanın problemini "Yaratıcı yazma uygulamaları, yabancı dil olarak Türkçeyi öğrenen öğrencilerin yazma becerilerini geliştirmekte etkili midir?" sorusu oluşturmaktadır.

Araştırmanın Amacı: Bu araştırma, yaratıcı yazma uygulamalarının yabancı dil olarak Türkçe öğrenen B2 düzeyi öğrencilerinin yazma becerileri, yazma öz yeterlilik algıları ve yazma kaygıları üzerindeki etkisini belirleme amacıyla yapılmıştır.

Yöntem: Bu araştırmada nicel araştırma yaklaşımlarından ön test-son test kontrol gruplu yarı deneysel model uygulanmıştır. Deneysel araştırmalar, araştırmacı tarafından oluşturulan farkların bağımlı değişken üzerindeki etkisini test etmeye yönelik çalışmalardır. Araştırmanın çalışma grubunu, Aksaray Üniversitesi Türkçe Öğretimi Uygulama ve Araştırma Merkezi'nde ileri düzey B2 basamağında öğrenim gören öğrenciler oluşturmaktadır. Araştırma, 2018-2019 eğitim öğretim yılının bahar döneminde gerçekleştirilmiştir. Katılımcıların yer aldığı iki şubenin deney ve kontrol grubu olarak belirlenmesi seçkisiz yöntemle gerçekleştirilmiştir. 24 öğrenciden oluşan deney grubunda yaratıcı yazma uygulamaları yapılırken, 25 öğrenciden oluşan kontrol grubunda Yunus Emre Enstitüsü'nün Öğretmen Kılavuz Kitabı doğrultusunda dersler işlenmiştir. Deneysel işlemler haftada 7 saat olmak üzere 8 haftada gerçekleştirilmiştir.

Araştırmada kullanılan veriler, Türkçe öğrenen yabancı öğrencilerin yazma becerisine yönelik geliştirilen "Yazma Öz Yeterlilik Ölçeği", "Yazma Kaygısı Ölçeği" ve öğrencilerden toplanan kompozisyonlar yoluyla toplanmıştır. Verilerin çözümlenmesinde araştırmanın tüm problemlerinde ortalamalar arası ikili karşılaştırmalar yapılmıştır. Bu karşılaştırmalar yapılmadan önce verilerin analizlere uygunluğu test edilmiştir. Bunun için ilk önce normallik varsayımı test edilmiştir. Normallik varsayımı sonuçları bulgular kısmında tablolaştırılmıştır. Verilerin analizinde SPSS 22.0 paket programı, sonuç grafiklerinin oluşturulmasında ise Excell

kullanılmıştır. İkili karşılaştırmalar için ise bağımlı ve bağımsız gruplar için t-testleri yapılmıştır.

Bulgular: Yazma öz yeterlilik ölçeğine göre deney ve kontrol grubunun öntest puanları arasında anlamlı bir fark bulunamamıştır ($t_{(47)}$=-.85; p>.05). Buna göre kontrol ve deney gruplarının öntest puanlarının benzer ortalamalara sahip olduğu görülmektedir. Yazma öz yeterlilik ölçeğine göre deney ve kontrol gruplarının sontest puanları arasında anlamlı bir fark bulunmaktadır ($t_{(47)}$=-8.98; p<.01). Bu farklılık deney grubu puanları lehinedir. Buna göre deney grubu üzerinde yapılan değişimleme kontrol grubuna göre pozitif ve anlamlı bir farklılık oluşturmuştur. Yazma kaygısı ölçeğine göre deney ve kontrol grubunun öntest puanları arasında anlamlı bir fark bulunamamıştır ($t_{(47)}$=-2.15; p>.05). Buna göre kontrol ve deney gruplarının öntest puanlarının benzer ortalamalara sahip olduğu görülmektedir. Yazma kaygısı ölçeğine göre deney ve kontrol gruplarının sontest puanları arasında anlamlı bir fark bulunmaktadır ($t_{(47)}$=2.63; p<.05). Bu farklılık kontrol grubu puanları lehinedir. Buna göre deney grubu üzerinde yapılan değişimleme kontrol grubuna göre pozitif ve anlamlı bir farklılık oluşturmuştur. Çünkü kaygı düzeyi beklenildiği gibi deney grubunda düşmüştür. Yaratıcı yazma ölçeğine göre deney ve kontrol grubunun öntest puanları arasında kontrol grubu lehine anlamlı bir fark bulunmuştur ($t_{(47)}$=-3.49; p<.05). Yaratıcı yazma ölçeğine göre deney ve kontrol gruplarının sontest puanları arasında anlamlı bir fark bulunmaktadır ($t_{(47)}$=-16.70; p<.01). Bu farklılık deney grubu puanları lehinedir. Buna göre deney grubu üzerinde yapılan değişimleme kontrol grubuna göre pozitif ve anlamlı bir farklılık oluşturmuştur.

Sonuç ve Öneriler: Kontrol ve deney gruplarının öntest puanları arasında anlamlı bir fark sadece üçüncü araştırma probleminde bulunmuştur. Deneysel desenlerde gruplarda değişimlemenin etkisinin gözlenebilmesi için her iki grupta da öntest puanlarının benzer olması beklenmektedir. Buna göre bu durum diğer araştırma problemleri için sağlanmıştır. Değişimleme sonucunda deney gruplarının öntest ve sontest puanları arasında sontest puanları lehine anlamlı farklar birinci ve üçüncü araştırma problemleri için bulunmuştur. İkinci araştırma problemi için öntest lehine bir fark bulunmuştur. Bunun nedeni kaygı puanlarındaki beklenilen azalmadır. Buna göre deney gruplarında yapılan değişimleme pozitif yönde anlamlı bir etki yaratmıştır. Deney grubunda yazma özyeterlilik ve yaratıcı yazma ölçeklerinin sontest puanlarının öntest puanlarına göre daha yüksek olduğu görülmektedir. Yazma kaygısı ölçeğinde ise durum tam tersidir. Araştırma sonucunda beklenilen bir durumdur. Çünkü kaygı seviyesinde azalma beklenmektedir. Araştırmadan elde edilen bulgular, yaratıcı yazma etkinliklerinin öğrencilerin yazılı anlatım becerileri üzerinde etkili olduğunu göstermektedir.

Araştırmanın sonuçlarından hareketle şu önerilere yer verilebilir. Yabancı dil olarak Türkçe öğrenen öğrencilerin öğrenme öğretme ortamları, öğrencilerin düşüncelerini rahatlıkla ifade edebilecekleri, duygularını akıcı bir üslupla anlatabilecekleri, yazmadan zevk alabilecekleri bir şekilde tasarlanmalıdır. Öğrencilerin yazılı anlatım becerilerinin geliştirilmesinde aktif öğrenme, işbirlikli öğrenme, yaratıcı dramaya dayalı çalışmalar gibi yöntem ve teknikler etkin bir şekilde kullanılmalıdır. Yazma çalışmaları süreç temelli öğrenme modeli doğrultusunda

gerçekleştirilmelidir. Öğretmenlerin bu süreci planlayıp uygulamaları ve öğrencilere gerekli rehberliği yapmaları gerekir. Yabancı dil olarak Türkçe öğretiminde kaygının önemli bir etken olduğu görülmeli, eğitim sürecinde bu kaygıyı giderecek tutum, davranış ve eylemler geliştirilmelidir. Öğrencilerin yazma öz yeterlik algılarını artırmaya dönük çalışmalar, onların yazma akademik başarısını da artıracaktır. Yaratıcı yazmanın diğer dil becerilerine etkisi ölçülebilir.

Anahtar Kelimeler: Türkçe eğitimi, yabancı dil olarak Türkçe öğretimi, yazma becerisi, kaygı, öz yeterlilik

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Implementing Innovative Lean Educational Method to Enhance English Language Achievement*

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ABSTRACT

Purpose: To our knowledge, the present study is the first experimental example of the application of innovative Lean Educational Method (LEM) in middle school English classes in Turkey. How to learn and teach foreign languages has become the preoccupation of teachers, researchers, educational authorities, parents, and students. All of the stakeholders in the education processes want to satisfy the learning needs of the students ideally. As a result of the relevant efforts, many teaching methods emerged in the field of English Language Teaching (ELT). In this regard, this study primarily aims to introduce LEM and present its efficiency through an experiment.

Methods: To question the effects of LEM in English lessons, this experimental study was conducted. A control group (40 students), and an experimental group (40 students) were chosen through random cluster sampling in a public middle school. The experimentation process continued for 19 weeks. Statistical analyses of the collected data were conducted using descriptive statistics and the variance analyses carried out using one-way ANOVA.

Findings: The findings showed that there was a statistically significant difference between the experimental and control groups (control group's pre-test mean=8.9, sd=3.801 / post-test mean=8.775, sd=4.293; experimental group's pre-test mean=8.45, sd=4.437 / post-test mean=13.375, sd=3.998). Variance analyses of the pre-test and the post-test showed a statistically significant difference in the dependent variable ($F=27.197$, $p<.05$).

Implications for Research and Practice: The results showed that the implementation of LEM in middle school contexts is quite possible. LEM has the potential to bring many innovations to ELT and it also increases the foreign language achievement in nation-wide public exams. LEM can be applied in other educational contexts such as; primary schools, high schools and universities.

*This study is a part of a master's thesis titled "An experimental study on enhancing eight grade students' academic achievement in TEOG English examination by implementing innovative Lean educational method" under the supervision of Assoc. Prof. Dr. Filiz Yalcin Tilfarlioglu

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Introduction

From the educational perspective, Lean can be described as a systematic approach that removes the wastes from educational processes and adds value to the educational processes (Ziskovsky & Ziskovsky, 2010). Lean aims to extract all of the factors which can be considered as waste in any job and purpose by adding value to the educational processes. In addition, Lean can be described as an organizational development program that strengthens the performance and job satisfaction of everybody in an educational institution starting from students to school administrators. Lean adds value to the processes by identifying and eliminating the steps which create redundancy, which is not needed, which adds no value, and which even prevents the work being completed (Ziskovsky & Ziskovsky, 2010). By applying LEM, schools can become more competent in their organizations; teachers can increase learning performance of all students to highest levels, as a result an atmosphere that contains eternal achievement and satisfaction can be created (Balzer, 2010).

To understand LEM, the techniques and tools, which are used in educational processes, should be investigated closely, and the first tool of LEM is load leveling. Load leveling can be described as a Lean tool that balances the curriculum, and this curriculum needs to be delivered to the students in an educational year. Due to various reasons, in each level, the curriculum cannot be delivered to the students effectively, and through their educational life, these unfinished curricula have devastating effects on students because students have difficulties in understanding the new information in the next steps of the curriculum (Ziskovsky & Ziskovsky, 2010). In this context, the main aim of LEM is to complete the curriculum effectively, and in this process some other Lean tools are also being used.

In a load-leveling plan, the process is needed to be separated into steps. The first step is the identification of the current situation, and then, an external environment analysis is carried out. After that, the purposes of the educational institution are determined, and the next critical success factors are specified. In the next step, the comparison between the school's current educational strategies with the needs of today is being addressed. Next, some predictions of the school's future are provided. After that, the school's new mission and vision are determined, and yearly targets are prepared in line with the new mission and vision. In the end, a final education and training plan is completed in line with the aims (Ziskovsky & Ziskovsky, 2010). The process of the load-leveling plan is a demanding job, and all of the possible missing time should be considered. Thus, two weeks of capture-time for the delivery of the curriculum should be decided in case of any problems.

When preparing a load-leveling plan, brain and learning theories should be taken into consideration to ensure that the students have been thoroughly trained in the given curriculum. Brain theory primarily deals with how the brain stores information in memory. According to brain theory studies, the findings showed that the brain absorbs more knowledge if the information is provided in small quantities continuously. In other words, students should not be provided with a hoard of unknown information in a short time, and they also should be provided with

processing time, and these time periods are generally sleeping periods (Jenkins, 2013). In addition, according to the studies which were conducted in the advertising sector, to hold information in the short term memory, four different repetitions are needed, and to transfer the information from short term memory to long term memory, ten different repetitions are needed (Connell, 2005). In other words, to achieve full acquisition of the curriculum by students, educators should repeat the knowledge by taking students' learning styles into consideration, and by doing this, they can easily achieve ten differentiated repetitions of the knowledge. Moreover, the time which is required to provide ten impressions is named ideal learning time (takt time). In LEM, it is appropriate to restrict this time period in a week, so ten different repetitions of the newly learned knowledge should be done within a week.

Since LEM mainly aims to eliminate wastes in educational institutions, there is a need to find out the wastes in schools. According to LEM, the biggest waste is using the school people's capacities below their ability. In the essence of LEM, the most important wealth is human resources, so there is a need for effective use of human resources. There are lots of wastes in educational institutions, and they are listed as follows (Eaker & DuFour, 2015):

1) Students who cannot meet the required success and need to re-study the curriculum.
2) Students who do not have the perspective of life-long learning, and the students who are taking courses just for graduating from an educational institution.
3) Activities that do not add any value to education, and the activities which are not relevant to real life.
4) Unnecessary staff and material movements due to the wrong organization of the workplace, and the effort of the staff to solve these problems.
5) Mistakes in the delivery of the curriculum, and the decrease in the quality and the increase in the costs due to mistakes in the delivery of the curriculum.
6) Taking more students than the optimum number, and giving education to them.
7) Teachers' inability to use their full potential when transferring knowledge.
8) 8 - Unused and unnecessary teaching materials that are waiting to be used in the schools.

As reported before, there are some wastes in schools, and these wastes should be avoided. In LEM, 5S tool (sort, set in order, shine, standardize, sustain) can be used to remove wastes and increase the quality of education. In the sort step of the 5S tool, educational materials, which are needed in language learning and teaching process, are separated from unnecessary materials, and the removal of the useless materials from the educational institutions is carried out. Next, in the step of set in order, learning places and materials are organized with a logical order. In the step of shine,

the educational materials are improved and placed appropriately in line with work-flow. In the step of standardizing, standards that favor the activities in the shine step are established. In the last step of 5S; sustain, the discipline to flow the first 4S is set up for all times (Dahlgaard & Østergaard, 2000).

The five basic principles of LEM have the main focus in the formation of load-leveling plan too. These principles are as follows; definition of value, value stream, continuous flow, pull system and perfection. First, in the principle of defining value, activities that can add value to teaching and learning of the foreign language are determined, and how and when these activities will be used specified in detail with the help of decision matrixes. Next, in the principle of the value stream, continuous learning of all school components (such as students, teachers, directors, supportive staffs and parents) is tried to be achieved. In other words, the curriculum is needed to be updated and developed in line with the needs of the students. Additionally, in the principle of continuous flow, the activities, which aim to maintain continuous learning, are ordered logically without any decrease in the quality of the language education. In the principle of pull, nothing is done unless there is a need for it. In other words, since every student has individual learning characteristics, the activities in the curriculum are shaped according to students' needs. Students also have a voice in the development process of the curriculum, and they can make suggestions for it, so more innovative ideas can also be put to the curriculum. In the last principle of LEM (perfection), the first four principles are tried to be maintained in harmony. In other words, perfection principle primarily deals with the improvement of the language learning and teaching process. Therefore, it brings continuous research, development and excellence (Jenkins, 2003).

Kaizen, in LEM, is an innovative activity, which tries to find sustainable ways for continuous improvement activities (Zimmerman, 1991). Kaizen activities can be described as team workshops, in which every school component comes together to generate new ideas, and these innovations are tested with another tool of LEM, namely PDCA (plan, do, check, act) to foster a continuous atmosphere of language lessons with innovations. In the first step (plan), which parts of the curriculum and language instruction need change are decided, and the probable results of this change in the curriculum are planned. In the second step (do), the details of the plan of the curriculum change are fixed, and in the third step, check is being applied. In check, the plan is being applied to a smaller scale, and it is repeated until the desired outcome (improvement in language learning) is achieved. Finally, in the step of act, the innovation which has shown a satisfactory result is applied all of the school processes (Stecher, Kirby, Barney, Pearson, & Chow, 2004). In short, PDCA is a scientific method that helps in deciding the effectiveness of innovations in language learning and teaching.

While preparing load-leveling plans, there is a need for using the same teaching procedures since students need patterns that they are used to. In other words, language lessons should be formed in a way that students are familiarized with because people generally need a specified framework for the acquisition of the foreign language (Fitzgerald, 2006). With the help of specified teaching design, students will

have less difficulty in newly taught material, and they will also easily do their homework and execute their other responsibilities since every classroom routine is specified beforehand.

Exams are an indispensable component of all teaching processes since exams provide information about how much the language instruction in educational institutions is successful. In LEM, small weekly exams are advised together with long term achievement tests or public exams. With the help of small weekly exams, the errors and mistakes in the language learning and teaching process can be diagnosed on the spot, and they can be treated immediately, so the possibility of future learning problems can be prevented. In LEM, after the small weekly exams, it is advised to carry out Pareto analysis to find out the most problematic parts in the language learning process. According to the rules of Pareto analysis, 80% of the problems are brought by 20% of the most problematic parts (Akin, 2005). In other words, in the process of Pareto analysis, 20% of the most wrongly answered questions are determined in small weekly exams, and then these problems are treated with Kaizen events, PDCA tool and if it is needed re-teaching of the materials. Moreover, to prevent the mistakes in the language learning process rubrics, control schedules and family signatures can also be used together with Pareto analysis of small weekly exams. All of these innovative ideas that LEM brings to the language education can facilitate instant intervention and resolution to the problems, and they can even provide real-time performance information to teachers, students, school administrations and parents (Ziskovsky & Ziskovsky, 2010). In short, one of the main aims of LEM is to reach perfection through exams.

LEM targets achieving the ideal situation in schools, and for many educational institutions, the ideal situation means the complete learning of the language curriculum within an academic year. This ambitious aim can be made real by developing Lean culture and Lean thinking in all of the processes of an educational institution. With the help of Lean thinking, all of the wastes in the processes of the schools can be eliminated, and with the help of Lean culture, an atmosphere, which is respect-based, can be developed in schools. Lean culture encourages everybody in the school process to become a problem-solver, and all of the problems can be easily solved with the involvement of the people in the school processes. In addition, the biggest problem in educational institutions, which is blaming others for students' failure in public examinations, can be solved since LEM requires mutual respect and effort (Flinchbaugh & Carlino, 2006).

LEM can offer unlimited opportunities for improvement in language learning and teaching. LEM aims to fix problems by investigating the roots of the problems in the processes. Therefore, LEM can be extremely helpful for students who are suffering from problems in the current educational system. Actually, LEM is not a prescriptive method; instead, it is an organizational learning journey that aims to bring continuous improvements to language learning and teaching (Flumerfelt, 2008). Thanks to the innovations that LEM can possibly bring to the field of ELT, the language learning problems and high failure rates in public exams can be solved easily since language education requires continuous improvement.

Statement of the Problem

According to the observation of the researcher, there are many reasons behind the failure of the students in the TEOG English examination. For example, there are just four hours of lessons available for both English instruction and exam preparation for TEOG per week, and within the limits of this time period, it is almost impossible to conduct lessons with traditional methods and make students ready for this very first public examination. Secondly, the students seem to have problems with the activities in the course books. In other words, the activities in the course books sometimes are not sufficient enough to provide successful acquisition of English and train students for TEOG English examination. At this point, there is a need to consolidate the curriculum with supportive learning activities, and re-order the teaching materials in a logical way. According to the observation of the researcher, another problematic part of English classes is the habit of rote learning. In other words, in English classes there is a tendency to learn the language, especially vocabulary items and grammatical usages, just by memorizing them, and this memorization experience leads to monotony in language classes. As a result, the students develop "save the day" attitude towards English lessons, and they cannot foster a lifelong learning approach to the language. This problem could be solved by respecting students, taking students' considerations in the lessons, and using the creativity of the students in language classes. Moreover, there are problems in the quality of English instruction in the middle school context, and this problem stems from the lack of enough testing materials and lack of teaching activities which provide more lasting learning, especially for vocabulary lessons. At this point, the learners are needed to be treated with weekly short exams, which provide diagnostic data to the learning problems of them, and in the teaching process of vocabulary items, activities which appeal the learners must be developed in line with the students' preferences.

Significance of this Study and Research Questions

Although some educational uses of Lean are present in higher educational institutions, there is almost no implementation of Lean in middle school contexts to increase general achievement in public examinations. In fact, a theoretical framework for implementing LEM to education has been formed. However, many of its assumptions, or at least those related to eight grade students' achievement in TEOG English exam have not been experimentally tested. Therefore, trying to find out whether or not LEM in eight grade English lessons have a positive effect upon answering all type of questions in the TEOG is the main aim of the present study.

Research Question # 1 To what extent does LEM increase students' general achievement in TEOG English exam?

Research Question # 2 To what extent is using LEM in English lessons of eight grade students effective in answering:

a. grammar questions in the TEOG English exam?

b. vocabulary questions in the TEOG English exam?

c. reading comprehension questions in the TEOG English exam?

Method

Research Design

This current study is based on experimental research design. In this study, two groups of students were chosen as experimental groups, and they were subjected to the treatment in line with the requirements of LEM, and two groups of students were chosen as control groups to compare the results with the experiment groups because the researcher was giving English lessons just for these four classes due to arrangement of the course load in this educational institution. All of the groups were tested with the first TEOG English examination as a pre-test, after that the treatment based on LEM was provided to the experimental groups of the study. When the treatment sessions were over, all of the groups were subjected to the second TEOG English examination as the post-test. Experimental groups were treated with a load-leveling plan of the curriculum (Table 1.) and other innovations that LEM brought to the field of language teaching. This alteration in the experimental groups was analyzed and compared with the control groups. Finally, the grades obtained from the pre-test and post-test were analyzed using one-way ANOVA to find out whether or not English instruction in line with LEM has a positive effect upon students' achievement in TEOG English examination.

Table 1.

Summary of the Load-leveling Plan

Unit	Allocated Time	Communicative Functions	Procedure
4-Communication	4 weeks	-Expressing concern and sympathy -Handling Phone conversations -Making simple inquiries -Talking about plans	-Application of 5S. -Presentation of the subject (e.g. PPTs, videos, songs, worksheets, vocabulary games, extra reading materials, home works, rubrics were used depending on the topic). -10 different repetition of the newly learnt material (notes, memos, messages, phone conversations, SMS,
5- The Internet	4 weeks	-Accepting and refusing -Giving explanations/reasons -Making excuses -Making simple requests -Making simple inquiries -Talking about plans -Telling the time, days and dates	

			communicative tasks, guessing the word meaning from the context, reading comprehension questions, real life tasks, role-play and simulations were used depending on the topic). -Kaizen events and PDCA. -Small weekly exams and Pareto analysis. -Family visits (after lessons).
6- Adventures	4 weeks	-Expressing preferences -Giving explanations/reasons -Making simple comparisons -Making simple inquiries -Stating personal opinions -Talking about what people do regularly -Talking about past events	
7- Tourism	4 weeks	-Describing places -Describing the weather -Expressing preferences -Giving explanations/reasons -Making simple comparisons -Stating personal opinions -Talking about past events	
8- Chores	3 weeks	-Expressing feelings -Expressing likes and dislikes -Expressing obligation -Giving explanations/reasons -Making simple inquiries -Making simple suggestions	

Research Context and Sample

The participants who attended this study were 8th-grade students of Münire Kemal Kınoğlu Middle School, Gaziantep, Turkey in 2016-2017 education year. The ages of the participants varied between 13-14 and there were 42 female and 38 male students. In this study, the researcher used cluster random sampling for the purpose of minimizing the population. In addition, the students were placed in the classes heterogeneously. In other words, no placement tests were used in the formulation of the classes by the school administration, and students' English level differentiates in each class but it can be said that the general profile of each classroom is almost similar. This situation is the same in almost every public school because MEB strictly forbids the formulation of special classes due to reasons of equality in education.

Research Instruments and Procedures

In this study, the first TEOG English examination in 2016-2017 education year was used as the pre-test, and the second TEOG English examination was used as the post-test with the aim of collecting data. In each TEOG English examination, there were twenty multiple-choice questions with four options, which were designed to assess the students' grammar and vocabulary knowledge, and also reading comprehension skills. In the first TEOG English exam, the students were required to answer questions from the first three units of the coursebook (Upturn in English), and in the second TEOG English exam, the learners were required to answer questions from the first eight units of the coursebook. In this context, the main aim of TEOG exams was to evaluate the students' English knowledge in a long period of time with many topics, not determining the students' performance in a short notice with a single topic. Since these exams question the topics, which were included in the coursebook and the curriculum, they can be considered valid exams, and these two examinations were developed by the nation-wide educational authority (MEB) to place students to secondary education institutions, so the data collected with them can be considered reliable as well.

Data Collection and Analysis Procedure

The results of the pre-test were analyzed using independent samples t-test, then the treatment was started to be applied on two experimental groups, while the two control groups followed the standard 8th grade English curriculum prepared by MEB. There were nineteen weeks between the pre-test and the post-test, and each week there were four 40 minute English lessons, so the treatment of LEM lasted 76-course hours. After the treatment process, the post-test (second TEOG English examination) was administrated to both control and experiment groups. The results obtained from both pre-test and post-test were analyzed using one-way ANOVA to find out whether the application of LEM has a positive effect on grammar, vocabulary and reading performance of the eighth-grade students. The f values were analyzed at .05 sig. level (p) and the data analysis was carried out with the help of SPSS 20.

Results

The Effects of LEM upon English Language Learning

In this study, the control groups and the experimental groups were needed to be at the same level of English language proficiency before the implementation of LEM in eighth grade English lessons in the purpose of reaching reliable conclusions. In fact, it is not an obligation for pre-test and post-test experimental research designs because the statistical comparison of both groups are still possible even though experimental and control groups have different levels of English language proficiency. However, the level of students' English language proficiency can become one of the factors, which can affect the results, so it was taken one of the variables. In fact, LEM can provide better results with more proficient learners or high school and university students than with middle school and primary school students and vice versa. The current study is based on whether or not implementing LEM to eighth grade English lessons has a positive effect on English language learning, so it is a need to see that both the experimental groups and control groups have nearly the same level of proficiency.

Table 2.

Pre-test Mean Scores, Standard Deviation, t and p-values for the Control Group and the Experimental Group

	Experimental or control	***N***	***M***	***SD***	***SEM***
PRE.TOTAL	*Control*	40	8,9000	3,80148	,60107
	Experimental	40	8,7750	4,29363	,67888
POST.TOTAL	*Control*	40	8,4500	4,43731	,70160
	Experimental	40	13,3750	3,99800	,63214

M: Mean, SD: Standard Deviation, SE: Standard Error Mean

From this table, it can be seen that the analyses of the data gathered from the pre-test showed that there was no statistically significant difference between the experimental group and the control group before this study (t=.138; p>.05). This result shows that both groups were almost at the same level of proficiency. The experimental group was suitable to treat with LEM.

Table 3.

Levene's Test for Mean Grades

		Levene's Test for Equality of Variances	
		F	***Sig.***
PRE.TOTAL	Equal variances assumed Equal variances not assumed	1,242	,269
POST.TOTAL	Equal variances assumed Equal variances not assumed	,013	,910

Whether the data were suitable for the experimental research design, Levene's test was applied. Levene's test for equality of variances showed that an *F* value .013 and significant value .910. This value is greater than .05. In other words, both of the groups showed similar variance, which means these two groups are independent of each other, that is independent samples t-test and one-way ANOVA are appropriate for the research design of the study. Additionally, in Table 4 below, it can be clearly seen that the post-test mean score of the experimental group has relatively increased when it is compared to its pre-test mean score and it is relatively higher than the control group's post-test mean scores as a result of implementing LEM in English lessons.

Table 4.

Pre-test and Post-test Mean Scores and the Standard Deviation for the Control Group and the Experimental Group

t-test for Equality of Means						
					95% Confidence Interval of the Difference	
t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
,138	78	,891	,12500	,90673	-1,68017	1,93017
,138	76,872	,891	,12500	,90673	-1,68058	1,93058
-5,215	78	,000	-4,92500	,94437	-6,80510	-3,04490
-5,215	77,167	,000	-4,92500	,94437	-6,80542	-3,04458

In Table 5, it can be seen that there is a statistically significant difference between the post-test mean score of the experimental group and the control group. In other words, there is an increase in the experimental group's achievement level in TEOG

English examination. This result showed the implementation of LEM to eighth grade English curriculum is quite possible.

Table 5.

Variance Analysis of Pre-test and Post-test Mean Scores of the Control Group and the Experimental Group

		Sum of Squares	df	Mean Square	F	Sig.
PRE.TOTAL	Between Groups	,313	1	,313	,019	,891
	Within Groups	1282,575	78	16,443		
	Total	1282,887	79			
POST.TOTAL	Between Groups	485,113	1	485,113	27,197	,000
	Within Groups	1391,275	78	17,837		
	Total	1876,387	79			

In table 5, variance analysis of the mean scores shows that there has been a statistically significant positive change in the dependent variable (English language achievement). The F value and the p value shows a difference between the mean scores (F = 27.197; p<,05). It has been verified that the implementation of LEM in eighth grade English lessons has a positive effect on TEOG English examination achievement.

The Effects of LEM upon Vocabulary, Grammar and Reading Comprehension

Up to now, it has been demonstrated that implementing LEM in eighth grade English curriculum has a positive contribution upon English language learning in general. Additionally, this study aims to find out whether or not the application of LEM in English language lessons has a positive effect upon vocabulary, grammar and reading comprehension skills. The related findings were showed in Table 6.

Table 6.

Mean Scores and Standard Deviation of Pre-test and Post-test Scores for Vocabulary, Grammar and Reading Comprehension Sections of the Test

	Experimental or control	***N***	***M***	***SD***	***SEM***
PRE.VOCAB	*Control*	40	2,2250	1,16548	,18428
	Experimental	40	1,7750	1,02501	,16207
POST.VOCAB	*Control*	40	2,3250	1,09515	,17316
	Experimental	40	3,1000	,70892	,11209
PRE.GRAM	*Control*	40	1,8250	1,10680	,17500
	Experimental	40	2,0250	1,09749	,17353
POST.GRAM	*Control*	40	1,7000	1,34355	,21243
	Experimental	40	2,8250	1,03497	,16364
PRE.READ	*Control*	40	4,8500	2,37022	,37476
	Experimental	40	4,9500	2,85505	,45142
POST.READ	*Control*	40	4,5000	2,69853	,42667
	Experimental	40	7,4250	2,89905	,45838

It can be seen in Table 6 that the treatment (application of LEM) has a positive effect on vocabulary, grammar and reading achievement. The experimental group's pre-test mean score was 1.775 in vocabulary, 2.025 in grammar, 4.950 in reading; whereas in the post-test the mean scores increased to 3.1 in vocabulary, 2.825 in grammar, 7.425 in reading. Therefore, this situation shows a positive change in vocabulary, grammar and reading achievement. Moreover, the mean scores and the standard deviation values are the highest in reading section, and it demonstrated that the application of LEM led to a greater increase in reading comprehension. This could be a result of the load-leveling plan and PDCA tool of LEM in English lessons.

Table 7.

Variance Analysis of the Mean Scores for the Vocabulary Part of the Test.

		Sum of Squares	df	Mean Square	F	Sig.
PRE.VOCAB	Between Groups	4,050	1	4,050	3,362	,071
	Within Groups	93,950	78	1,204		
	Total	98,000	79			
POST.VOCAB	Between Groups	12,012	1	12,012	14,116	,000
	Within Groups	66,375	78	,851		
	Total	78,388	79			

When Table 7 is examined, it can be seen that in vocabulary acquisition there is a positive change on behalf of the experimental group. The values in the table show that there is a statistically significant difference between the post-test and pre-test mean scores. (F = 14.116; $p<.05$). It can be concluded that the application of LEM in vocabulary sessions was successful.

Table 8.

Variance Analysis of the Mean Scores for the Grammar Part of the Test

		Sum of Squares	df	Mean Square	F	Sig.
PRE.GRAM	Between Groups	,800	1	,800	,659	,420
	Within Groups	94,750	78	1,215		
	Total	95,550	79			
POST.GRAM	Between Groups	25,313	1	25,313	17,601	,000
	Within Groups	112,175	78	1,438		
	Total	137,487	79			

Another aim of this study was to see whether there is a positive change in grammar achievement. When the experimental group's pre-test and post-test mean scores are compared, it can be easily observed that the students have increased their achievement in the post-test, and they gained better results in the post-test compared to the pre-test. When Table 8 is examined closely, it can be observed that the application of LEM in grammar sessions has positively contributed to learners' test scores in grammar questions (F = 17.601; p<.05). Additionally, the results related to the positive effects of LEM on learning grammar structures of the English language showed the characteristics, and there is a significant increase in the mean scores of the grammar part of the test, as well.

Table 9.

Variance Analysis of the Mean Scores for the Reading Comprehension Part of the Test.

ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
PRE.READ	Between Groups	,200	1	,200	,029	,865
	Within Groups	537,000	78	6,885		
	Total	537,200	79			
POST.READ	Between Groups	171,112	1	171,112	21,816	,000
	Within Groups	611,775	78	7,843		
	Total	782,888	79			

When Table 9 is examined, it can be observed that the application of LEM in eighth grade English lessons has a positive effect upon learning the reading comprehension skills (F = 21.816; p<.05). Additionally, the mean score of the post-test in this section is relatively higher than the pre-test. This finding shows that the treatment has caused a greater positive change in the reading comprehension skills of the learners.

Discussion, Conclusion and Recommendations

In this study, it has been concluded that the application of Lean to the field of English language teaching is quite possible, and LEM has a positive effect upon foreign language in general. Actually, Lean is not just a prescriptive method; instead it is an organizational learning journey, which aims to bring continuous improvement to the field. Thanks to the innovations that Lean can possibly bring to the education of the

English language, the problems in this field can be easily solved since education requires continuous development. Moreover, LEM has a positive effect upon vocabulary, grammar and reading comprehension learning. The variance analyses of the post-test results of the experimental group showed that there is a statistically significant improvement on behalf of the experimental group. The analyses of the collected data for each part of the test, which is grammar, vocabulary, and reading, were also conducted with the same statistical procedures and it has been seen that the implementation of LEM can approximate the language learning and teaching processes. In other words, LEM can offer unlimited opportunities for improvement in language learning and teaching (Flumerfelt, 2008). Because of these features in its nature, Lean is totally suitable for Turkish educational contexts, since most of the language teachers in this country rely on or forced to use course books to provide language learning activities but with the help of LEM, course content can be sorted easily and innovation can take place in the classrooms.

As a result of this present study, the experimental groups showed better scores in the post-test. Thanks to this emergent improvement in the average grades of the students, the researcher has been given a certificate of achievement by MEB. When the teachers are recognized by the educational authorities due to their efforts in the teaching processes, their motivation to implement educational innovations can survive, and the teachers can create a better sense of professional character and self-confidence (Gonzales, 2015). In other words, thanks to the promising results that LEM has brought to eighth grade English lessons, the researcher has been recognized by the educational authorities and he is eager to carry out LEM in his future lessons.

Lean primarily deals with the identification and elimination of the wastes in the institutions, and there are lots of wastes in the processes of any school. Firstly, Lean gets rid of the wastes, cleans the learning environment (5S), modifies the curriculum (load-leveling), and finally, sustains the innovation through perfecting it (kaizen events, PDCA procedure), and at the same time reducing the costs (Womack & Jones, 2010). From the findings of this study, it has been seen that LEM has achieved more fruitful language learning in middle school contexts and made the education system more successful in the institution.

Applying LEM in language classes can be considered as exploratory practice since Lean promotes the idea of ongoing research rather than a short-term trial and error process, so the benefits of LEM are indefinitely sustainable, and at the same time, LEM minimizes the efforts for the innovation in the language classrooms. In other words, Lean is just not appropriate for the business operations, it is also a good fit for the field of language education, and with this study, and it has been proved. In fact, some applications of Lean can be seen in higher education institutions (see Antony, 2014; Carvalho, Lopes, Ramos, Ávila, Bastos, Fonseca, & Martens, 2013; Comm & Mathaisel, 2005; Gadre, Cudney, & Corns, 2011; Heinemeier, 2014; Ranky, Kalaba, & Zheng, 2012; Thirkell & Ashman, 2014; Van Til, Sengupta, Fliedner, Tracey, & Yamada, 2005). However, we should note that, to our knowledge, this study is the first study that was conducted in Turkish middle school contexts and resulted in satisfactory conditions both for the teacher and the students.

LEM aims to fix the problems by investigating the roots of them in the processes; it does not aim to fix the students. It can be said that one of the major problems in the Turkish educational context is "out-of-field teachers". These teachers were hired by MEB because there was an enormous need for the English teachers. To consolidate English language teaching in this country, these teachers should be informed with LEM since it can be easily applied to the problem-solving and pragmatic nature of the teachers' job.

As Balzer (2010) states Lean means doing more with existing resources. Every year millions of Euros are spent on English course books and most of them are exported from foreign countries, so this situation leads to a serious loss of national wealth. If LEM was used in a country scale project, there would be a decrease in the cost of education, and this national wealth could be used for the next generations. In this study, no extra-course books were forced to be bought by the teacher, the researcher himself created a load-leveling plan and additional language learning materials (such as PPTs, worksheets, vocabulary exercises, videos, weekly small exams). In other words, the findings suggest that with less money and existing resources, an increase can be achieved in public exams with the help of LEM.

Last but not least, Lean can be very useful for students, teachers, parents and school administrators who are suffering from problems in the current educational system. Moreover, by adopting LEM, educational institutions may allocate and utilize precious resources to main competencies. LEM may become widespread in this country, and it can produce a ripple effect in Turkish educational contexts.

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Yenilikçi Yalın Eğitim Yönteminin İngiliz Dili Başarısının Yükseltilmesi İçin Uygulanması

Atıf:

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Özet

Problem Durumu: Söz konusu bilimsel çalışma yenilikçi Yalın Eğitim Yönteminin Türkiye'deki ortaokul İngilizce derslerinde uygulanmasının ilk deneysel örneğidir. Yabancı dil öğrenmek ve öğretmek, öğretmenlerin, araştırmacıların, eğitim otoritelerinin, ebeveynlerin ve öğrencilerin endişe kaynağı haline gelmiştir. Eğitim sürecindeki tüm paydaşlar, öğrencilerin öğrenme ihtiyaçlarını en iyi şekilde karşılamak istemektedir. Söz konusu çabaların sonucu olarak İngiliz Dili ve Eğitimi alanında birçok öğretim yöntemi ortaya çıkmıştır. Başka bir deyişle, ilgili yöntem ve teknikler İngilizce öğretilmesi ve öğrenilmesi konusunda sayısız değişikliğe neden olmuştur; ancak hemen hemen hepsi eğitim sürecine katılan paydaşların ihtiyaçlarını karşılayamamıştır. Günümüzde, özellikle de Türkiye'de İngiliz Dili ve Eğitimi bağlamında büyük ölçekli standartlaştırılmış testler (örneğin; TOEFL, IELTS, PET, KET, FCE, CAE, CPE, PTE, SAT, LYS, TEOG vb.) önemli bir rol oynamaktadır. Sınavlar, tüm öğretim süreçlerinin vazgeçilmez bir parçasıdır; çünkü sınavlar eğitim kurumlarındaki dil öğretiminin ne kadar başarılı olduğu hakkında bilgi sağlar.

Araştırmanın Amacı: İlköğretim sürecinin ikinci kademesi olan ortaokul bağlamlarında, öğrenciler sekizinci sınıf seviyesine geldiğinde Milli Eğitim Bakanlığı öğrencileri TEOG (Temel Eğitimden Ortaöğretime Geçiş) sınavına tabii tutarak onları ortaöğretim kurumlarına (liselere) yerleştirir. TEOG İngilizce sınavlarında, sorularla sadece anlama seviyesini değil, aynı zamanda daha doğru okuma, mantıklı çıkarımlar yapma ve öğrencilerin kelime bilgileri de ölçülmektedir. Bunun yanı sıra, her sorunun yapısı, anlaşılabilir bir bağlamda ve genellikle de sorunun kalitesini artıran bir soru-cevap formundadır. Ancak, TEOG İngilizce sınavlarından alınan sonuçlar istenilen düzeyde değildir (2016-2017 eğitim öğretim yılı ortalaması 57.315). İngiliz Dili ve Eğitimi alanında yöntembilimsel bir yenilik olan Yalın Eğitim Yöntemi (YEY), bu soruna bir çözüm önermektedir. Yalın Eğitim Yöntemi'nde ölçme ve değerlendirme süreci haftalık küçük sınavlar (quizler), aylık testlerle tamamlanır. Haftalık küçük sınavların aracılığıyla, dil öğrenimi ve öğretimi sürecindeki hatalar ve yanlışlar yerinde tespit edilebilir ve hemen gerekli önlemler alınabilir, böylelikle öğrencilerin gelecekte öğrenme problemleriyle karşılaşma olasılığı önlenebilir. Yalın Eğitim Yöntemi'nde temel amaç tüm öğrenme-öğretme süreçlerinde üretkenliği ve verimliliği, israfları ortadan kaldırarak artırmaktır. Bu çalışmada Yalın Eğitim Yöntemi'nin sekizinci sınıf öğrencilerinin İngilizce dersindeki kelime bilgisi, dilbilgisi ve okuma edinimi üzerine etkisi araştırılmıştır.

Araştırmanın Yöntemi: İngilizce derslerinde, Yalın Eğitim Yöntemi'nin etkisini sorgulamak için deneysel bir çalışma yapılmıştır. Rastlantısal grup örneklemesi ile 40 öğrenci içeren bir deney gurubu ve 40 öğrenci içeren bir kontrol gurubu bir devlet ortaokulunda oluşturulmuştur. Deney grubu Yalın Eğitim Yöntemi'ne göre uyarlanan yabancı dil eğitimini almış ve kontrol grubu standart yabancı dil eğitimini almıştır. Analizler ortaokul bağlamında toplam 80 öğrenci üzerinde yürütülmüştür. Deney süreci 19 hafta devam etmiş ve ilgili deney sürecinden önce hem deney hem de kontrol grupları ön teste tabi tutulmuştur, deney sürecinden sonra iki grup Yalın Eğitim Yöntemi'nin yabancı dil başarısına etkisini araştırmak için bir son teste tabi tutulmuştur. Toplanan verilerin istatistiksel analizleri betimsel istatistikler ve varyans analizleri de tek yönlü ANOVA ile gerçekleştirilmiştir.

Araştırmanın Bulguları: Deney ve kontrol grupları arasında ön test ve son testteki puanlar açısından istatistiksel olarak anlamlı bir farklılık olduğu bulunmuştur (kontrol grubunun ön test ortalaması=8.9, SS=3.801 / son test ortalaması=8.775, SS=4.293, deney grubunun ön test ortalaması=8.45, SS=4.437 / son test ortalaması=13.375, SS=3.998). Son testte deney grubunun ölçe değerlendirme süreci sonunda ortalama başarısının 4.925 yaklaşık olarak %60 oranında artırmış olduğu; kontrol grubunun ise ortalama başarısının .125 yaklaşık olarak %2 oranında düştüğü saptanmıştır. Ön test ve son testin varyans analizi, bağımlı değişken üzerinde istatistiksel olarak anlamlı bir değişiklik göstermiştir ($F=27.197$, $p<.05$).

Araştırmanın Sonuçları ve Önerileri: Yalın'ın temelinde eğitim süreçlerindeki israfların tanımlanması ve ilgili israfların süreçlerden kaldırılması hedeflenir ve herhangi bir eğitim kurumunun işlemlerinde de önemli miktarda israf ile karşılaşılabilir. Organizasyonel bir değişim planı olan Yalın çerçevesinde; israflardan arındırılma amaçlanır, eğitim öğretim ortamları temizlenir (5S), müfredat dengelenir ve geliştirilir (yük dengeleme) ve eğitim-öğretim ortamlarına getirilen yenilikler (PUKÖ döngüsü ve kaizen etkinlikleri) mükemmelleştirilerek sürdürülür ve ayrıca maliyetler en aza indirgenir. Yalın Eğitim Yönteminin ortaokul İngilizce derslerinde daha etkili bir yabancı dil öğrenimi sağladığı ve eğitim-öğretim süreçlerini uygulanan kurumda daha başarılı bir hale getirebileceği görülmüştür. İlgili çalışmada, Yalın uygulamalarının İngilizce öğretiminde mümkün olduğu ve Yalın Eğitim Yönteminin genel olarak olumlu bir etkisinin olduğu gözlemlenmiştir. Yalın, sadece neyin nasıl yapılması gerektiğini emreden bir yöntem değildir; bunun yerine eğitim-öğretim süreçlerinde sürekli iyileştirmeyi hedefleyen bir öğrenme yolculuğudur. Yalın'ın dil öğretimine getirebileceği potansiyel yenilikler sayesinde, süreçlerdeki problemler kolaylıkla çözülebilir. Yalın Eğitim Yönteminin kelime bilgisi, dil bilgisi ve okuduğunu anlama öğrenimi üzerinde olumlu bir etkiye sahip olduğu gözlemlenmiştir. Deney gruplarının son-test sonuçlarının kontrol gruplarının sonuçlarıyla karşılaştırılmasıyla Yalın Eğitim Yönteminin İngilizce derslerinde uygulanmasının deney grubları lehine istatistiksel olarak anlamlı bir iyileşmenin gerçekleştiği görülmüştür. Başka bir değişle, Yalın, yabancı dil öğretiminde sınırsız fırsatlar sunabilir. Doğasındaki bu özellikler sayesinde Yalın Eğitim Yöntemi Türk eğitim bağlamları için elverişlidir, çünkü ülkemizdeki yabancı dil öğretiminde, öğretmenler genellikle ders kitaplarına bağlı kalmak zorundadır ve dolayısıyla dil

öğretiminin ihtiyaç duyduğu yenilikleri hayata geçirmekte güçlük çekmektedir. Yalın Eğitim Yöntemi öğretmenlerimize tanıtılarak yabancı dil öğretimindeki sınırlılıklar kolaylıkla kaldırılabilir ve eğitim sisteminin ihtiyaç duyduğu yenilikler ve sürekli gelişim faaliyetleri gerçekleştirilebilir. Özetle, söz konusu sonuçlar ortaokul düzeyinde Yalın Eğitim Yöntemi'nin uygulanmasının oldukça mümkün olduğunu göstermiştir. Yalın Eğitim Yöntemi'nin ülke çapındaki genel İngilizce sınavlarında yabancı dil başarısını artırdığı bulunmuştur.

Anahtar Kelimeler: Yalın, Yalın eğitim yöntemi, İngiliz dili eğitimi, Yabancı dil başarısı.

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Suitability of Problem Scenarios Developed by Pre-service Teacher Candidates to Problem-Based Learning Approach

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ABSTRACT

Purpose: The most important element in Problem-Based Learning (PBL) that has a significant place in science education is the structure of the problem. Even though it seems easy to formulate the problem that is suitable for this approach at first glance, it is rather difficult to find the problem that will meet the purposes of education. When hardship in developing problem scenarios suitable to the approach and the significance of approach in science education are taken into consideration, the quality of scenarios that teachers will use gain importance. For this purpose, studies were conducted during this study with pre-service teacher candidates in order to develop problem scenarios that are suitable with PBL approach, and the extent to which these scenarios reflect the characteristics expected from the approach were examined.

Method: In the study conducted with 24 pre-service teacher candidates who took Science and Technology Teaching course in the 2018-2019 academic year, "characteristics that a problem should contain" scale was used for the problem situations developed in PBL.

Findings: The findings put forward that the pre-service teacher candidates were successful in preparing daily life scenarios that were appropriate to their course achievements, but they should have included more expressions in these scenarios that would allow students to think, synthesize their knowledge and develop their creativity skills.

Implications for Research and Practice: Based on the findings, it can be suggested that pre-service teacher candidates' understanding of PBL approach through experience can make a significant contribution to reflecting this approach more accurately in their professional lives; and therefore, such practices should be applied more.

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Introduction

With the unprecedented scientific and technological advancement, the changing needs of societies make it necessary to educate individuals who can adapt and contribute to this advancement (Oztemel, 2018). In this context, innovations in education became inevitable, and some changes were made in the curriculum. The newly developed curriculum is structured on new approaches, and the importance of these approaches is emphasized frequently. In this context, when the Science Curriculum that has been renewed periodically since 2000 and updated recently in 2018 is taken into consideration, it is seen that the research-inquiry-based learning strategy is adopted, through which the student is responsible for his/her self-learning, participates in the learning process actively, structures the information in his/her mind (Ministry of National Education [MoNE], 2018). It is also reported that the same program aims to educate science-literate individuals who research-inquire, can make effective decisions, solve problems, are confident, are open to cooperation, can communicate effectively, and are lifelong learners with the awareness of sustainable development. One of the student-centered teaching approaches that are effective in achieving these goals is problem-based learning.

Problem-based learning (PBL) is defined as the learning approach in which students try to solve real-life or real-like problems taken from daily life in cooperative learning environments (Barrows & Tamblyn, 1980; Newstetter, 2006; Senocak & Taskesenligil, 2005). Problem situations related to the concepts are developed in this approach without working on the subject to be taught, and students are asked to bring in solutions to this problem situation. In short, contrary to the traditional approach, the student is not expected to come up with the solution to the problem after the information is given by the teacher (Senocak & Taskesenligil, 2005). With this characteristic, PBL can be defined as the approach where "first learning is the problem" (Pepper, 2013). Therefore, it can be suggested that the problem situation to be developed is the most important step in the implementation of the approach. When the characteristics of the problems used in science courses are examined based on this significance, the information that is briefly explained below is reached.

Problems used in science courses are examined under two headings of "structure" and "content". Problems are divided into two groups according to their structure as structured (ordinary) and unstructured (unordinary) (Kizilcik, 2012). Structured problems are the ones where the introduction and purpose situation are clearly defined, and there is only one correct answer. One can achieve the correct answer through one or more numerical operations. In such kind of problems, students reach the answers of questions with the help of the formulas they have memorized without having the need to think in-depth and make interpretations (Lin, Chiu & Chou, 2004; Nakhleh & Mitchell, 1993); therefore, such problems do not contribute to the development of the problem-solving competencies of students (Jonassen, 2003). Structured problem types are not suitable for PBL approach because of this characteristic (Kizilcik, 2012). The type of problems that are called unstructured or real-life problems include complex situations that are encountered in daily life and do not have a clear and single solution (Saka, 2008; Uyeda, Madden, Brigham, Luft &

Washburne, 2002). The purpose of solving such kind of problems is to develop the skills of understanding the nature and logic of the problem, selecting and using the appropriate strategy, and interpreting the results (Altun, 2000). When solving such problems where, in general, a clear definition is not made (Lohman & Finkelstein, 2000) it may often be necessary to use more than one discipline to reach the solution. The problems that need to be used in PBL approach are these types of problems (Kizilcik, 2012).

When examined in terms of content and solutions, the problems used in science courses are categorized in four different levels. These levels can be summarized in Table 1.

Table 1.

Problems According to Content and Solutions (Kizilcik, 2012)

Problem Level	Problem Content	Solution	Situation Encountered
1. Level	Familiar for the student.	Familiar for the student.	Familiar for the student.
2. Level	New for the student.	Familiar for the student.	Familiar for the student.
3. Level	Familiar for the student.	Familiar for the student.	New for the student.
4. Level	New for the student.	New for the student.	New for the student.

When we examine Table 1, we may suggest that the students do not learn a new solution or gain new knowledge with the solution of the problems at the first level, they only reinforce the content and the solution. For the problem types at the second level, a familiar solution is used, although the content of the problem is new for the student; therefore, the problems at this level serve the students only to reinforce the solution. For the problem types at the third level, students are expected to adapt the solution they know to new situations. For the problem types at the last level, with the guidance and tips of the teacher, students will be able to find the appropriate solution strategy and solution with their own efforts because the problem's content, solution and situation encountered are completely new to them. When all the problem levels are taken into consideration, it can be claimed that the problems at the first and second levels do not allow students to discover a new solution and are not suitable for the PBL approach from this aspect. Problems at the third level are widely used in education (Unsal, 2006). The most appropriate problem level for PBL approach is the fourth level because it offers new content and solution.

As we can understand from the above explanations, the key element in the PBL approach is the structure of the problem (Goodnough, 2003). Even though it seems easy to formulate the problem at first glance, it is rather difficult to find a real-life problem that will meet the purposes of education (Shepherd & Cosriff, 1998). Because only a well-prepared problem scenario will help students in making judgments on the given information and asking questions to formulate their ideas (Wang, Cox,

Thompson, Shuler, 1998). Scenarios should be prepared in such a way that will attract the interest of students, be relevant to real life, and should not be very difficult or very complicated. Moreover, in these scenarios students should be given the opportunity to determine their current information and the information they need to know, and to learn how, where and through which method they can obtain such information (Karaca, 2014; Keles, 2015). Taking into consideration all the information described above, it can be suggested that a problem in PBL approach should have the following characteristics (Baysal, 2005):

- It should be based on the interests, individual needs, values, experiences, facts, cultures, and backgrounds of the students.
- The program should overlap with its objectives.
- It should ensure the acquisition of skills.
- It should be suitable to unite around disciplines.
- It should contain important concepts that can be reflected upon.
- It should be suitable for students to communicate with the community.
- It should be able to have the students comprehend the meaning of relationships in life with what is learned at school.
- It should challenge the students to think at a higher level, to be creative and to make a better synthesis of knowledge.
- It should be well structured and answers should not be given.
- It must be open-ended.
- It should reflect real life as much as possible.

During the implementation of the approach, the students should take their responsibilities in the collaborative work environments, examine the issue in-depth, collect information, make recommendations about the solution of the problem and prepare a report for the solution and share it with his/her friends. It is believed that students, who reach the basis of information by learning themselves during the process starting from defining the problem to sharing the solutions (Hmelo-Silver, 2004; Keles, 2015) can learn to learn and develop research, critical thinking and problem-solving skills (Jones, 2006; Murray-Harvery, Curtis, Cattley & Slee, 2005; Yaman & Yalcin, 2005). Based on this information, it can be suggested that using PBL approach in science courses can contribute to the education of science-literate individuals that are targeted in the programs. In this context, teachers who will be the implementers of the approach should be able to comprehend the approach and gain experiences to reflect on their professional lives.

The focus of the professional development of teachers is for them to gain experience on how to teach and how to turn their knowledge into practice for the development of students (Avalos, 2011). Nevertheless, in previous studies, the effect

of PBL approach applied in science courses on academic achievement (Aidoo, Boateng, Kissi & Ofori, 2016; Ayaz, 2015; Cayan & Karsli, 2015; Etiubon & Ugwu, 2016; Horak & Galluzzo, 2017) or on conceptual change (Loyens, Jones, Mikkers & Gog, 2015; Oktarisa, Utami & Denny, 2017) are sought, but there were no studies on the scenarios developed by teacher candidates. It is evident that the characteristics of the problem scenarios developed in the implementation of the approach are important (Baysal, 2005; Selcuk & Sahin, 2008), and it is clear that there is a need for studies on the characteristics of the problem scenarios developed by teacher candidates.

For the reason that the PBL approach can be used at all teaching levels, the first implementers of this approach will be pre-service teacher candidates, and the elementary school students will be able to gain the ability to make research for the first time in their education according to the problem scenarios developed by their teachers. For this reason, the quality of problem scenarios developed by pre-service teacher candidates is important and teachers can only gain this knowledge and experience during their undergraduate education. Based on all these reasons, problem scenario and research question writing studies that are suitable to PBL approach were conducted in this study with pre-service teacher candidates, and the suitability of these scenarios to the approach was determined. Answer to the following research question was sought for this purpose:

- To what extent do the problem scenarios and research questions developed by pre-service teacher candidates on the basis of PBL approach reflect the expected characteristics of the approach?

Method

Within the scope of this research, quality of the problem scenarios and research questions developed by pre-service teacher candidates on the basis of PBL approach were determined. For this purpose, the ratio of meeting the expected characteristics of the approach of the problem scenarios and research questions developed were examined, and the frequency percentage values of each characteristic were calculated. For these calculations, a qualitative research method was used.

Participants

The participants of the study consisted of 3rd-grade students who were studying at the Department of Classroom Teaching in the Department of Basic Education of the Faculty of Educational Sciences of a major public university located in Ankara, and who took Science and Technology Teaching I course in the 2018-2019 academic year. Of the 41 pre-service teacher candidates, 24 volunteered to participate in the research, and the study was conducted after obtaining the written approval forms from all participants. 21 pre-service teacher candidates were female and 3 were male.

Data Collection Process

In this process, firstly, to help for the comprehension of the PBL approach general information about the content, implementation, advantages, and disadvantages of the approach was given in a three-hours session in the Science and Technology teaching

course. In the following class, the pre-service teacher candidates were asked to write a problem scenario that is suitable to the approach. The researcher determined the outcome, and some visuals were used for guidance because the candidates did not have any experience on this topic. For this purpose, the "Makes inferences about the convergence and divergence of a sound source and its location by using the sense of hearing" outcome, which was selected from the primary school 3rd-grade science program, was given, and the information "Ali and his mother are driving down the road. Meanwhile, they hear the sirens of a police car and an ambulance. The horn sound of a car is mixed with the sirens," was provided. In the meantime, images of an ambulance, a police car, a driver sounding the horn and a car were projected on the board. They were told that they could use this information and images if they wanted, or they could fictionalize another scenario to their liking. In this process, all candidates worked individually. Scenarios developed by the candidates were read in the classroom, and the whole class discussed their suitability for the approach. In the following week, "moving and stopping objects" topic was selected from the program, the candidates were given the outcomes "Discovers by experiencing that pushing and pulling is a force" and "Observes the effects of pushing and pulling forces on moving and stable objects and explains the concept of force', and were asked to develop a problem scenario and appropriate research questions. This time, except for the outcome, information or an image was not provided. Scenarios and questions developed by the candidates were read in the classroom and the extent to which they reflect the expected characteristics of the approach were discussed. Following the practices in the course, the candidates were announced that they would be asked to develop a problem scenario within the scope of research and that volunteers could participate in this study. After obtaining the written consent forms from 24 volunteer pre-service teacher candidates, the candidates selected the outcome(s) from the Science Teaching Program to their liking and were assigned to develop the appropriate problem scenario and research question(s).

In the selection of the gains, the candidates were allowed to choose any of the 3rd through 8th-grade subjects without being limited to the 3rd and 4th-grade subjects. In this way, the diversity of subjects were increased and the candidates were given the opportunity to look at the science subjects that they will teach in their professional lives in a broader perspective and to gain experience in determining the outcome(s) in which the PBL approach can be applied most effectively. Written assignments taken from the pre-service teacher candidates were used as research data. All this process was conducted over a 5-week period.

Data Analysis

In this study, the characteristics of the problem were based on to determine the extent to which the problem scenarios developed by pre-service teacher candidates reflect the characteristics expected from the approach. For this purpose, "characteristics that a problem should contain" scale, which was expressed by Armstrong, (1998); Delisle, (1997); Torp and Sage, (1998) and Shepherd and Cosriff (1998) and developed by Baysal (2005) for the problem situations developed in PBL, was used. However, it was tried to determine within the scope of this research how

the teacher candidates would apply PBL approach in the classes, in addition to developing a problem scenario that was suitable for this approach. The researcher developed a new scale by taking into consideration the suitability of the problem scenarios, which were developed to serve this purpose, to the outcomes and whether or not the suitable questions were determined for the research of the students (Kaptan & Korkmaz, 2001). This scale was applied for the first time to 33 students who took the same course in the 2017-2018 academic-year, and the data obtained were evaluated and used for this research. The opinions of two experts in the science education field were obtained for the content validity of the scale, and both the researcher and another expert examined each item during the pilot implementation for reliability. The problem situations examined by the experts were evaluated in terms of whether or not they included the qualification in question and the reliability coefficient among the experts was calculated. This coefficient was found to be 0.83 and was used in this study without making any changes on the scale. Characteristics contained in the scale are provided in Table 2.

Table 2.

Suitability of Problem Scenarios and Research Questions Developed by Pre-Service Teacher Candidates to The Approach

Necessary Characteristics for the Implementation of Problem-Based Learning Approach	Yes	Partially	No
It is based on the interests, individual needs, values, experiences, facts, cultures, and backgrounds of the students.			
It contains important concepts that can be reflected upon.			
It is suitable for students to communicate with the community.			
It can have the students comprehend the meaning of relationships in life with what is learned at school.			
It encourages students to think, be creative and synthesize their knowledge.			
It is open-ended.			
It reflects real life.			
It has been developed in accordance with the science course gain(s).			
Suitable research questions were determined at the end of the problem scenario.			

In the analysis of the data, the problem scenarios and research questions, which were developed by pre-service teacher candidates and suitable to PBL, were examined, and frequency and percentage values were calculated for each characteristic. The problem development levels of the candidates were determined according to these values.

Results

In this section, firstly examples of some problem scenarios and research questions were given and evaluation procedure was demonstrated. In the selection of the scenarios, primarily the problem characteristics that were suitable to PBL approach were taken as the basis, and a ranking was made from the scenario that demonstrated these characteristics the least to the scenario that demonstrated the most. Afterwards, scenarios from different levels were selected by taking into consideration class levels. The examples provided below were ranked from the lesser ones to the ones more in quantity in terms of problem characteristics that are suitable to the approach, and the class levels were indicated by the outcome number (the first number given in the outcome indicates the class level and the second number indicates the number of units). The scenarios were coded with the first letter of the names and last names of pre-service teacher candidates.

Example 1: Gain: 5.6.2.1. Expresses the importance of interaction between human and the environment.

5.6.2.2. The negative effects of environmental pollution on human health are mentioned.

Problem Scenario

Hasan and his family visited his grandparents living in the village. Hasan was very curious about the new factory built in the village that his grandfather told about. Just like they do whenever they go to the village, Hasan and his family got up early in the morning and started preparing for a picnic. When Hasan went to the chicken coop to collect eggs, he realized that the chickens did not look as healthy as they did before. When they completed the preparations and went for a picnic, they noticed that the river bed smelled very bad, but in the old days, it was very pure and clean. All this did not make any sense to Hasan. He decided to ask his grandfather the reasons. Hasan's grandfather said that since the factory was built, not only there were some problems with the chickens and river bed, but also he started to face some health problems. (A. D.)

Questions

1) Why do you think the chickens looked unhealthy?

2) What may be the reasons that the river bed smells bad?

3) Why do you think all these problems emerged after the factory was built?

4) What do you think the negative situations in this story are?

5) Why do you think Hasan’s grandfather started to face health problems?

Table 3.

Suitability of Problem Scenarios and Research Questions for Example 1

Necessary Characteristics for the Implementation of Problem-Based Learning Approach	Yes	Partially	No
It is based on the interests, individual needs, values, experiences, facts, cultures, and backgrounds of the students.	✓		
It contains important concepts that can be reflected upon.		✓	
It is suitable for students to communicate with the community.	✓		
It can have the students comprehend the meaning of relationships in life with what is learned at school.	✓		
It encourages students to think, be creative and synthesize their knowledge.		✓	
It is open-ended.			✓
It reflects real life.	✓		
It has been developed in accordance with the science course gain(s).	✓		
Suitable research questions were determined at the end of the problem scenario.			✓

Example 2: Gain: 4.5.5.1. Questions the reasons for noise pollution.

4.5.5.2. Explains the negative effects of noise pollution on human health and the environment.

4.5.5.3. Creates solutions to reduce noise pollution.

Problem Scenario

Ahmet started to practice days before for the preliminary examination of the contest that would be held among primary schools. If he passed the examination, he would represent his school in the district. At the time of examination, Ahmet was ready with his pencil and eraser and was waiting for the exam papers to be distributed. Meanwhile, there was a noise that disturbed all the class and Ahmet looked in the direction where the noise came from. The sound of the construction vehicles, the car horns, the sound of an announcement through a vendor's megaphone were all mixed. Meanwhile, the examiner began to speak and Ahmet could not hear some of the examiner's words. After some time, the examiner said that the exam was over and collected the papers while Ahmet was solving the questions on his exam paper. Ahmet could not pass the exam because he could not answer all the questions. (T. H.)

Questions

1) Why could not Ahmet hear what the examiner told?
2) What are the reasons of noise pollution in the exam place?

3) What kind of solutions can we find to reduce noise pollution? Please share your recommendations with your friends.

4) Did you also encounter some incidents that caused noise pollution? If so, what were those incidents?

5) What solutions did you find to those incidents you encountered? If you did not encounter any such incidents, please answer as if you encountered it.

Table 4.

Suitability of Problem Scenarios and Research Questions for Example 2

Necessary Characteristics for the Implementation of Problem-Based Learning Approach	Yes	Partially	No
It is based on the interests, individual needs, values, experiences, facts, cultures, and backgrounds of the students.	✓		
It contains important concepts that can be reflected upon.		✓	
It is suitable for students to communicate with the community.	✓		
It can have the students comprehend the meaning of relationships in life with what is learned at school.	✓		
It encourages students to think, be creative and synthesize their knowledge.		✓	
It is open-ended.		✓	
It reflects real life.	✓		
It has been developed in accordance with the science course gain(s).	✓		
Suitable research questions were determined at the end of the problem scenario.		✓	

Example 3: Gain: 4.2.1.4. Associates human health with balanced nutrition.

4.4.1.5.The relationship between obesity and eating habit is emphasized. Prevention of food waste is emphasized.

Problem Scenario

Every day Ali's parents prepared different kinds of healthy food for him to eat at school and put them in his school bag. However, at the feeding time Ali would not eat the healthy food he brought from home, but bought unhealthy food such as chocolate, candies and fruit juice from the canteen. He would also put his food secretly next to a tree at school. When Ali came home, he would not want to eat dinner, and always wanted foods such as chocolate and candy. Ali would get tired very quickly during the day and could not concentrate on his lessons. After a while, some changes began to occur in Ali's body. This situation also attracted the attention of his family. They began to observe what Ali ate and decided to go to the doctor. (G. S.)

Questions:

1) What would you eat during the feeding time if you were in Ali's shoes?

2) What do you eat at the feeding time? What kind of nutrition habits do you have?

3) Did you ever eat candy and chocolate too often like Ali? If so, how did you deal with this situation?

4) Do you think Ali's nutrition is appropriate? What do you think Ali should do to improve his health problems and nutrition?

5) What do you think Ali should have done with the foods he didn't eat?

Table 5.

Suitability of Problem Scenarios and Research Questions for Example 3

Necessary Characteristics for the Implementation of Problem-Based Learning Approach	**Yes**	**Partially**	**No**
It is based on the interests, individual needs, values, experiences, facts, cultures, and backgrounds of the students.	✓		
It contains important concepts that can be reflected upon.	✓		
It is suitable for students to communicate with the community.	✓		
It can have the students comprehend the meaning of relationships in life with what is learned at school.	✓		
It encourages students to think, be creative and synthesize their knowledge.		✓	
It is open-ended.		✓	
It reflects real life.	✓		
It has been developed in accordance with the science course gain(s).	✓		
Suitable research questions were determined at the end of the problem scenario.		✓	

Example 4: Gain: 7.7.3.4. Expresses the causes of space pollution and predicts the possible consequences of this pollution.

Problem Scenario

It was 10 days to the last day of school. Oguz and his cousins started planning for the holiday. It was very important for them to learn about the weather forecast, as they would stay in the tent. Oguz wanted to learn how the weather would be for the region they were thinking of going to, but somehow could not reach any information. He thought that there was an Internet outage and left his research for later. After a few days, he searched for the weather forecast again, but could not reach any information. Oguz knew that there was no problem with the Internet and wondered the reason for this situation. In the meantime, news in the newspaper attracted his attention. The

newspaper wrote that a spacecraft completing its mission in space hit a meteorological satellite in the orbit of the world. (Ş. U.)

Question:

According to this, what would the consequences of space pollution be?

Table 6.

Suitability of Problem Scenarios and Research Questions for Example 4

Necessary Characteristics for the Implementation of Problem-Based Learning Approach	Yes	Partially	No
It is based on the interests, individual needs, values, experiences, facts, cultures, and backgrounds of the students.	✓		
It contains important concepts that can be reflected upon.	✓		
It is suitable for students to communicate with the community.	✓		
It can have the students comprehend the meaning of relationships in life with what is learned at school.	✓		
It encourages students to think, be creative and synthesize their knowledge.	✓		
It is open-ended.	✓		
It reflects real life.	✓		
It has been developed in accordance with the science course gain(s).	✓		
Suitable research questions were determined at the end of the problem scenario.		✓	

Example 5: Gain: 4.5.3.1. Questions the reasons for light pollution.

4.5.3.2. Explains the negative effects of light pollution on natural life and the observation of heavenly bodies in space.

4.5.3.3. Creates solutions to reduce light pollution.

Problem Scenario

Omer went up to the roof of their house to watch the stars in the sky. But he could not see the stars even though he went to the attic. Then, he asked his parents to go to the beach to watch the stars and they all went. But Omer could not see the stars there either. On the way home, he saw baby Caretta Carettas swimming towards the most enlightened part of the beach with city lights where there were too many glass bottles. Omer was very upset about these little poor turtles. (K. Y.)

Questions

1) Why do you think Omer could not see the stars in the attic?

2) Why do you think Omer is upset for the little turtles?

3) What do you think attracted the turtles to the city side?

4) What do you think the negative situations in this story are?

Table 7.

Suitability of Problem Scenarios and Research Questions for Example 5

Necessary Characteristics for the Implementation of Problem-Based Learning Approach	Yes	Partially	No
It is based on the interests, individual needs, values, experiences, facts, cultures, and backgrounds of the students.	✓		
It contains important concepts that can be reflected upon.	✓		
It is suitable for students to communicate with the community.	✓		
It can have the students comprehend the meaning of relationships in life with what is learned at school.	✓		
It encourages students to think, be creative and synthesize their knowledge.	✓		
It is open-ended.	✓		
It reflects real life.	✓		
It has been developed in accordance with the science course gain(s).	✓		
Suitable research questions were determined at the end of the problem scenario.	✓		

As seen in the examples given, the frequency and percentage values given in Table 2 were obtained when the problem scenarios and questions of all the pre-service teacher candidates were examined.

Table 8.

Frequency and Percentage Values of Problem Scenarios Developed by Teacher Candidates Reflecting The Characteristics of PBL Approach

Necessary Characteristics for the Implementation of Problem-Based Learning Approach	Yes		Partially		No	
	f	%	*f*	%	*f*	%
It is based on the interests, individual needs, values, experiences, facts, cultures, and backgrounds of the students.	22	92	2	8.3		
It contains important concepts that can be reflected upon.	18	75	4	16.6	2	8.3
It is suitable for students to communicate with the community.	23	95.8	1	4.2		
It can have the students comprehend the meaning of relationships in life with what is learned at school.	21	87.5	2	41.7	1	4.2
It encourages students to think, be creative and synthesize their knowledge.	16	66.7	6	25	2	8.3
It is open-ended.	16	66.7	5	20.8	3	12.5
It reflects real life.	24	100				
It has been developed in accordance with the science course gain(s).	24	100				
Suitable research questions were determined at the end of the problem scenario.	8	33.3	12	50	4	16.7

When the data were examined, it was seen that the problem scenarios developed by the pre-service teacher candidates were from daily life and were suitable for course outcomes. It was also found out that the majority were able to develop problem scenarios that were suitable for the students to communicate with the community (95.8%) and were based on their interests, individual needs, values, experiences, facts, cultures, and backgrounds (92%). More than half of the teacher candidates (62.5%) were able to develop open-ended problems that contained important concepts that students should think about. Moreover, it was seen that 41.7% of the candidates could not prepare scenarios that could encourage students to think, be creative and synthesize their knowledge, and that, in this direction, the questions developed at the end of the scenario were mostly knowledge-based rather than research-based.

Discussion, Conclusion, and Recommendations

This study was conducted to determine the suitability of the problem scenarios and research questions developed by pre-service teacher candidates in the event that the PBL approach was applied in science courses. In the PBL approach, which is emphasized in the Science curriculum, the problem situation is determined first, just as in the work of a scientist, and then the necessary information is gathered for the solution of this situation, and a result is achieved by evaluating such information (Senocak & Taskesenligil, 2005). In this context, an open-ended problem scenario that requires research is needed in order to implement the PBL approach. Pre-service teachers should experience the problem scenarios for the reason that the problem scenarios will be developed and given to students by teachers. In short, teachers who will be the implementers of the curriculum should acquire the ability to develop problems that are suitable to their outcomes in order for them to be able to use PBL approach in the classes. Based on this necessity, teacher candidates in the study were asked to identify research questions by writing a problem scenario suitable to PBL and these were evaluated in terms of the characteristics they should contain.

The findings demonstrated that all the pre-service teacher candidates could identify the outcome(s) that were suitable for developing a problem scenario and associate them with daily life events. When it is considered that the outcomes are not provided and the candidates determine the suitable outcome(s), it can be primarily suggested that the candidates can correctly determine the gain that the PBL approach can be applied. Moreover, when taking into consideration that not only the 3rd and 4th grades, but also the 6th, 7th and 8th grades are considered, pre-service teacher candidates can be considered to have the ability to correctly analyze the outcomes in general, and determine the suitable teaching method. Candidates were generally able to relate problem scenarios to daily life as they chose socio-scientific topics in general. When considering the aim of verbal problems to reduce the students' hardship in not being able to make a one-to-one connection with real-life (Verschaffel, 1997), the importance of the candidates' ability to develop a problem scenario based on daily life emerges once again.

Another important result obtained from the research findings was that the majority of the pre-service teacher candidates were able to develop problem scenarios that were

suitable for the students to communicate with the community, and were based on their interests, individual needs, values, experiences, facts, cultures, and backgrounds. When the vision of MoNE (2015) Science curriculum is taken into consideration, considering that science-literate individuals should have an understanding of the relationship between science and technology, society and environment and feel responsible for solving problems related to social problems, the significance of this finding emerges. Moreover, it can be clearly expressed that the practices carried out within the scope of this study are a necessity for teacher education for the reason that the students should be aware that the cultural values, social structure, and beliefs are effective in processing information in mental processes (MoNE, 2015).

As explained above, the fact that the pre-service teacher candidates chose socio-scientific issues and 75% of the candidates were able to include in the problem scenarios they developed important concepts that could be reflected upon, they could plan appropriate courses for the purpose of "Developing scientific thinking habits by using socio-scientific issues", which is taken as the basis of the MoNE (2015) Science curriculum. In addition, it can be stated that the candidates can be effective in the development of analytical and creative thinking skills as well in accordance with the vision of the program due to the fact that the scenarios include important concepts.

In the PBL approach, creative thinking skills of students improve because students use their imagination and different mental processes while solving real-life problems (Yaman & Yalcin, 2005). In science courses, it is known that associating the concepts with daily life enables an increase in scientific literacy in students, positive developments in their interests, attitudes, and motivation towards the course and the realization of meaningful learning (Costu, Unal & Ayas, 2007). Based on this information, it can be clearly asserted that it is important for the students to comprehend the relationship between real life and the information they learn at school. The findings obtained as a result of this study demonstrated that the majority of teacher candidates (87.5%) could develop scenarios in which students can comprehend the meaning of relationships in life with what they learn at school. Based on this result, it can be suggested that studies of developing problem scenarios with pre-service teacher candidates in accordance with PBL approach have an important contribution to their formation of the course environments that can support the opinion that "the program is able to establish relationships with life in the education and training process" (MoNE, 2018) as stated in the Science Curriculum.

It is seen that almost half of the pre-service teacher candidates were successful in developing scenarios that allow students to think, synthesize their knowledge and develop their creativity. The same number of teacher candidates was able to develop open-ended scenarios. It can be suggested that this success is important as the problem situations that are suitable to PBL approach should be unstructured (Kizilcik, 2012; Lohman & Finkelstein, 2000) and allow the development of creativity (Yaman & Yalcin, 2005). Before these applications within the scope of the study, the candidates were used to solving structured problems and asking them to prepare a problem situation was a very new practice for them. On the other hand, it is thought that the preliminary studies carried out within the scope of the research are effective in the

development of open-ended, challenging problem scenarios of the majority of the candidates. Based on this idea, it can be emphasized that such practices should be performed more frequently and that the candidates can easily develop and apply open-ended problems through which students can synthesize their knowledge in their professional lives and increase their creativity.

When the findings obtained from the study were examined, it was seen that the pre-service teacher candidates had hardship in asking questions suitable for the research. As it is seen in the example given in the findings section, a teacher candidate who could develop a problem scenario in accordance with the PBL approach related to space pollution asked the question "what would the consequences of the space pollution be?" and led the students to the concept of space pollution. Another teacher candidate used the concept of sound pollution directly in the research question after developing a problem scenario related to sound pollution. This situation suggests that the research questions as well as the problem scenarios should be given more importance in the studies conducted with the candidates.

When all the results obtained after examining the findings are taken into consideration, it can be asserted that pre-service teacher candidates' understanding of PBL approach through experience is effective for them in reaching a level where they can use this approach in their professional lives. This idea is supported by the view that it is important to develop teaching materials appropriate to the problem-based learning approach in teacher education, as mentioned by most of the teachers who have participated in Tapilouw, Firman, Redjeki and Chandra (2017)'s studies.

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Öğretmen Adaylarınca Geliştirilen Problem Senaryolarının Probleme Dayalı Öğrenme Yaklaşımına Uygunluğu

Atıf:

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Özet

Probleme dayalı öğrenme (PDÖ) öğrencilerin, günlük yaşamdan alınmış gerçek ya da gerçeğe yakın problemleri işbirlikli öğrenme ortamlarında çözmeye çalıştıkları öğrenme yaklaşımı olarak tanımlanmaktadır (Barrows & Tamblyn, 1980; Newstetter, 2006; Şenocak & Taşkesenligil, 2005). Bu özelliği ile PDÖ "ilk öğrenmenin problem" olduğu yaklaşım olarak da tanımlanabilir (Pepper, 2013). Bu sebeple de oluşturulacak problem durumunun, yaklaşımın uygulanmasındaki en önemli basamak olduğu söylenebilir.

Araştırmanın Önemi: İçerik ve çözüm yolları bakımından incelendiğinde fen derslerinde kullanılan problemlerin dört farklı düzeyde olduğu görülmektedir. İlk düzeyde problemin içeriği, çözüm yolu ve karşılaşılan durum öğrenci için tanıdık iken, dördüncü düzeyde tümü öğrenci için yenidir. Bu özelliği nedeniyle PDÖ yaklaşımı için en uygun problem düzeyinin dördüncü düzey olduğu söylenebilir. PDÖ yaklaşımında en temel unsurun problem yapısı (Goodnough, 2003) olması ve ilk bakışta problemi formüle etmenin kolay gibi görünse de eğitim amaçlarını karşılayacak gerçek yaşam probleminin bulunmasının zor (Shepherd ve Cosriff, 1998) olması, bu öğrenme yaklaşımının uygulayıcısı olacak öğretmen adaylarının bu konudaki başarı düzeylerinin ne olduğu sorusunu akıllara getirmektedir.

Problem Durumu: Alan yazında yapılan araştırmalar, fen derslerinde uygulanan PDÖ yaklaşımının, akademik başarıya (Aidoo, Boateng, Kissi, Ofori, 2016; Ayaz, 2015; Çayan & Karslı 2015; Etiubon & Ugwu, 2016; Horak & Galluzzo, 2017) ya da kavramsal değişime (Loyens, Jones, Mikkers & Gog, 2015; Oktarisa, Utami, & Denny, 2017) etkisinin araştırıldığını, fakat öğretmen adaylarının uygulamaları ile ilgili çalışmalar olmadığını göstermektedir. Özellikle PDÖ yaklaşımının uygulamasında geliştirilen problem senaryolarının niteliklerinin önemli olduğu (Baysal, 2005; Selçuk & Şahin, 2008) ve öğretmenlerin bu konuda deneyim kazanmaları gerektiği düşünüldüğünde, öğretmen adaylarınca geliştirilen problem senaryolarının niteliklerine ilişkin araştırmalara ihtiyaç olduğu açıktır.

Araştırmanın Amacı: Belirlenen problem durumuna bağlı olarak bu araştırmada;

- Sınıf öğretmeni adaylarınca PDÖ yaklaşımı temelinde geliştirilen problem senaryoları ve araştırma soruları yaklaşımından beklenen nitelikleri hangi oranda yansıtmaktadır?

sorusuna cevap aranmıştır.

Araştırmanın Yöntemi: Bu araştırmada sınıf öğretmeni adayları tarafından PDÖ temelinde geliştirilen problem senaryolarının ve araştırma sorularının nitelikleri belirlenmeye çalışıldığından, adaylar tarafından geliştirilen problem senaryolarının yaklaşımdan beklenen nitelikleri karşılama oranları araştırılmış ve her bir niteliğe ait frekans yüzde değerleri hesaplanmıştır. Bu amaçla Armstrong, (1980); Delisle, (1997); Torp ve Sage, (1998) ve Shepherd ve Cosriff'in (1998) tarafından ifade edilen ve Baysal (2005) tarafından düzenlenen PDÖ'de geliştirilen problem durumları için "problemin içermesi gereken özellikler" ölçeğinden yararlanılmıştır. Ancak araştırma kapsamında PDÖ yaklaşımına uygun bir problem senaryosunun geliştirilmesinin yanı sıra öğretmen adaylarının bu yaklaşımı derslerde nasıl uygulayacaklarını da belirlenmeye çalışıldığından,senaryolarının kazanımlara uygunluğu ve öğrencilerin araştırması için uygun soruların (Kaptan ve Korkmaz, 2001) belirlenip belirlenmediği de dikkate alınarak araştırmacı tarafından yeni bir ölçek geliştirilmiştir. Bu ölçek ilk kez pilot çalışma olarak 2017-18 öğretim yılından aynı dersi alan 33 öğrenciye uygulanmış ve buradan elde edilen veriler değerlendirilerek bu araştırma için kullanılmıştır. Ölçeğin kapsam geçerliliği için fen eğitimi alanında uzman iki kişinin görüşüne başvurulmuş, güvenirlik içinse, her bir madde pilot uygulama sırasında hem araştırmacı hem de alanında uzman başka bir kişi tarafından incelenmiştir. Uzmanlar tarafından incelenen problemler durumları söz konusu niteliği içerip içermeme yönünde değerlendirilmiş ve uzmanlar arası güvenirlik katsayısı hesaplanmıştır. Bu katsayı 0,83 olarak bulunmuş ve ölçek üzerinde herhangi bir değişikliğe gidilmeden bu araştırmada kullanılmıştır.

Araştırmanın Bulguları: Araştırmaya katılan adayların problem senaryoları ve sorularına verdikleri yanıtlara ilişkin elde edilen veriler değerlendirildiğinde öğretmen adaylarınca geliştirilen problem senaryolarının tamamının günlük yaşamdan ve ders kazanımlara uygun olduğu görülmektedir. Yine büyük bir çoğunluğun (%95.8) öğrencilerin toplumla iletişim kurmalarına elverişli ve (%92) öğrencilerin ilgilerine, bireysel ihtiyaçlarına, değerlerine, deneyimlerine, olgularına, kültürlerine ve öz geçmişlerine dayalı problem senaryoları geliştirebildikleri belirlenmiştir. Öğretmen adaylarının yarısından çoğu (% 62.5'i) öğrencilerin üzerinde düşünmeleri gereken önemli kavramları içeren, açık uçlu problemler geliştirebilmişlerdir. Bunun yanı sıra adayların %41.7'sinin öğrencileri düşünmeye, yaratıcılığa ve bilgilerini sentezlemeye teşvik edebilecek içerikte senaryolar hazırlayamadıkları, bu doğrultuda da çoğu kez senaryo sonunda geliştirilen soruların araştırmaya dayalı olmaktan çok bilgiye dayalı olduğu görülmektedir.

Araştırma Sonuçları: Elde edilen bulgular adayların tamamının problem senaryosu geliştirmeye uygun kazanım/kazanımları belirleyerek bunları günlük yaşam olayları ile ilişkilendirebildiklerini göstermektedir. Kazanımların verilmediği ve uygun kazanımı/kazanımları adayların belirlediği düşünüldüğünde öncelikle adayların PDÖ yaklaşımının uygulanabileceği kazanımı doğru belirleyebildikleri söylenebilir. Ayrıca kazanımların belirlenmesinde yalnızca 3 ve 4. sınıfların değil 6.,7. ve 8. sınıflarının da dikkate alındığı düşünüldüğünde adayların genel olarak kazanımları doğru olarak analiz edebilme ve uygun öğretim yöntemini belirleyebilme becerisine

sahip oldukları düşünülebilir. Araştırma bulgularından elde edilen önemli bir diğer sonuç adayların büyük bir çoğunluğunun öğrencilerin toplumla iletişim kurmalarına elverişli ve ilgilerine, bireysel ihtiyaçlarına, değerlerine, deneyimlerine, olgularına, kültürlerine ve öz geçmişlerine dayalı problem senaryoları geliştirebilmeleridir.

Bu araştırma sonunda elde edilen bulgular öğretmen adaylarının büyük bir çoğunluğunun öğrencilerin okulda öğrendikleriyle yaşamdaki ilişkilerin anlamını kavrayabilecekleri senaryolar geliştirebildiklerini göstermektedir. Öğrencilerin düşünmesine, bilgilerini sentezlemesine ve yaratıcılıklarının gelişmesine fırsat tanıyan senaryoları geliştirmede öğretmen adaylarının yarısının çoğunun başarılı olduğu görülmektedir. Yine aynı sayıda öğretmen adayı açık uçlu senaryolar geliştirebilmişlerdir. Araştırmadan elde edilen bulgular değerlendirildiğinde adayların araştırmaya uygun sorular yöneltmede zorlandıkları görülmektedir.

Anahtar Kelimeler: Probleme dayalı öğrenme, problem niteliği, öğretmen adayı, fen öğretimi.

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An Authentic Look at Evaluation in Education: A School Self-Evaluation[1] Model Supporting School Development

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ABSTRACT

Purpose: Inspection and evaluation in education gained a different dimension with the implementation of concepts such as accountability, transparency and effectiveness to educational organizations. School self-evaluation is put into practice based on evidence in cooperation with stakeholders in order to develop and improve schools accordingly. The overall objective of this research is to develop a school self-evaluation model supporting school development for public secondary schools.

Methods: Among the mixed research methods, multi-stage mixed pattern is used for this purpose. The stages of this pattern are structured in accordance with the Research and Development (R&D) methodology. The documents are examined and the opinions of 9 experts are obtained by means of surveys in order to develop the model draft.

Results: A school self-evaluation model supporting school development, which is planned to be implemented annually, is developed in line with the overall objective of this research. This model consists of the following six stages: preparation, planning, implementation, evaluation, taking action, monitoring and reviewing. The first four stages are used for self-evaluation, and the last two stages are for development. The content of the model consists of the following six areas: "administration and leadership, education-training process, school-family-community cooperation, school health and safety, relations and communication at school, professional development".

Implications for Research and Practice: In conclusion, a six-stage school self-evaluation model for secondary schools is developed. The model that is developed may be used by adapting it according to the type of school, teaching level and needs. However, the school administrators and teachers need training on basic statistics, research and report writing during the implementation of the model. Experts with postgraduate diploma in fields such as education administration, supervision/evaluation may provide support in this matter. Moreover, opinions may be obtained from field expert academic members, education inspectors, school administrators and teachers regarding the applicability and adoptability of the model that is developed.

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Introduction

One of the important resources of countries is their young population. One of the main objectives of the education system is to educate this young population as qualified manpower according to the needs. The quality of education is determined with the level of achievement of goals. Serious resources are allocated to education in order to achieve these goals. The quality level of the education outcomes may determine whether or not resources are used effectively. We may suggest that this is possible by inspecting and evaluating the educational activities provided in schools.

Effective inspection and evaluation play a key role in improving the quality of education and school success (Aydin & Toptas, 2017, 168). Therefore, schools are not left to their own fate in almost every education system in the world. Schools and education and training services provided there are inspected through various models such as scientific, artistic, developmental, instructional, clinical, differentiated, risk-oriented and thematic models.

The education inspectors of the ministry conduct school inspections in Turkey once in three years within the scope of recent legislation (Law No. 6764 and the Supervisory Board Regulations). In other words, only 500 education inspectors of the ministry are expected to inspect 65 thousand 564 schools, approximately 18 million students and 1 million 68 thousand 979 teachers (MoNE, 2018a) (Law No. 6764). When we examine these figures, we find that there are approximately 130 schools, 36 thousand students and 2 thousand teachers per inspector in average.

Schools are only open 180 business days of the year. In this case, it does not seem possible for the inspectors to inspect every school even if they work continuously throughout the year on weekdays and weekends. Shortly, inadequate external evaluation in education has led to the development of different inspection and evaluation models. In this context, school self-evaluation as a product of this pursuit may be considered as an internal evaluation practice that enables schools to recognize and know themselves together with their stakeholders and complete the external evaluation.

A valid and reliable evaluation in the development of educational practices and the improvement of student learning at all levels is at the heart of establishing thriving education systems. The concept of effective use of public resources and providing qualified education services for every person started to become dominant in education policies. Moreover, increasing expectations from school, more educated parents, evidence-based decision-making, technological developments and looking after commercial interests in education are the factors that trigger the self-evaluation process (Organization for Economic Co-operation and Development [OECD], 2013).

School Self-Evaluation

School self-evaluation may be considered as an alternative approach to inspection. Each individual in this context is considered a natural learner. Moreover, the basis of school self-evaluation is the philosophy that development and change come from

within, that individuals have commitment to what they generate and that feedback is crucial for individual learning and organizational development (MacBeath, 1999). MacBeath, Schratz, Jakobsen and Meuret (2000, 92) define school self-evaluation as starting a dialogue on targets, priorities and quality criteria at the school and grade levels, or achieving targets by using tools that are appropriate and easily accessible. On the other hand, Simons (2013, 5) defines school self-evaluation as the process of obtaining, collecting, analyzing and transmitting the information with the purposes of increasing creativity at school, achieving the targets of accountability, development and knowledge, providing professional self-accountability, gaining the trust of the society in the school, attributing the school value to the school, and informing the stakeholders about the decision-making process within the school.

Self-evaluation is an extensive process. MacBeath (2006, 62-65-111) determined seven factors in this process for self-evaluation: purpose, intended audience, framework, criterion, process, tools and product. First of all, the purpose of self-evaluation should be identified. This goal should not only serve the expectations of inspectors coming from central offices such as Ofsted, but also focus on the identity of the school itself, which will respond to the challenges of the changing world. Schools may develop and center their activities towards criteria that are meaningful for and valued by the school stakeholders, rather than taking easily accessible standards, such as national or international test results for the reason that self-evaluation is the process of schools writing their own stories.

Self-evaluation in education in the globalizing world has become an increasingly important matter. Common points such as quality assurance and effectiveness in the context of self-evaluation are used in the ranking of countries in international comparisons according to specific indicators (OECD, 2009). Moreover, another reasoning behind the transition to self-evaluation at the international level is the transfer of decision-making process about education to the local school level (Ladden, 2015). Shortly, it may be suggested that self-evaluation practice attracts more attention at the international level as the matters such as quality assurance, effectiveness, accountability, and local decision-making gain more importance.

Self-evaluation has a multidimensional structure. MacBeath et al. (2000, 93) explained this multidimensional structure within the context of internal and external evaluation, development and accountability. According to the authors, self-evaluation is at a point where internal and external evaluation, accountability and development dimensions combine. Self-evaluation may be defined as a bottom-up process. The internal evidence of the school must meet the external expectations. However, self-evaluation needs to be school-based by being supported and not imposed by the central office to improve and develop education (MacBeath, 1999, 2).

School Self-Evaluation in Various Countries

Self-evaluation within the context of international policy is directed by three basic reasoning: economy, accountability and school improvement. This is because the cost of training, administration, execution and observing external evaluation is very high

in terms of economy and they do not add value to money. In terms of accountability, schools have to report to the government and parents who invest in them and to maintain community trust in teachers and school administrators. Reflection, dialogue process and evidence-based evaluation are the driving forces of better schools (MacBeath, 2006). There are differences in self-evaluation practices to answer the questions that arise within this reasoning. The self-evaluation process that is used in various countries and organizations is carried out with models consisting of different stages. These models are summarized in Table 1.

Table 1.

Self-Evaluation Model Samples from Various Countries and Institutions

Model Developers	***The name of the Model***	***The Stages of the Model***
1. Irish Department of Education and Skills (DES, 2016a)	Six Staged School Self-Evaluation Model	1. Identify focus 2. Gather evidence 3. Analyse and make judgments 4. Write and share report and improvement plan 5. Put improvement plan into action 6. Monitor actions and evaluate the impact
2. European Foundation for Quality Management [EFQM], 2013)	European Foundation for Quality Management Excellence Model Self-Assessment Cycle	1. Engage the management team 2. Plan the assessment 3. Train the participants 4. Conduct the assessment 5. Agree with priorities 6. Develop action plans 7. Monitor progress
3. The Standing International Conference of Inspectors (SICI, 2003)	Effective School Self-Evaluation [ESSE]	1. Input 2. Process 3. Outcomes 4. External support
4. Scotland (How good is our school) (Alba, 2015)	School Improvement	1. Looking inwards (knowing ourselves inside out through effective self-evaluation) 2. Looking outwards (learning from what happens elsewhere challenge our own thinking) 3. Looking forwards (exploring what the future might hold for today's learners and planning how to get there)
5. Canada (Ontario) (Ministry of Education, 2013; MacBeath, 2006)	Self-Evaluation Model based on School Effectiveness Framework	1. Plan 2. Identify the focus 3. Measure the indicators 4. Collect data 5. Analyse data 6. Report 7. Develop an action plan

Table 1 Continue

6. Singapore (Tee, 2003)	School Excellence Model (SEM)	1. Leadership 2. Personnel 3. Strategic Planning 4. Resources 5. Students focused Process 6. Staff Results 7. Administrative and Operational Results 8. Partnership and Society Results 9. Key Performance Results
7. New Zealand (Nusche, Laveault, MacBeath & Santiago, 2012)	Five staged Self-Evaluation Cycle for School Improvement	1. Consider about school 2. Planning 3. Implementing 4. Monitoring 5. Informing
8. Hong Kong (Education Bureau, 2013)	School Self-Evaluation Mechanism (School Improvement Cycle)	1. Determining the current situation of the school 2. Planning 3. Implementation and Monitoring 4. Evaluation 5. Writing school report

As can be seen in Table 1, the school self-evaluation process is carried out in different and in minimum three and maximum nine stages in the countries that may be considered top-level according to OECD education data: Europe, New Zealand, Hong Kong, and Singapore. When we consider these stages, the school self-evaluation process starts with collecting evidence from different data sources about the current state of the school. Afterwards, these evidences are analyzed, the current state of the school is evaluated and a school self-evaluation report is prepared. The school improvement plan is prepared, implemented and observed based on this report. These evaluation models generally represent a cyclical process. We may suggest that action is being taken to improve the developmental areas in this process, while the strengths are maintained.

The self-evaluation models in Ireland, New Zealand, Singapore, Canada, Scotland and Hong Kong are developed within the context of educational organizations. Only Singapore directly adapted the EFQM stages to education in the perfection model (Tee, 2003). Therefore, we may assert that the model stages in these countries draw a more concrete road map for the education practitioners. In particular the six-stage school self-evaluation model of Ireland is a countrywide education policy; therefore, it is conducted with the support of guides issued by DES (2016b) and consultants.

There are different self-evaluation models that are developed to improve quality assurance and quality in education. Although some of these models (EFQM) have been

developed directly in business organizations, they have been adapted to schools as a result of the emergence of the concepts of accountability, transparency, quality assurance, performance evaluation in education through neoliberal policies (Tolofari, 2005).

We may suggest that self-evaluation models are developed by affecting each other despite certain differences. Even though the names of the stages in the current models differ, they seem to serve similar purposes (Taubman, 2015). In this respect, we may assert that these models serve the logic of presenting the current evidence-based state of schools and taking action for improvement.

Self-Evaluation Practices in Turkey

Practices in the world such as accountability in education, school development and improvement, and effective schools also affect the Turkish Education System. In the light of these developments, school self-evaluation in Turkey is practiced in the elementary, vocational secondary and higher education levels. At the primary school level, MoNE General Directorate of Basic Education has published the "Standards of the Primary Education Institutions (SPEI)" with the circular numbered 2009/83 and dated 05.11.2009 (MoNE, 2010). School self-evaluation in Turkey is a mandatory process carried out from the central office within the context of SPEI. The school principals have duties and responsibilities in this process, such as informing the teachers, students and parents in this respect and having the perception scales filled out, determining the school needs, and preparing the school development plan. Teachers, on the other hand, are responsible for assisting students in entering data into the SPEI system and discussing this issue at board meetings (MoNE, 2015a).

Turkey is at the beginning of the process of school self-evaluation. This is because self-evaluation in Turkey may also be regarded as a top-down practice from the central office to keep pace with the developments in the world through the development of institutional standards, increasing accountability in education, delegating certain authorities to schools such as class inspections. We may also assert that the importance of school self-evaluation studies will gradually increase within the scope of "School Development Model" of 2023 Education Vision (MoNE, 2018b). In this context, various researches have been conducted on the functioning of the SPEI process and the difficulties encountered in practice. In his research on self-evaluation based on SPEI, Zingil (2012) stated that the expressions in the perception scales are not clear and understandable enough and that students and parents disregard this practice.

On the other hand, the study of Sahin and Ceper (2013) conducted with school administrators and teachers indicated the parents' illiteracy and lack of knowledge of how to use computers, the unclear evaluation questions and the unreliable evaluation results as obstacles on the effectiveness of SPEI. Similarly, Tanriogen and Ergun (2018) stated in their study conducted with teachers and administrators that stakeholders need support in the implementation of SPEI. This is because sufficient and objective results cannot be achieved within the scope of SPEI for the reason that parents do not know how to use computers and students enter data under the supervision of teachers.

Moreover, SPEI results are not shared with the schools or stakeholders are not informed in any way. Therefore, we may suggest that the questionnaires completed within the scope of SPEI do not serve the school self-evaluation at the desired level.

All these developments indicate a transition to self-evaluation in Turkey. Accordingly, there is a need for a school self-evaluation model that is easy to implement in schools, has valid and reliable tools, explains the participation of stakeholders with specific roles and tasks and provides flexibility to practitioners. In this context, the problem of the research is how a school self-evaluation model supporting school development should be, who should take part in this process, what the scope is and how the data collection process should be.

The overall objective of this research is to develop "a school self-evaluation model supporting school development" for public secondary schools. For this purpose, answers to the following questions are sought:

1. In regards to a school self-evaluation model supporting school development according to the views of academic members and current literature:

a. Which stakeholders should it consist of?

b. Which areas should it cover?

c. Which stages should it consist of?

d. From whom and by means of which data collection tools should data within the content determined in this process be collected?

Method

Research Design

The overall objective of this research is to develop a "school self-evaluation" model supporting school development and the study is conducted with a mixed research method (Teddlie and Tashakkori, 2010, 11), where both quantitative and qualitative research methods are used together. The multi-stage mixed pattern is used in this study, in which sequential or simultaneous stages of qualitative and quantitative approaches are combined to meet the overall program target, in order to provide support for the development, adaptation and evaluation of special programs (Creswell and Plano Clark, 2015, 108). The multi-stage mixed pattern is structured in accordance with the stages in Research and Development (R&D) methodology. In line with the purpose of this study, four-stage R&D model cycle consisting of "(1) research and comprehending, (2) design and development, (3) reflection and review, (4) implementation and evaluation" stages, formulated by Borg (1987) and Gall, Gall and Borg (2003), is used. However, since this study is limited to model development, the implementation and evaluation stage is removed from the cycle. Accordingly, the R&D methodology stages used in this study are summarized in Figure 1.

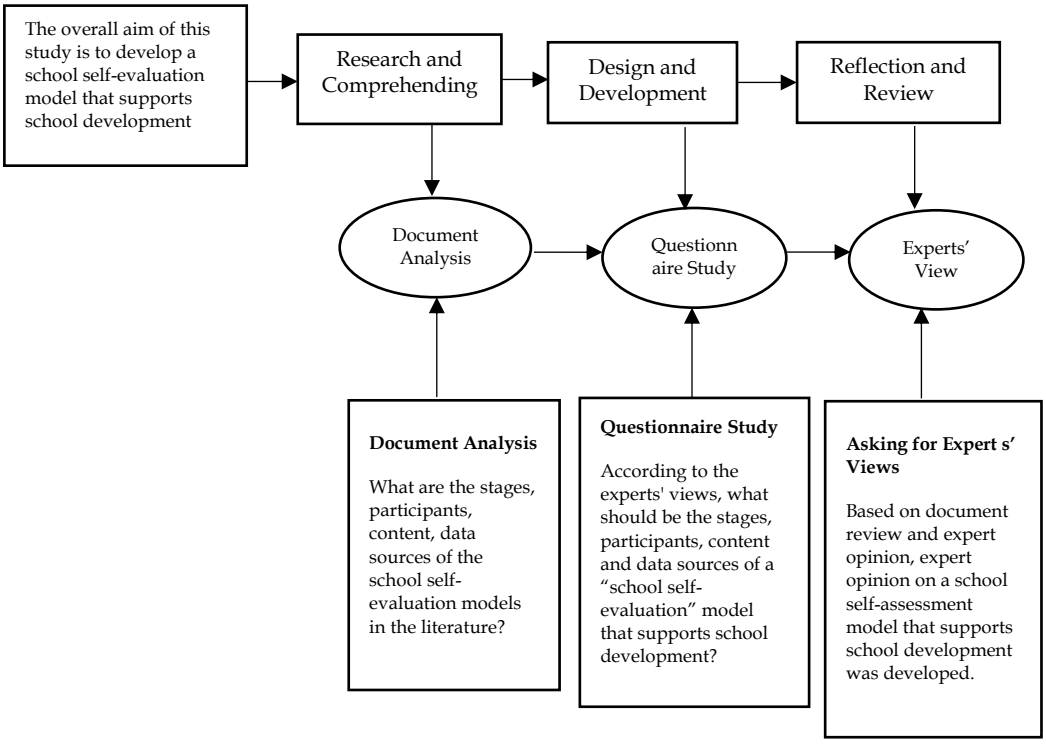


Figure 1. *Stages of R&D Methodology*

As can be seen in Figure 1, the multi-stage mixed model is organized within the framework of R&D methodology. This methodology has been conceptualized by Borg (1987) and then developed by Gall, Gall and Borg (2003). R&D methodology is an enterprise-based development model. Research results are used in order to design new products and principles. However, educators have later adapted this methodology in order to develop useful guides, models or documents for teachers and other practitioners (Saban, 2006). The four-stage R&D cycle used in the model development phase of the research is described as follows:

*Research and Comprehending***.** At this stage, the literature and implementation examples related to self-evaluation and school self-evaluation (international and national dissertations, articles, papers and official web sites, etc.) are examined and an understanding of the school self-evaluation process supporting school development was tried to be developed. School self-evaluation models in the literature are screened and general characteristics, dimensions, elements, stages, scopes, stakeholders involved in

school self-evaluation process, time period of these models, information-data sources on which the school self-evaluation process is based, their intended use, from whom the data should be collected are analyzed. Moreover, the researcher also traveled to Ireland, where school self-evaluation has been officially implemented and applied, and gained experience in the self-evaluation process through observation and school visits.

Design and Development. Common characteristics of a "School Self-Evaluation Model Supporting School Development" are determined based on the information obtained from the self-evaluation models examined in the literature. These common points are considered according to "stakeholders, time frequency, objective, information-data sources providing evidence, differences/similarities according to school type/level, stages, self-evaluation areas/content, and from whom the data based on this content should be collected, and the model frame is formed. The opinions of experts on this subject are obtained through two questionnaires prepared within this frame. A draft "School Self-Evaluation Model Supporting School Development "is developed in line with the information obtained.

Reflection and Review. The model is presented to experts for review. Accordingly, the model is finalized. Afterwards, data collection tools are prepared for the implementation of the model that is developed.

Study Group

The study group of this research comprises nine academic members serving in the universities in Turkey. "Criterion sampling", which is one of the purposeful sampling methods, is used in the model development process (Patton, 2014, 230-235). The criterion in this research is the faculty members to be experts in the areas of school development and evaluation, performance evaluation, teacher competencies and primary school institution standards. Within the scope of these criteria, 30 academic members, who have worked in the field of performance evaluation/conducted a thesis, took part in the process of determining teacher competencies, worked in school development and participated in the process of setting primary school institution standards, are determined. Afterwards, the studies of these academic members on related subjects are reviewed again and 17 faculty members are selected for the model development stage of this research.

The *School Self-Evaluation Model Questionnaire* (S-SEMQ) I form is sent to 17 selected academic members on 05.01.2018 by e-mail. However, only five professors, three associate professors and one academic member with doctorate degree from these academic members responded. One of the nine academic members stated that the questionnaire served its purpose, rather than responding the questionnaire. The areas of activity of the experts are school development, performance evaluation, teacher competencies and primary school institution standards. Obtaining expert knowledge from people who are experienced in the subject area in the relevant model development process also lies at the logic of R&D methodology (Gall, Gall and Borg, 1983).

In the process of developing a "School Self-Evaluation Model Supporting School Development Model", S-SEMQ II is formed in line with the answers obtained from S-SEMQ I. S-SEMQ II is sent to nine academic members who answered the first questionnaire by e-mail. Six of these participants responded to S-SEMQ II.

Data Collection

In this study, qualitative and quantitative data are collected in line with the first three stages of R&D methodology. The qualitative data is collected using the document review method. This method is the reviewing of all kinds of technical, official and private documents (such as records, stamps, memorials, pictures, record books and scientific studies) (Sonmez and Alacapinar, 2017, 186). It is also used in the verification of information and findings from other sources (Bowen, 2009, 30). Document analysis method is used also in this study in order to identify school self-evaluation practices in various countries. Certain criteria have been established in this context for the studies included in the document review. These criteria are as follows:

1st Criterion: Documents to be related to self-evaluation/school self-evaluation,

2nd Criterion: Documents to be official reports, guides, brochures, dissertations or articles published in peer-reviewed journals with full text in Turkish/English.

In order to identify the studies that meet these criteria, keywords such as "self-evaluation, school self-evaluation, quality standards in education" are used to screen Google Academia, EBSCO databases, official website addresses of the Ministries of Education of the countries considered as developed in school self-evaluation and the websites of international organizations such as OECD, UNICEF, World Bank. As a result of this screening, quality standard areas from nine models, two of which are developed in business organizations (EFQM) and adapted to education, and seven of which are developed for schools (Ireland, Scotland, Canada, New Zealand, Hong Kong, Singapore, ESSE), 15 guides, 13 reports and brochures, and 11 studies are included in the study. While selecting the countries, we tried to take samples from different continents that are developed in school self-evaluation and that apply self-evaluation systematically within the framework of a certain model. In this context, we selected Ireland and Scotland in Europe, Hong Kong and Singapore in Asia, Canada in America and New Zealand in Australia, all of which have pioneered in school self-evaluation.

Besides, in order to collect quantitative data, S-SEMQ I and II, which are developed by the researcher, are used in order to obtain the opinions of experts, who are experts on school development and evaluation, performance evaluation and teacher competencies, about the components of a school self-evaluation model supporting school development (such as participants, stages, areas to be evaluated). The "participants, areas, evaluation stages, evaluation content" variables of the first sample of the model are determined based on expert opinions and information in the literature.

Data Analysis

Nine expert opinions are obtained through S-SEMQ-I and S-SEMQ-II. Data are collected from experts online. Descriptive statistics are used to analyze the data obtained from questionnaires. Data obtained from questionnaires applied to the experts are shown individually in tables and described as frequencies. In this context, the researcher calculated the frequencies of the data from experts in MS Excel program. The findings of the expert group are tabulated individually as U1, U2, U3... in line with each sub-objective and discussed with the literature support.

Descriptive content analysis is conducted within the scope of literature review in analyzing the documents related to the school self-evaluation models used in various countries in order to realize the sub-objectives of the study. The implementation of models in various countries is identified in line with the main parameters determined in particular (stakeholders, stages, content, etc.).

Results

Findings about the Development of a School Self-Evaluation Model Supporting School Development

The findings are discussed for the purposes of the research and presented in line with the research questions. In this context, the themes are determined as a result of document review. Themes covering the characteristics used in forming the developed model are shown in Figure 2.

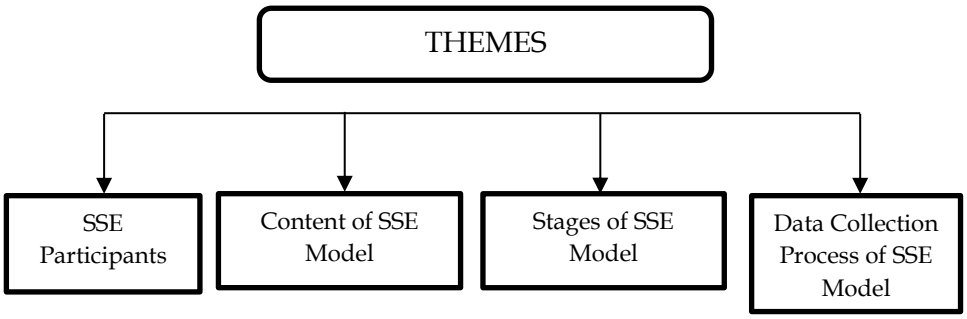


Figure 2. *Themes in the Research*

As can be seen in Figure 2, the findings of a school self-evaluation model supporting school development are presented under the following themes: stakeholders participating in the process, the content and stages of the model and the methods of data collection. In line with the stakeholder theme involved in the school self-evaluation process , two working groups as consultation unit and school self-

evaluation team are designed. In this context, expert opinions are obtained during the school self-evaluation process as to which stakeholders should be in the consultation unit and which should be in the school self-evaluation team. The opinions of experts on this matter are shown in Table 2.

Table 2.

According to Experts' Views Participants that should be in the Advisory Unit and School Self-Evaluation Team

Stakeholders	***School Self-Evaluation Team***	***f***	***Advisory Unit***	***f***
Principals and deputy principals	U2, U4, U6, U7, U9	5	U2, U3, U5, U6, U7, U9	6
Head of teachers	U1, U2, U3, U4, U5, U7, U9	7	U2, U6, U7, U9	4
Subject Teachers	U1, U2, U3, U4, U5,U9	6	U2, U7,U9	3
Support staff	U1, U2, U3, U4, U5, U6	6		-
Parents/parent-teacher association	U1, U2, U4, U6, U9	5	U3, U5	2
Head/representative of the school-teacher association	U1, U2, U4, U6, U7	5	U2, U3, U5	3
Students/students representative	U1, U2, U3, U4, U5, U6, U9	7	U6	1
External experts (researchers or academicians on SSE)	U1, U3, U6, U7, U9	5	U1, U2, U4, U5, U6, U7, U9	7
Supervisors (specialists on SSE)	U1	1	U1, U2, U3, U4, U5, U6, U9	7
External evaluators/inspectors	U1, U2, U6	3	U1, U2, U3, U4, U5, U9	6
Representatives of non-governmental organizations	U1	1	U1, U2, U3, U4, U5, U6	6

As can be seen in Table 2, experts believe that the consultation team should consist of school administrators, teachers, students, parents, support staff, representatives of parent-teacher association, external experts and evaluators. On the other hand, the experts stated that the school self-evaluation team should consist of school administrators, teachers, counselors, external experts, external evaluators and representatives of non-governmental organizations. At this point, one expert stated that "*it is not necessary for NGO representatives and students to be in the self-evaluation team*

(U7)". The same expert expressed that "*external experts and consultants may be combined and take part in both units as "Expert"* (U7)".

There are different stakeholders, which vary according to the structure of each country's education system, in the school self-evaluation models of the countries taken into consideration in this study. Therefore, the common stakeholders of various countries based on the literature are shown in Table 3.

Table 3.

Stakeholders at SSE Process in Various Countries

	Countries/Institutions							
Stakeholders	Ireland (DES, 2016b)	Scotland (HMIE, 2007)	Hong Kong (Education Bureau, 2013).	Singapore (Tee, 2003)	ESSE (SICI, 2003)	Canada (Ministry of Education, 2013)	New Zealand (Education Review Office, 2016)	Turkey (MoNE, 2015b)
School administrators	X	X	X	X	X	X	X	X
Teachers	X	X	X	X	X	X	X	X
Students	X	X	X	X	X	X	X	X
School board						X	X	
Parents	X	X		X		X	X	X
Experts/ Consultants	X					X		
External evaluators/ inspectors	X			X	X	X		
Support staff		X						
District managers						X		X
Representatives of society		X				X		

As shown in Table 3, the school self-evaluation process in various countries is generally carried out with the participation of school administrators, teachers, students and parents. In addition, external evaluators/inspectors also participate in the self-evaluation process in Ireland, Singapore, the ESSE model and Canada. On the other hand, administrators in the regional level are included in the self-evaluation

process in Turkey and Canada. In addition, experts/consultants, support staff and community representatives participate in the self-evaluation.

In the light of the research results and the findings of the literature review, a consultation unit within the Provincial/District Directorate of National Education (DNE) and a school self-evaluation team within the school is designed. The consultation unit consists of the school administrator, heads of departments, advisor (expert in the field of school evaluation or specialist with postgraduate diploma) and the education inspector as the external evaluator. On the other hand, the school self-evaluation team consists of the school administrator, heads of departments, student representative, parent representative and expert.

The content of the school self-evaluation models generally consists of quality standards/areas identified by the Ministry of Education or the relevant department. In Turkey, areas of administration, teaching-learning process and support services are identified within the context of SPEI. However, in this study, the existing inspection areas are examined in the literature in order to create a more general and comprehensive content. The opinions of experts on these areas are obtained in order to determine the content of the school self-evaluation model that is developed. The opinions of experts on school self-evaluation areas are shown in Table 4.

Table 4.

Experts' Views on the Domains of the School Self-Evaluation Model

SSE Domains	Experts	f
Administration services	U1 U2, U3, U4, U5, U6, U7, U9	8
Financial affairs	U2, U3, U4, U5, U6	5
Educational Environment	U1, U2, U3, U4, U5, U6, U7, U9	8
School environment	U1, U2, U3, U4, U6, U7, U9	7
Education and training programs	U1, U2, U3, U4, U6, U9	6
Student services	U1, U2, U3, U4, U5, U6, U7, U9	8
Teacher Services	U1, U2, U3, U4, U5, U6, U7, U9	8
Support Services	U1, U2, U3, U4, U6, U7, U9	7

As can be seen in Table 4, experts believe that school self-evaluation should be in the following areas: "administration services, financial affairs, educational environments, school environment, education and training programs, student services, teacher services and support services". However, one expert stated that "*financial affairs should be within the scope of administration services* (U1)", while another expert suggested that "*family participation and communication may be included in these areas* (U4)". Another expert stated that "*the education and training program should not be included in this model since it is carried out by MoNE* (U7)". However, there are also different quality or improvement areas identified in various countries. These areas provide information about the activities that schools should carry out. The quality standards and areas of the countries and studies examined within the scope of this research are shown in Table 5.

Table 5.

Educational Quality Domains According to Countries and Studies

Countries/Studies	***Educational Quality Domains***
Ireland (DES, 2016a)	• Learning-teaching • Leadership management
ESSE (SICI, 2003)	• External Support • Vision and Strategy • Key inputs for evaluation and improvement • Basic processes of evaluation and improvement • Impact on evaluation and outcomes
Scotland (HMIE, 2007)	• Leadership and Management • Learning process • Success and Acquisition
Canada (Ministry of Education, 2013)	• Assessment of Learning • School and Class Leadership • Student Participation • Curriculum, Teaching and Learning • Planning and Programming • Home, School and Community Cooperation
Singapore (Ministry of Education, 2015)	• Outputs to be achieved at the end of basic education • Outputs at the end of secondary education • Outputs to be achieved after secondary education
New Zealand (Education Review Office, 2016).	• Management • Leadership for Equality and Excellence • Educational Power Connections and Relations • Sensitive Education Program, Effective Teaching and Learning Opportunity • Professional competence and collective capacity • Evaluating, questioning and generating information for improvement and innovation
Hong Kong (Education Bureau, 2013).	• Organization and Management • Learning and Teaching • Student support and school partnerships • Student Performance
Turkey (SPEI) (MoNE, 2015b) and Performance Management System (PMS) (MoNE, 2015b)	• Education Management (SPEI) • Learning-Teaching Processes (SPEI) • Support Services (SPEI) • Education and training process (PMS) • School-family-environment cooperation (PMS) • School resources health and safety (PMS) • Student Support (PMS) • Management and leadership (PMS) • Personal and professional development (PMS)

Table 5 Continue

Common Inspection Framework (Ofsted, 2015)	• Effective leadership and management • Quality of teaching, learning and assessment • Personal development, behavior and welfare • Student outcomes
Characteristics of Effective School (Sammons, Hillman & Mortimore, 1995)	• Shared vision and goals • High expectations of students' academic achievement levels • Professional leadership • Observation of development • Purposeful teaching • Focus on learning and teaching • Learning organization • Learning environment • School-family-community cooperation • Positive support and • Student Rights and responsibilities
Maldives (Ministry of Education, 2010)	• Inclusiveness • Learner-centered teaching-learning • Health and safety • School, family and community cooperation • Leadership and management

As can be seen in Table 5, 11 studies are examined in addition to expert opinions when identifying the content of this model. In each country and study, there are specific quality areas that form the basis of the school self-evaluation process. These areas and the relevant standards and sub-standards vary according to the educational objectives in the relevant country. However, it is possible to say that the content of all these models and studies is gathered in the following areas: "*school administration, leadership, education and training affairs, school-family cooperation, community support, school safety, healthy school, communication at school and the professional development of teachers*". In this respect, the content of "A School Self-Evaluation Model Supporting School Development" is designed based on the quality areas and standards in education in the countries and studies given in Table 5. The findings and explanations in relation to the content of the model that is developed are summarized in Table 6.

Table 6

The Content of School Self-Evaluation Model Supporting School Development

Domains and Standards	***Explanation***
Management and Leadership • *School management* (Ofsted, 2015; Sammons, Hillman & Mortimore, 1995; Alba, 2015-Scotland; Education Bureau2016-Hong Kong; DES, 2016-Ireland; National Agency For School Evaluatıon, 2017) • *Leadership at School* (Ofsted, 2015; Education Review Office, 2016-New Zealand; Sammons, Hillman & Mortimore, 1995; Alba, 2015-Scotland; Education Bureau2016-Hong Kong; DES, 2016-Ireland; Ministry of Education, Canada) • *Participation in school management process* (SPEI, 2015; Sammons, Hillman & Mortimore, 1995; Ministry of Education, 2013-Canada)	In the field of Management and Leadership, the school management focuses on leadership and engaging stakeholders in the management process. The school administrator is expected to demonstrate transformational, instructional, distributive and sustainable leadership in line with the school context in order to act together with stakeholders towards the goal of improving education and training. It is the act of the school administration in consultation with the opinions of teachers, students and parents who are affected by this process in decisions to be made with a participatory management approach.
Education Process • *Planning regularly educational process* (Sammons, Hillman & Mortimore, 1995; Education Review Office, 2016-New Zealand; SPEI, 2015) • *Identifying and meeting students' learning needs* (SPEI, 2015; Ministry of Education, 2013-Canada) • *Measurement-Evaluation-Monitoring-Supporting of Education* (Ministry of Education, 2013-Canada; Alba, 2015-Scotland; Sammons, Hillman & Mortimore, 1995) • *Making the physical conditions of the school suitable for education* (MacBeath, 1999; SPEI, 2015; Sammons, Hillman & Mortimore, 1995) • *Distributing and using resources/equipment appropriate for the education process* (SPEI S, 2015; Sammons, Hillman & Mortimore, 1995)	In the field of Education Process, focusing on the roles and responsibilities of school management, teachers, students in order to improve the education offered at school within the scope of funding, educational environment, educational program, learning support and measurement, evaluation and monitoring.
School-Family- Community Cooperation • *Making arrangements for school-family cooperation* (MacBeath, 1999; Sammons, Hillman & Mortimore, 1995; Alba, 2015-Scotland) • *Cooperating for taking community support* (SPEI, 2015; Education Bureau, 2016-Hong Kong; Ministery of Education, 2013-Canada)	In the field of School-Family-Community Cooperation, the school management and teachers focus on providing and informing the participation of family and community in order to carry out the educational process with the cooperation of family and society.

Table 6 Continue

Domains and Standards	*Explanation*
School Health and Safety • *Providing students with a safe educational environment at school* (Alba, 2015-Scotland) • *Providing students with a healthy educational environment at school* (MoNE, 2015b,PMS)	In the field of School Health and Safety, the school administration focuses on providing students with a safe and healthy school environment.
Relations and Communication at School • *Developing relations among stakeholders at school* (Education Review Office, 2016-New Zealand; SPEI, 2015) • *Developing communication among stakeholders at school* (MacBeath, 1999; National Agency For School Evaluation, 2017-Lithuania)	In the field of Relations and Communication at School, the school management and teachers focus on healthy relationships and effective communication with students and families, and welcome families.
Professional Development • *Supporting teachers to develop the field and professional knowledge* (SPEI, 2015; Sammons, Hillman & Mortimore, 1995 • *Evaluating and contributing to the professional development of teachers* (Education Review Office, 2016-New Zealand)	In the field of Professional Development, the school management focuses on the roles and responsibilities of teachers to improve their professional knowledge and support their professional development by conducting monitoring and evaluation studies.

Content of the model that is developed is summarized in Table 6. As can be seen, the content of the model consists of the following areas: "administration, leadership, education-training process, school-family-community cooperation, school health and safety, relations and communication at school, professional development". The underlying reason for establishing the model's content based on world practices rather than taking from the existing SPEI practice in Turkey (MoNE, 2015b) directly is to develop a more comprehensive and general model content. This is because practices in Turkey, as also expressed by Simsek (2016), are not in the form of a stable educational policy, but are maintained until the bureaucrat who implemented the practice leaves his/her position. Therefore, we tried to determine a content that includes the practices in the world. The experts were asked, "*which of the six areas and standards should be included in the content of the model*," in order to clarify the content of the model. Expert opinions about the areas and standards that should be included in the model are summarized in Table 7.

Table 7.

Experts' Views on Six Domains Containing the Content of School Self-Evaluation

Domains/Standards	***Absolutely Must***	***f***	***May not be***
1. Administration and Leadership			
1.1. Administrating a school organization	U2, U4, U5, U6, U7, U9	6	
1.2. Leading school organization	U2, U3, U4, U5, U6, U7, U9	7	
2. Education Training Process			
2.1. Planning educational process	U2, U3, U4, U5, U6, U7, U9	7	
2.2. Measurement-evaluation and monitoring	U2, U3, U4, U5, U6, U7, U9	7	
2.3. Arranging educational environments	U2, U3, U4, U5, U6, U7, U9	7	
2.4. Supporting education	U2, U3, U4, U6, U7	5	U5
2.5. Students' outputs/experiences	U2, U3, U4, U5, U6, U7, U9	7	
3. School-Family-Community Cooperation			
3.1. School-family relations	U2, U3, U4, U5, U6, U7, U9	7	
3.2. School-community relations	U2, U3, U4, U5, U6, U7, U9	7	
4. School health and safety			
4.1. Providing school health	U2, U3, U4, U5, U6, U7, U9	7	
4.2. Providing school safety	U2, U3, U4, U5, U6, U7, U9	7	
5. Relations and Communication at School			
5.1. *Arranging relations among educational stakeholders(management-teachers-students-parents) at school*	U2, U3, U4, U5, U6, U7, U9	7	
5.2. Effective communication at school	U2, U3, U4, U5, U6, U7, U9	7	
6. Professional Development			
6.1. Supporting the professional development of school staff	U2, U3, U4, U5, U6, U7, U9	7	
6.2. Monitoring and contributing to the professional development of school staff	U2, U3, U4, U5, U6, U7, U9	7	

As can be seen in Table 7, the experts stated that six areas and sub-areas that are identified should definitely be in the content of school self-evaluation. Only one expert expressed that "*it may not be related to the sub-area of supporting education within the Education-Training Process* (U5)". However, the researcher expressed the supporting of teaching in order to provide social-cultural-educational activities and guidance services to the students and to provide special education when necessary. In addition, there is no feedback from the experts regarding the content of the model. In the light of these findings, the following six areas included in the school self-evaluation process are identified: "Administration and Leadership, Education-Training Process, School-Family-Community Cooperation, School Health and Safety, Relations and Communication at School, Professional Development". The data collection tools necessary for the implementation of the study are also prepared in line with this content.

School self-evaluation models consist of specific stages. In this study, the stages of school self-evaluation and EFQM self-evaluation model of Ireland, Scotland, ESSE, Canada, Singapore, Hong Kong and New Zealand are observed. Possible stages are determined for the model in this research based on the stages in the models mentioned above and expert opinions are obtained. The opinions of experts in relation to the stages of the model are shown in Table 8.

Table 8.

Experts' Views on School Self-Evaluation Stages

Stages	***Experts' Views***	***f***
1. Preparation	U2, U4, U3, U5, U6, U7, U9	7
2. Planning	U1, U2, U4, U3, U5, U6, U7, U9	8
3. Implementation	U1, U2, U4, U3, U5, U6, U7, U9	8
4. Evaluation	U1, U2, U4, U3, U5, U6, U7, U9	8
5. Taking action	U2, U4, U3, U5, U6, U7, U9	7
6. Monitoring and Reviewing	U2, U4, U3, U5, U6, U7, U9	7

As can be seen in Table 8, the experts expressed that the school self-evaluation model should consist of the following six stages: "preparation, planning, implementation, evaluation, taking action, monitoring and reviewing". Only one expert suggested that "*the preparation and planning stage should be combined and the action taking stage should be brought forward* (U1)".

A school self-evaluation model supporting school development in this study as a result of the research findings and literature review is structured in the following six stages: "preparation, planning, implementation, evaluation, taking action, monitoring and reviewing". The first four stages of this model aim at school self-evaluation, and the last two stages at school development. In this context, the preparation, planning, implementation and evaluation stages and the current state of the school are demonstrated. Afterwards, improvement plan is prepared based on these results and evidence and action is taken. In the development phase of the model, external evaluators (education inspectors) are included in order to overcome organizational blindness. Finally, the sub-stages are shown in Figure 3 in order to provide a more detailed understanding of the model that is developed.

The sub-stages of "A School Self-Evaluation Model Supporting School Development" that is developed in the light of literature review and expert opinions within the scope of this study are shown in Figure 3. In addition, the process for how the model that is developed will be carried out in six stages in a school term (10 months) is shown in Figure 4.

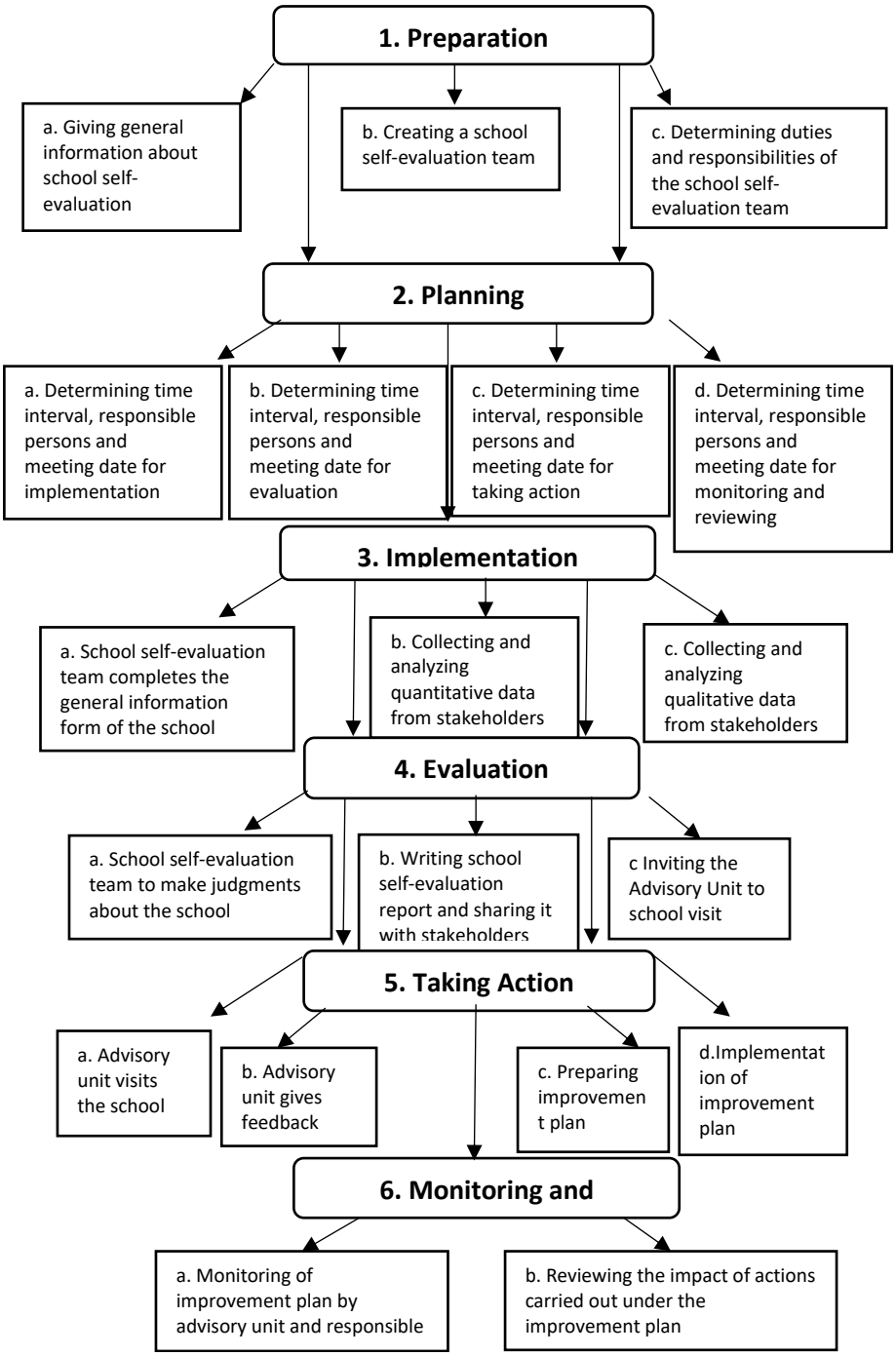
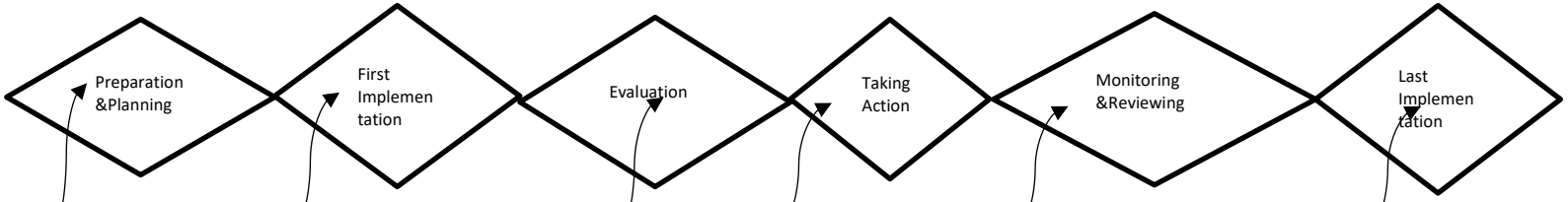


Figure 3. *Sub-Stages of a School Self-Evaluation Model Supporting School Development*



September	October	November	December	January	February	March	April	May	June
	First report		*Second report*			*Monthly report*	*Monthly report*	*Monthly report*	*Last report*
• School self-evaluation team is created • Duties and responsibilities are distributed • Planning is done	• Scales are administered to stakeholders • Data is analysed • Interviewing with stakeholders • Data is analysed • Key findings are reported		• School self-evaluation team fills the evaluation form • School self-evaluation report is written • School self-evaluation report is submitted to school management • External evaluators are invited to the school	• Improvement plan based on the results of the school self-evaluation report is prepared • The improvement plan is implemented		• The level of achievement of the targets determined within the scope of the improvement plan is monitored through monthly reports and • It is evaluated according to the evidence presented and • Intervention programs are applied			• In order to evaluate the impact of the improvement scales/ interviews are administered and then the results are reported

Figure 4. *Progress of School Self-Evaluation Model*

As can be seen in Figure 4, "A School Self-Evaluation Model Supporting School Development" is conducted once a year based on the findings. However, how the practitioners plan this one-year process is shown on a monthly basis for the period when the schools are open (September-June). At the beginning of this process, the school self-evaluation team is established in September within the scope of the preparation and planning stage, and planning is made by distributing the duties and responsibilities. Data is collected and analyzed according to this planning in October and November within the scope of the implementation phase and the results are written as the first report. In December, the school self-evaluation team completes the evaluation form based on the results and the evidence/documents presented at the school as a requirement of the evaluation phase of the model and makes a judgment about the school. Afterwards, a school self-evaluation report is prepared based on the existing results and evidence. External evaluators are invited to the school. The school self-evaluation part of the model is completed up to this stage.

The school development part of the model starts in January and February. The improvement plan is prepared and implemented in this part based on the results of the school self-evaluation report. In March, April and May, monthly reports on what has been done at school to achieve the improvement targets are prepared and the responsible persons determined observe the improvement process. In June, scales/interviews are reapplied and reported to evaluate the effect of improvement studies.

School self-evaluation is a process based on evidence that requires collaboration with the stakeholders. Data is collected in this process in six areas from school administrators, teachers, students and parents as the main stakeholders. However, it is not possible for all the identified stakeholders to have knowledge in these six areas. In this respect, expert opinions are sought to find out which data from which stakeholders should be collected. The frequency distribution of expert opinions on this matter is shown in Table 9.

Table 9.

Frequency Distribution of Experts' Views on Data Collection Process in SSE

Domains	Data Collection Methods									To whom data is collected			
	General Information	Documents (meeting)	Legislation	Observation	Interview	Questionnaire/Scale	Test Results	Product File	Practices in various areas	School administrators	Teachers	Students	Parents
	f	*f*	*f*	*f*	*f*	*f*	*f*	*f*	*f*	*f*	*f*	*f*	*f*
1. Management and Leadership		21	4	23	35	30		2	19	32	36	33	27
2. Educational Process	1	30	7	44	69	52	6	16	24	52	70	65	40
3. School-Family-Community Cooperation		11	3	12	20	16		1	6	19	20	7	20
4. School Health and Safety	4	7	4	6	15	11	1		3	15	15	11	11
5. Relations and Communication at school		9	2	11	20	16		4	8	20	20	19	17
6. Professional Development		11		8	20	16			6	20	20	3	2

As can be seen in Table 9, "A School Self-Evaluation Model Supporting School Development" focuses on the following six areas: "Administration and Leadership, Education-Teaching Process, School-Family-Community Cooperation, School Health and Safety, Relations and Communication at School, Professional Development". In this context, expert opinions are sought to find out through which methods and from whom the data related to each field should be collected. The highest number of expert opinions is determined to be the collection of data from school administrators, teachers, students and parents through questionnaire/scale and interview form.

Besides, data should be collected from school administrators, teachers and parents in the field of "School-Family-Community Cooperation". This is because experts in this field think that students should only be involved in the fields that concern them. For this reason, students are accepted to be indirectly involved in school-family-community cooperation. In addition, implementation examples, minutes of meetings, records, legal documents and product files are requested as evidence during the evaluation phase.

Discussion Conclusion and Recommendations

Self-evaluation is a cooperative process. In this context, school self-evaluation is carried out with stakeholders. In the light of expert opinions and document review, we may suggest that school self-evaluation is generally conducted with the participation of teachers, students and parents under the leadership of school administrators. However, in Portugal (Figueiredo, Ramalho and Rocha, 2017), Belgium (Faddar and Vanhoof, 2017) and Ireland (Brown, McNamara, O'Hara, O'Brien and Skerritt, 2017), studies evaluating student and parent participation in the school self-evaluation process reveal that this participation remains unilateral, passive, and in the form of gathering information or obtaining opinions (Kurum, Cinkir, Brown, Faddar and Figueiredo, 2018). Therefore, a consultation unit within the Provincial/District DNE and a school self-evaluation team within the school are designed in this study and the role of each participant in the team is defined.

Some countries also have different participants. The self-evaluation process in Ireland is conducted with the participation of school administrators, teachers, parents and students under the leadership of school board (DES, 2016b). In addition, schools in Ireland get consultation about carrying out the model from academic members who are experts in self-evaluation or from experts in units such as PDST, when needed. In Scotland, on the other hand, this process is carried out with school administration, teachers, support staff, students, parents, community leaders (HMIE, 2007).

In Canada, self-evaluation is carried out by students, teachers, school administrators, parent-teacher associations, parents, local community, school board, district administrators and ministries (Ministry of Education, 2013) within the scope of school improvement. In Hong Kong, the stakeholders of the school self-evaluation process are not identified directly. However, it is stated that the process is carried out by school administrators and teachers to provide more qualified education to the students (Education Bureau, 2013). In New Zealand, the school board as well as the school principal and educational staff are responsible for the school self-evaluation process (Nusche, Laveault, MacBeath and Santiago, 2012).

In Singapore, school administrators have great responsibility in carrying out the self-evaluation process in the context of school excellence. In addition, external evaluators are responsible for verifying these results (Tee, 2003). In the ESSE model, the role of external evaluation in ensuring the effectiveness of self-evaluation is explained. Therefore, school administrators, teachers, students, parents, staff and external evaluators are identified as stakeholders (SICI, 2003) Data in the self-evaluation process that is tried to be implemented in Turkey in the context of ICS is gathered from school administrators, teachers, students and parents. Besides, Provincial/District DNE have specific responsibilities in carrying out the process (MoNE, 2015b).

In line with the second objective of the study, the content of school self-evaluation process consists of the following six areas: "Administration and Leadership, Education-Training Process, School-Family-Community Cooperation, School Health and Safety, Relations and Communication at School, Professional Development". On the other hand,

it is observed in the self-evaluation models examined that the process is carried out in cycles and that there are no sharp stages. The six-stage model of Ireland (DES, 2016a) begins with the identification of the focal point. After the focal point is identified according to the quality areas of education, evidence is collected; then, the process continues with the stages of analysis-making judgment, preparation of report-writing of improvement plan, taking action, monitoring and reviewing. In ESSE (SICI, 2003), the self-evaluation process, which starts with input, is carried out with the cycle of process, output and external support.

In Scotland (Alba, 2015), the process structured within the framework of school improvement also begins with self-evaluation. However, information about developments in the environment are obtained by looking outwards and planning is made in order to reach the target determined by looking at the future. Similarly, in Canada (Ministry of Education, 2013), the framework of school effectiveness is structured as the school self-evaluation and district process. The school self-evaluation process starts with the students' achievement of the learning and success goals. The process continues with the stages of evidence collection and taking action for improvement.

In Singapore (Tee, 2003), where the model of business excellence is adapted to education, the model is structured in the following variety of areas: leadership, personnel management, strategic planning, resources, student-oriented processes, staff results, managerial and functional outcomes, partnership and community outcomes. In New Zealand (Nusche, Laveault, MacBeath and Santiago, 2012), the five-stage self-evaluation model for school improvement is carried out in the cycle of thinking, planning, implementing, observing, informing about the current state of the school. Finally, in Hong Kong (Education Bureau, 2013), the process described as the school improvement cycle begins with demonstrating the current state of the school. The process continues with the planning, implementing, monitoring, evaluation, and reporting stages. The school self-evaluation model in this research is structured in the following six stages: "preparation, planning, implementation, evaluation, taking action, monitoring and reviewing".

In the self-evaluation models examined within the scope of this research, it is seen that data or evidence is collected mostly from school administrators, teachers, students and parents through observation, reflection, interview, questionnaire, peer observation, exam result analysis or other legal documents that provide evidence. The Ireland model uses observation, teacher reflection report, learning toolkit, checklists, interview, peer observation, documentation and questionnaires as evidence collection tools. Data are also collected from school administration, teachers, students and parents (DES, 2016a).

EFQM (2013) excellence model used for enterprises uses simple self-evaluation questionnaires, EFQM checklists, EFQM business excellence model matrix and simulations. On the other hand, evidence is collected in Singapore, which adapted the EFQM excellence model to education, in the form of ongoing activities in the school self-evaluation process, analysis of the results obtained, and community, stakeholder and personnel satisfaction that contribute to school excellence and success (Tee, 2003).

ESSE (SICI, 2003) determines the effectiveness of the school self-evaluation process based on available evidence. However, there is no direct information on which data collection method is taken to obtain evidence from school administration, teachers, students, parents and the society. In Scotland, qualitative, quantitative and observational data are obtained from school staff, students, partners and other stakeholders in the self-evaluation conducted within the scope of school improvement (HMIE, 2007).

In Canada, self-evaluation based on evidence obtained within the framework of quality standards in education to improve school effectiveness is carried out with the participation of the whole school and all school personnel (Ministry of Education, 2013). In New Zealand, the school self-evaluation process is carried out by presenting data on student achievement and school performance with the participation of all stakeholders in the school (Nusche, Laveault, MacBeath and Santiago, 2012). In Hong Kong, evidence is collected in the school self-evaluation cycle from school administrators, teachers, students and parents through interviews, surveys and screening, observations, analysis of student studies, document review (Education Bureau, 2013).

In order to implement the model developed in accordance with the fourth objective of the study, scales are developed and questionnaire and interview forms are prepared for school administrators, teachers, students and parents. In addition, "General School Information Form" is prepared in order to obtain general information about the school within the scope of these six areas.

In conclusion, the school self-evaluation is an extensive process. For the effective implementation of the developed model, schools need consultation. Therefore, MoNE should assign a certain number of schools to experts who have postgraduate diploma on topics such as education administration, inspection/evaluation, and school self-evaluation, and this process should be carried out with the help of expert support. On the other hand, data collection and analysis and reporting stages are challenging for practitioners. Therefore, basic statistics, research and report writing training should be provided to the individuals in the school self-evaluation team. In addition, a handbook about these analyzes should be prepared for schools and expert support should be provided, when necessary.

The content of this model is determined as six areas. However, according to the needs of the school, the stakeholder scales in these areas may be used independently or different areas (such as accommodation-food/nutrition for vocational high schools) according to school district, type and level may be added. Valid and reliable data collection tools should be developed within this context and school self-evaluation should be conducted.

The researchers may seek the opinions of school inspectors, school administrators and academic members regarding the applicability and adoptability of this model in Turkey. School administrators or researchers in secondary schools within the context of MoNE 2023 Vision Certificate school development target may apply the model that is developed. In addition, researchers may adapt this school self-evaluation model to different teaching levels and school types.

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Eğitimde Değerlendirmeye Özgün Bir Bakış: Okul Gelişimini Destekleyen Bir Okul Öz-Değerlendirme Modeli

Atıf:

Kurum, G. & Cinkir, S. (2019). An authentic look at evaluation in education: A school self-evaluation model supporting school development. *Eurasian Journal of Educational Research*, 83, 253-286, DOI: 10.14689/ejer.2019.83.12

Özet

Problem Durumu: Eğitimin niteliği, amaçlara ulaşma düzeyi ile belirlenmektedir. Bu amaçlara ulaşmak için eğitime ciddi kaynaklar ayrılmaktadır. Kaynakların etkili şekilde kullanılıp kullanılmadığı eğitim çıktılarının nitelik düzeyiyle belirlenebilir. Bu durumun ise okullarda sunulan eğitim-öğretim etkinliklerinin denetlenip değerlendirilmesi ile mümkün olduğu söylenebilir. Ancak eğitimde dış değerlendirmenin yetersiz kalması farklı denetim ve değerlendirme modellerinin geliştirilmesini sağlamıştır. Bu bağlamda okul öz-değerlendirme de bu arayışın bir ürünü olarak okulların paydaşlarıyla birlikte kendilerini tanımasını ve bilmesini sağlayıp dış değerlendirmeyi tamamlayan bir iç değerlendirme uygulaması olarak ele alınabilir.

Öz-değerlendirme kapsamlı bir süreçtir. Bu süreçte MacBeath (2006, 62-65-111) öz-değerlendirme için amaç, hitap edilen kitle, çerçeve, ölçüt, süreç, araçlar ve ürün olmak üzere yedi faktör belirlemiştir. Öz-değerlendirme, okulların kendi hikâyelerini yazma süreci olduğu için okullar sadece ulusal ya da uluslararası test sonuçları gibi kolaylıkla

erişilebilen standartları ölçüt olarak almak yerine okul paydaşları tarafından anlamlı bulunan ve değer verilen ölçütler geliştirip, onları temel alabilir.

Dünyada eğitimde hesapverebilirlik, okul geliştirme ve iyileştirme, etkili okul gibi uygulamalar Türk Eğitim Sistemini de etkilemektedir. Bu gelişmeler ışığında Türkiye'de öz-değerlendirme ilköğretim, mesleki ortaöğretim ve yükseköğretim düzeyinde uygulanmaya başlanmıştır. İlköğretim düzeyinde MEB Temel Eğitim Genel Müdürlüğü, 05.11.2009 tarihli 2009/83 sayılı genelge ile "İlköğretim Kurumları Standartlarını (İKS)" yayınlamıştır (MEB, 2010). Türkiye'de okul öz-değerlendirme İKS bağlamında merkezden yürütülen zorunlu bir süreçtir.

Türkiye'de öz-değerlendirmeye bir geçiş olduğunu göstermektedir. Bu doğrultuda okullarda kullanımı kolay, geçerli ve güvenilir araçlara sahip, paydaş katılımının belirgin rol ve görevlerle açıklandığı ve uygulamacılara esneklik tanıyan bir okul öz-değerlendirme modeline ihtiyaç duyulmaktadır. Bu bağlamda araştırmanın problemini, okul gelişimini destekleyen bir okul öz-değerlendirme modelinin nasıl olması, bu süreçte kimlerin yer alması, kapsamının neler olması ve veri toplama sürecinin nasıl olması gerektiği oluşturmaktadır.

Amaç: Bu araştırmanın genel amacı kamu ortaokulları için okul gelişimini destekleyen bir okul öz-değerlendirme modeli geliştirmektir. Çalışmada öğretim üyelerinin görüşlerine ve mevcut alan yazına göre okul gelişimini destekleyen bir okul öz-değerlendirme modelinin paydaşları, alanları, aşamaları ve veri toplama süreci belirlenmeye çalışılmıştır.

Yöntem: Bu araştırma hem nicel hem de nitel araştırma yöntemlerinin birlikte kullanıldığı karma araştırma yöntemi (Teddlie ve Tashakkori, 2010, 11) ile gerçekleştirilmiştir. Ayrıca bu araştırmada özel programların geliştirilmesi, uyumlu hale getirilmesi ve değerlendirilmesine destek sağlamak amacıyla (Creswell ve Plano Clark, 2015, 108) nitel ve nicel yaklaşımların sıralı ya da eş zamanlı aşamalarının genel program hedefini karşılayacak şekilde birleştirildiği çok aşamalı karma desen kullanılmıştır. Çok aşamalı karma desen Araştırma ve Geliştirme (AR-GE) yöntembilimindeki aşamalar doğrultusunda yapılandırılmıştır. Bu çalışmanın amacı doğrultusunda Borg (1987) ve Gall, Gall ve Borg (2003) tarafından formülleştirilen "(1)araştırma ve kavrama, (2)tasarlama ve geliştirme, (3)yansıma ve gözden geçirme, (4)uygulama ve değerlendirme aşamalarından oluşan dört basamaklı AR-GE modeli döngüsü kullanılmıştır. Ancak bu çalışma model geliştirme ile sınırlı tutulduğu için uygulama ve değerlendirme aşaması döngüden çıkarılmıştır.

Bu araştırmanın çalışma grubu için Türkiye'de bulunan üniversitelerde görev yapan performans değerlendirme alanında çalışma yapmış/tez yürütmüş, öğretmen yeterlikleri belirlenmesi sürecinde yer almış, okul geliştirme üzerine çalışma yapmış ve ilköğretim kurum standartları belirleme sürecinde yer almış 30 öğretim üyesi belirlenmiştir. Sonrasında bu öğretim üyelerinin ilgili konularda yaptığı çalışmalar tekrar gözden geçirilerek bu araştırmanın model geliştirme aşaması için 17 öğretim üyesi seçilmiştir. Sonuç olarak bu çalışma katılmayı kabul eden dokuz öğretim üyesi ile yürütülmüştür. Veriler dokuman analizi ve Okul Öz-Değerlendirme Modeli Anketi aracılığıyla toplanmış, betimsel olarak analiz edilmiştir.

Bulgular: Araştırmanın genel amacı doğrultusunda yıllık olarak uygulanması planlanan okul gelişimini destekleyen bir öz-değerlendirme modeli geliştirilmiştir. Bu model hazırlık, planlama, uygulama, değerlendirme, eyleme geçme, izleme ve değerlendirme olmak üzere altı aşamadan oluşmaktadır. İlk dört aşama öz-değerlendirme, son iki aşama geliştirme amacıyla kullanılmaktadır. Bu modelin içeriği "yönetim ve liderlik, eğitim-öğretim süreci, okul-aile-toplum işbirliği, okul sağlığı ve güvenliği, okulda ilişkiler ve iletişim, mesleki gelişim" olmak üzere altı alandan oluşmaktadır. Model okul öz-değerlendirme ekibi tarafından uygulanmaktadır. Ayrıca bu sürece kılavuzluk etmesi amacıyla danışma birimi de oluşturulmuştur. Danışma birimi okul yöneticisi, zümre başkanları, danışman (okul değerlendirme alanında uzman öğretim üyesi ya da lisansüstü eğitim almış uzman) ve dış değerlendirici olarak maarif müfettişinden oluşmaktadır. Diğer taraftan okul öz-değerlendirme ekibi; okul yöneticisi, zümre başkanları, öğrenci temsilcisi, veli temsilcisi ve uzmandan oluşmaktadır. Uzmanların görüşlerine göre nitel ve nicel veriler okul yöneticisi, öğretmen, öğrenci ve veliden anket/ölçek ve görüşme formu aracılığıyla toplanmalıdır.

Diğer taraftan "Okul-Aile-Toplum İşbirliği" alanında okul yöneticisi, öğretmen ve veliden veri toplanmalıdır. Çünkü bu alanda uzmanlar öğrencilerin sadece kendilerini ilgilendiren alanlarda sürece dâhil olmaları gerektiğini düşünmektedir. Bu sebeple öğrencilerin okul-aile-toplum işbirliğine dolaylı olarak dâhil edildiği kabul edilmektedir. Bu kapsamda geçerli ve güvenilir paydaş ölçekleri, görüşme/anket ve okul genel bilgiler formu hazırlanmıştır. Ayrıca değerlendirme aşamasında kanıt olarak uygulama örnekleri, toplantı tutanakları, kayıtlar, yasal belgeler ve ürün dosyaları istenmiştir.

Sonuç ve Öneriler: Bu çalışmada ortaokullar için altı aşamalı bir okul öz-değerlendirme modeli geliştirilmiştir. Okul öz-değerlendirme işbirlikli bir süreçtir. Ancak okul öz-değerlendirmenin genel olarak okul yöneticileri liderliğinde daha çok öğretmen, öğrenci ve veli katılımıyla gerçekleştiğini söylemek mümkündür. Bu sebeple bu araştırmada İl/İlçe MEM bünyesinde danışma birimi, okul bünyesinde okul öz-değerlendirme ekibi tasarlanmıştır ve her katılımcının ekip içindeki rolü tanımlanmıştır. Okul öz-değerlendirme modelinin içeriği "Yönetim ve Liderlik, Eğitim-Öğretim Süreci, Okul-Aile-Toplum İşbirliği, Okul Sağlığı ve Güvenliği, Okulda İlişkiler ve İletişim, Mesleki Gelişim" olmak üzere altı alandan oluşmaktadır. Ancak okulun ihtiyaçlarına göre bu alanlardaki paydaş ölçekleri bağımsız şekilde kullanılabilir ya da okul bölgesi, türü ve kademesine göre farklı alanlar (meslek liseleri için konaklama-gıda/beslenme gibi) eklenebilir.

Diğer taraftan bu modelin uygulaması sürecinde okul yöneticileri ve öğretmenler temel istatistik, araştırma ve rapor yazma konusunda eğitime ihtiyaç duymaktadır. Bu doğrultuda eğitim yönetimi, denetimi/değerlendirmesi gibi alanlarda lisansüstü eğitim almış uzmanlardan destek sağlanmalıdır. Ayrıca geliştirilen modelin uygulanabilirliği ve benimsenebilirliğine ilişkin alan uzmanı öğretim üyelerinin, maarif müfettişlerinin, okul yöneticilerinin ve öğretmenlerin görüşleri alınarak çeşitli araştırmalar yürütülmelidir.

Anahtar Sözcükler: Okul öz-değerlendirme, okul geliştirme, okul iyileştirme, model geliştirme, araştırma-geliştirme yöntembilimi.

Submission Checklist

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13	☒	*The article is preceded by **English Structured Abstract of not more than 250 words** and not less than 200 using five required headings:* **Purpose***: State the problem in field. Then explain the purpose of the study.* **Method:** *Specify the research design, sample, and research instrument and data analysis in brief.* **Findings***: Highlight the significant, interesting or surprising results*. **Implications for Research and Practice**. (These headings may need some adaptation in the case of discussion papers: *Background, Purpose of Study, Sources of Evidence, Main Argument, and Conclusions)*. More information available from http://www.tandf.co.uk/journals/authors/rereabstracts.asp Yapılandırılmış İngilizce öz 200-250 sözcük uzunluğunda olup, aday makalenin başında yer almakta ve **Purpose** *(İlk önce alanda karşılaşılan sorunu belirtelim. Daha sonra araştırmanın amacını bir cümle ile veriniz),* **Method** *(Araştırma deseni, örneklem, very taoplama aracı ve verilerin analizinini kısaca açıklayınız),* **Findings** *(En önemli ve çarpıcı araştırma bulgularını verelim)* **Implications for Research and Practice, (***Uygulama ve ileriye dönük araştırmalar için olası çıkarımlarınız)* başlıklarını içermektedir. Bu başlıklar tartışma yazıları için: *Çalışmanın Temeli, Çalışmanın Amacı, Kanıt Kaynakları, Ana Tartışma ve Sonuçlar* şeklinde olabilir. Daha fazla bilgi için; http://www.tandf.co.uk/journals/authors/rereabstracts.asp adresine başvurunuz.
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